



**UNIVERSITY OF CONNECTICUT**

**DEPARTMENT OF NATURAL  
RESOURCES AND THE ENVIRONMENT**

**Eight-Year Program Review 2005-2013**

**Self-Study**

**2013**

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## Executive Summary

The Department of Natural Resources and the Environment has a long rich history that began at the turn of the 20<sup>th</sup> century. The present day focus of the Department was the result of a merger of the Departments of Renewable Natural Resources and Agricultural Engineering in 1989. The merged Department was called the Department of Natural Resources Management and Engineering until a name change in 2009 to the Department of Natural Resources and the Environment (NRE).

Like many natural resource programs across the United States our beginnings were rooted in forestry. Our program can trace back to the Department of Horticulture and Forestry and Landscape Gardening in 1900. Agricultural Engineering appeared in 1914 as the Agronomy and Agricultural Engineering Department. From the beginning, the tripartite mission of teaching, research, and service that is ingrained in the Land Grant Philosophy has been a guiding principle and a tradition that we continue to embrace today. While there have been many changes since our last External Program Review in 2001, one constant is our Land Grant ethos as well as the unity and collegiality that makes up our Department.

This Self-Study is concerned with years 2005 to 2013. This period of time covers the major economic downturn starting in 2008 and like most public universities we weren't immune to the economic impact. Given the economic crisis we looked for strategic opportunities to increase the size of the faculty and have succeeded. We used this time to develop a new strategic plan, implemented strategies to increase our undergraduate student numbers, steadily increased our extramural funding, reconnected to our alumni and constituencies, and sought to position ourselves to make greater contributions to the solution of environmental problems with new initiatives, from K-12 programs to international opportunities.

To increase the size and diversity of our faculty we have formed partnerships with other units on campus, resulting in the hiring of four new tenure-track faculty members within the Department as well as an additional nine faculty members who have accepted joint appointments and have become active participants in our Department. Collectively, this increase in the breadth and depth of our faculty has led to new interdisciplinary collaborations in instruction, research and outreach. An example of some of our recent collaborative efforts includes a partnership with the Center for Environmental Science and Engineering (CESE). Together we have hired two tenure-track Assistant Professors with joint appointments between the two units. Another example is a partnership we forged with the Departments of Civil and Environmental Engineering and Agricultural Resources Economics to develop a cluster hire initiative in "Climate and Sustainable Water Resources," which was approved in 2012. From this initiative, five new positions (3 in CEE, 1 in NRE, & 1 in ARE) were approved in fall 2012 to initiate the new cluster, from which NRE and CESE successfully hired a new Assistant Professor in Landscape Ecology with a focus on biogeochemistry; and we are currently searching for two new Assistant Professors, one in Human Dimensions of Natural Resources and the other in Fisheries or Wildlife Ecotoxicology.

Our undergraduate enrollment has more than doubled since 2005. We had fewer than 80 undergraduate majors in Natural Resources in 2005. Beginning in 2008 we have steadily increased not only in the number of students majoring in Natural Resource, but also in Environmental Science majors concentrating in natural resources. This period also included a sharp increase in the number of students enrolled in NRE courses. Concurrent with the increase in enrollment, we have been able to maintain, and actually increase, our success at obtaining extramural funding. Since 2005, NRE faculty serving as either a PI or Co-PI on grants, have had a steady increase in funding from ~\$1 million per year in 2005 to more than \$3 million annually today.

We have reached out and reconnected with our alumni, friends and stakeholders since our last departmental review. One positive outcome from this engagement has been the more than \$2 million in private giving since 2008, representing greater than a 100% increase in our endowment. One is an endowed deferred gift of \$1.5 million to create the first-ever endowed Chair in the College of Agriculture and Natural Resources. Another is a recent gift for \$50,000 per year for up to ten years to create and run our newest program: the Natural Resources Conservation Academy (NRCA) ([www.nrca.uconn.edu](http://www.nrca.uconn.edu)). The NRCA is a new transformative program in conservation and land use planning targeted to high school students.

The NRCA training camp is located in the UConn Forest, a 2,100-acre forest surrounding the UConn campus that our Department manages. As part of the university's capital campaign, we have worked collaboratively with a renowned artist to develop conceptual drawings and a program design of renderings for an eco-facility field station that will be a base for research, instruction, and outreach, including the future home of the NRCA. We are currently working on an endowment for the facility. We have also focused on building strong strategic international partnerships. In 2010 we signed cooperative agreements for joint education and research programs with two notable universities in China: China Agricultural University and Sichuan University. To make the most of our new relationships, over half of the NRE faculty conducted two joint research workshops in China in May 2011 with faculty and scientists from China Agricultural University in Beijing, Northwest University of Agriculture and Forestry, and the Chinese Academy of Sciences Institute of Soil and Water Conservation. The goals were to develop joint research and education programs in which we can pursue extramural funding collectively. In addition, we have developed a new study-abroad program with these new partners for summer 2014. Together with the College of Agriculture and Natural Resources we helped foster the development of a new 3+2 program with Sichuan University and are finalizing another 3+2 program with China Agricultural University. Other international efforts include one by a NRE faculty member who developed and continues to teach UConn's largest summer study abroad program, which is based in South Africa. International initiatives also include development of a new concentration for undergraduate students majoring in natural resources entitled: "International Studies in Sustainable Natural Resources," and assisting in the development and instruction of a new College-wide study abroad opportunity entitled: "Sustainable Food & Environmental Systems Program," which is held each Fall semester in Florence, Italy.

In addition to the successes above, we have had the following major accomplishments since 2005:

- In 2006 two faculty initiated and organized the first annual Connecticut Conference on Natural Resources. Since that time, all NRE faculty have fully participated in the conference. This annual event, which emphasizes interdisciplinary study and contributes to strengthening partnerships among the conservation community including State and Federal agencies, attracts 200-300 participants each year.
- We led the effort for UConn to be accepted for membership into the University Corporation for Atmospheric Research (UCAR), which is an affiliate organization to the National Center for Atmospheric Research.
- Faculty have been recognized for numerous (17) teaching, research and service awards at university, regional and national levels. Including one faculty member who was the first at UConn to receive a USDA National Award for Excellence in College and University Teaching in the Food and Agricultural Sciences.
- NRE is the home of several notable Centers and Institutes including the Center for Land Use Education and Research, the Connecticut Institute of Water Resources, the Wildlife and Fisheries Conservation Center, and the Connecticut State Climate Center.
- We recently developed a Professional Graduate Certificate Program entitled "Sustainable Environmental Planning and Management." The program is the first in the northeastern United States with this focus.

Over the past eight years we have had several notable successes, but these have also come with numerous challenges. Of particular note are the stagnant operating budgets and severe reduction in staff positions. Since our last review staff have been reduced from five to two. This is particularly difficult because NRE manages the 2,100 acre UConn Forest with no staff; it is purely through the volunteer efforts of faculty. We operate and manage the Laboratory for Earth Resources Information Systems

(LERIS), which was once designated a NASA Center of Excellence in Applications of Remote Sensing to Regional and Global Integrated Environmental Assessments, without staff. Like the UConn Forest, LERIS is completely maintained by faculty. Infrastructure such as the computers in LERIS, which are also used in our geospatial and other natural resource courses, are out of date. Our field vehicles, which are critical for our research and teaching, are also not being updated; two of our three trucks were recently taken off the road due to age and safety concerns. Despite burgeoning course enrollments our graduate teaching support is wholly inadequate at just 3.75 graduate assistantships per year; this is down from 4.0 prior to 2010, which itself had not changed in more than a decade. Despite anemic budgets and the lack of adequate staff and infrastructure support, which are problematic and potential barriers to forward momentum and growth, we have been able to continue to excel by most measures and remain optimistic about our future.

### **A. Unit Description, Mission, Goals, and Recent History**

*1) Describe briefly (with summary tables):*

*a) the profile of full-time and part-time faculty, including adjuncts and graduate assistants in the teaching programs of the unit. Clarify the primary campus appointment of each instructor.*

Most of the courses in the Department are taught by the 13 tenure track faculty within the unit, all at Storrs (Appendix A1). Two courses, Environmental Law (NRE 3245) and Conservation Law Enforcement (NRE 3201), are each taught annually by adjunct faculty members, and one graduate course, Geospatial Processing Techniques (NRE 5585), is primarily taught by a graduate student. A great many of NRE's course offerings include laboratory/field sections, and these are led by both faculty and graduate student assistants. However, most are still either taught by faculty or under their supervision as NRE is allocated only 3.75 Teaching Assistantships (TA) each year. While we have greatly increased the number of students enrolled in our courses over the last several years (Appendix A3), the TAs allocated to the unit have largely not changed.

*b) the instructional offerings associated with the unit, including graduate and undergraduate degrees and certificates.*

There are 48 undergraduate course offerings (including Independent Study, Field Study Internship, Undergraduate Research and Undergraduate Research Thesis) that are regularly offered within the unit (Appendix A3). The majority are taught by NRE tenure-track faculty members. The Department offers undergraduate study leading to the Bachelor of Science (B.S.) degree in Natural Resources. The students must also choose at least one of six concentrations within the Natural Resources Major: Climate and Water Resources, Environmental Conservation, Fisheries and Wildlife Conservation, Sustainable Forest Resources, Geomatics, and International Studies in Sustainable Natural Resources. The Department also offers an undergraduate minor in Wildlife Conservation.

The Department actively participates in the undergraduate Environmental Science B.S. program that is housed in both the College of Agriculture and Natural Resources (CANR) and the College of Liberal Arts and Sciences (CLAS). Since its inception in 1994, our Department has also consistently maintained a leadership role serving as either a co-director (from 1994 – 2013) or director (2013 – present) of the program. Environmental Science students must choose one of nine potential concentrations: Environmental Biology, Environmental Chemistry, Environmental Geography, Environmental Geoscience, Environmental Marine Science, Environmental Health, Natural Resources, Resource Economics and Soil Science. Of the nine concentrations, the largest percentage of graduates to date have been in the Natural Resources concentration (26%) followed by Environmental Biology (18%) and Environmental Health (15%). Students majoring in Environmental Science with a concentration in Natural Resources are considered by the university as students majoring in our unit.

At the graduate level, there are 23 graduate course offerings that are typically offered every other year. All, with the exception noted above, are taught by Department tenure-track faculty. Graduate degrees offered within the Department include Master of Science (M.S.) and Doctor of Philosophy

(Ph.D.) degrees in Natural Resources: Land, Water, and Air. In addition, a new Professional Graduate Certificate entitled “Sustainable Environmental Planning and Management” was just approved (November 2013) by the University of Connecticut Board of Trustees. The Professional Certificate Program will begin offering classes in Fall 2014 (Appendix A4).

*c) the areas of scholarly productivity and creative performance associated with the unit.*

Although our unit is relatively small in size (ranging from 10-12 tenure-track faculty over the past 8 years) scholarly productivity associated with the unit has always been across a diverse range of natural resource specialties. In a broad sense, our scholarly foci mirror our undergraduate concentrations, because we have expertise in atmospheric and climate modeling; sustainable forestry particularly in the context of an urbanizing environment; fisheries and wildlife conservation; geomatics including remote sensing, geodesy, GIS and GPS; and water resources. With the recent cluster hire approved in Climate and Sustainable Water Resources, we will have emerging strengths in landscape biogeochemistry, ecotoxicology, and water policy (human dimensions).

*d) the outreach, service, public engagement, and clinical activities of the unit.*

We have a long tradition in embracing our Land Grant University heritage and this is reflected in the many strong programs we have developed in outreach, service and public engagement. (University Service is not considered here, see Section F). We engage in many individual service activities, such as week-long short course offerings in GPS Surveying and Geometrical Geodesy and numerous presentations annually on greenhouse design and energy, plus outreach programs associated with the Center for Land Use Education and Research ([www.clear.uconn.edu](http://www.clear.uconn.edu)), the Connecticut Institute of Water Resources ([www.ctiwr.uconn.edu](http://www.ctiwr.uconn.edu)), the Natural Resources Conservation Academy ([www.nrca.uconn.edu](http://www.nrca.uconn.edu)) and the new Stormwise initiative ([www.stormwise.uconn.edu](http://www.stormwise.uconn.edu)). We also actively engage in editorships and grant reviews and panels (see Section F).

2) *What are the major goals of the unit? How have these evolved through recent years with respect to the unit's mission statement? How are they expected to change in the future?*

Major goals of the Department of Natural Resources and the Environment were articulated in our 2009 five-year Strategic Plan (Appendix A5) and were designed to specifically address our core missions of teaching, research and service as articulated in our mission statement.

The Mission of the Department of Natural Resources and the Environment is: *to provide high-quality undergraduate and graduate education, to generate new knowledge by conducting research, and to provide extension and outreach programs in the fields of natural resources management and engineering and environmental science.*

*The Department places distinct emphasis on the problems associated with the interface between rural and urban environments. These services are directed primarily toward Connecticut's students, governmental agencies (local, state, and federal), natural-resource owners and managers, and the general public. The program also addresses national and global issues.*

*The major focus of the Department is directed toward water, air, forests, fisheries, and wildlife resources, and remote sensing/geographic information systems. The Department's overall purpose is to contribute to the solution of environmental problems, to increase the understanding of natural resources systems, and to enhance the wise management of these resources. Over the years, the Department has become a leader in the natural resources and environmental sciences.*

The Strategic Plan is a guiding document that we have used to improve our unit. As such, using the Strategic Plan in this context it has been more of a living document. There are numerous goals in the plan and within each goal there are strategies outlined to help achieve them. These were not simply a litany of tasks that we thought needed to be checked off, but were written as potential guides. In this context they are constantly evolving as new opportunities arise or when certain strategies may not prove to be that

effective. Thus, the Strategic Plan helps us advance our core mission. The goals were articulated into five core areas: 1) Undergraduate Education, 2) Graduate Education, 3) Research and Scholarship, 4) Outreach and Engagement, and, 5) Diversity. The specific goals and associated strategies to achieve these goals can be found in Appendix A5.

*3) How do these goals relate to the mission and plans of the university as expressed in the University of Connecticut Academic Plan?*

Our core mission along with our 2009 Strategic Plan fit exceedingly well, and indeed directly support, the UConn Academic Plan. One of three focused areas of excellence in UConn's Academic Plan is "The Environment, including the environment and human health, the environment and sustainable ecosystems, the environment and sustainable energy." Throughout the Academic Plan the environment is emphasized and has direct relevance and connection to our Department's mission and goals. For example, the University's Academic Plan states: "*Develop enhanced degree programming and course opportunities for undergraduates in emerging areas of interdisciplinary excellence and workforce demand. - Leverage our emerging excellence in environmental studies to offer focused programs that will enhance the ability of our students to understand and solve critical environmental and ecological issues. Engage communities in collaborative efforts to address pressing environmental issues. - Establish partnerships between students, faculty, staff and community leaders to identify and address local environmental challenges; - Continue to enhance extension-related outreach activities.*" Our Departmental strengths and expertise in natural resource and environmental science teaching, research and service all directly support and are related to the university's expressed focus on environmental issues. As described above, at the undergraduate level we have six concentrations in numerous areas of environmental and natural resource sciences, from Climate and Water Resources to our newest concentration in International Studies of Sustainable Natural Resources. Our expertise in these areas led to a successful cluster hire in spring 2012 in Climate and Sustainable Water Resources. We have also formed partnerships with other units on campus, such as the Center for Environmental Science and Engineering and the Department of Civil and Environmental Engineering. We also have a strong integration with the faculty in the Department of Extension. Collectively, this increase in the breadth and depth of our faculty has led to new multidisciplinary collaborations in instruction, research and outreach. In addition to our increasing strengths among environmental faculty members, we also have several strong environmental Centers and Institutes that are housed or directed by faculty within the Department. We are the home of the Natural Resources Conservation Academy ([www.nrca.uconn.edu](http://www.nrca.uconn.edu)) an innovative new program in conservation and land use planning targeted to Connecticut high school students. In partnership with the Connecticut Department of Energy and Environmental Protection (DEEP) we also house the Connecticut Environmental Conditions Online website ([www.cteco.uconn.edu](http://www.cteco.uconn.edu)), an online site that provides free maps and geospatial data for planning, management, education and research.

*4) Describe the process for reviewing the unit's strategic plan and assessing its achievements and goals.*

As outlined above, the strategic plan was updated in 2009 and has been a guiding document in our efforts to achieve our goals and objectives. Prior to that plan, the Department's previous strategic plan was in 1995. The Department also went through an external combined Academic Assessment Review and USDA On Site Program Review in 2001. A summary of findings and 19 reviewer recommendations from that external review can be found in Appendix A6. The 2001 On Site Program Review Report is in Appendix A7. Overall the summary of findings were extremely positive across all facets of the Department, and included mention of productive faculty members, strong Departmental leadership, graduates of the program meeting natural resources needs of the state and region, and the morale and mutual respect among faculty, staff and students was deemed outstanding.

*5) What peer units at other universities provide targets of aspiration for this unit?*

Our faculty expertise includes forestry, water resources, biogeochemistry, air and climate, geospatial technologies (GIS, GPS, and remote sensing), and fisheries and wildlife conservation. Given this broad and deep expertise among our faculty, it is particularly difficult to provide peer units or targets of aspiration because of the vast range in size and diversity among natural resource programs. For example, a large number of natural resource units across the country are either Colleges or Schools, and those that reside solely in one Department tend to be of large size in terms of faculty numbers (e.g., > 25 or more). Those universities that have Departments of similar size to ours, such as the University of Rhode Island (14 faculty members) or Texas Tech University (15 faculty members), are not units to which we aspire to, but rather would be considered as equivalents. With this understanding, we feel that peer units at other universities that provide targets of aspiration include Cornell University's Department of Natural Resources (24 faculty members) and the University of Illinois's Department of Natural Resources and Environmental Sciences (21 faculty members). The next level of target aspirants includes the University of Michigan's School of Natural Resources and the Environment and Colorado State University's Warner College of Natural Resources (Appendix B7).

## **B. Scholarly Productivity and Creative Performance**

*1) Include a list of recent intellectual contributions in an Appendix*

Intellectual contributions since 2005 are listed in Appendix B1.

*2) Evaluate the level of scholarly activity in the unit. Address the quality and quantity of the unit's publications, presentations at academic and/or professional forums, and performances, as appropriate.*

NRE faculty are very productive scholars who have authored, since 2005, 197 peer-reviewed articles, 17 book chapters, 2 books, 3 software packages, 32 technical reports, 61 published proceedings/abstracts, and 85 other publications including course manuals and extension articles since 2005 (Appendix B1, B2). Several of these articles have appeared in the top publications in the faculty's respective field including *Ecology*, *Nature*, *BioScience*, and the *Proceedings of the National Academy of Science* all of which have significant impacts.

Publications by NRE faculty are heavily cited even though several faculty members have their disciplinary home in a somewhat narrow field. They have been cited 12,038 times (Appendix B3). Two articles have been cited over 500 times, 18 over 100 times, and 39 over 50 times. Nine faculty in the Department had at least one paper that has been cited over 50 times, 7 faculty over 100 times and 2 over 500 times. The average h-index for the Department is 13.8 and the average i10-index is 16.7.

NRE faculty are very active in presentations and have made 395 presentations of which seven were keynote or plenary (Appendix B4). They have also received 17 honors and awards in the past eight years from a wide variety of sources including societies, institutions and private corporations (Appendix B5).

*3) Evaluate the level of internal and external funding for research, performance, or creative activity in the unit. Is the unit competing effectively for external support?*

NRE faculty are highly active in seeking and obtaining extramural funds to support their research and training of graduate students. Since 2005, NRE faculty have obtained \$20 million in extramural grants as PIs or Co-PIs. (Appendix B6). These grants cover 189 projects (some have multiple co-investigators within the Department). The sources of extramural funds are notably diverse and include many Federal agencies such as the US Geological Survey, US Department of Agriculture, USDA-Natural Resources Conservation Service, USDA-Agricultural Research Service, US Environmental Protection Agency, the Department of the Army, the Naval Facilities Engineering Service Center, the National Science Foundation, the National Aeronautics and Space Administration, US Department of Transportation, US Fish & Wildlife Service, and the US Department of Energy. State agencies such as the Connecticut Department of Environmental Protection; and several private foundations and companies, most notably Northeast Utilities, also have been significant sources of support for research. NRE faculty members have also obtained a small amount of intramural funds, amounting to only \$110,407 (0.5% of the total).



The attached "Program Review Baseline Data" provided by OIRE shows a decrease in external grant expenditures since FY 05-06. However, it should be noted that this decrease in expenditures is primarily due to the ending of two large earmarks in FY05-08, which amounted to \$2.6M NASA support and \$0.4M/yr from the US EPA for three years (Appendix B, Figure B1). In addition, NRE faculty are currently co-PIs on eight grants that amount to \$2,698,000 in extramural research funding. However, as co-PIs NRE does not receive any credit for expenditures; those funds are solely credited to the PI. NRE faculty are important co-investigators with faculty in the departments of EEB, CEE, PLSC, and EXT, as well as at many other universities. Grants awarded to NRE faculty members as either PI or Co-PI since 2005 show an increasing trend in grants dollars awarded, especially when early Earmark funds are subtracted (Appendix B6, Figure B1).

*4) Describe any significant research interactions with external entities (public or private) developed by the unit. What have been the benefits of these interactions and the drawbacks, if any? How do they contribute to the unit's research goals?*

As noted in 3) above, NRE faculty collaborate with several other departments at the university as well as other universities and institutions in the U.S. Five of these significant research interactions are described below.

A) The Department has a strong and long-lasting relationship with the Connecticut Department of Energy and Environmental Protection (DEEP). In the past eight years, there have been 41 grants with DEEP amounting to \$3.7 M and involving 11 faculty. Some of these DEEP grants are US EPA grants that have been awarded through DEEP (Appendix B6). Also, Connecticut Environmental Conditions Online (CT ECO), the collaborative work of the DEEP and the University of Connecticut Center for Land Use Education and Research (CLEAR), the director of which is an NRE faculty member, has become an indispensable resource for the sharing of environmental and natural resource information with the general public.

B) The US Geological Survey supports the Connecticut Institute of Water Resources (CT IWR) which is housed in NRE. This program has existed since 1964 and is legislatively mandated at the state level. The mission of the program is to support water resources research and foster the education of water scientists. Each year CIWR has received about \$92,000 to support the institute and research projects. Since 2005 the CT IWR has funded 21 research projects.

C) The USDA- Natural Resources Conservation Service has supported research in NRE for many years. Projects have included treatment wetland research, soils research, agricultural runoff studies, and forest management plans.

D) Recently, NRE has partnered with CEE in the School of Engineering in major projects with Northeast Utilities. This has resulted in the \$1,800,000 NU Center of Excellence on Storm Hazards Mitigation & Power System Resilience: A 2-yr Demonstration Activity with E. Anagnostou (PI), M. Rudnicki, J. Volin, B. Hartman and T. Worthley. This is a multidisciplinary effort that involves forest management, geospatial modeling, tree biomechanics, atmospheric science, urban and community forestry, and extension and outreach.

E) The Wildlife and Fisheries Conservation Center in NRE uses scientific research techniques to better understand wildlife and fish populations, the habitats they require, and interactions with human society in our shared landscape. This center has expanded on relationships with CT DEEP and includes eight affiliated faculty, two of which are adjuncts working in the fisheries and wildlife divisions within CT DEEP. Numerous contracted grants have been executed to perform fish and wildlife research needed to advance the state's Comprehensive Wildlife Conservation Strategy using State and Tribal Wildlife Grant

monies passed through CT DEEP from the US Fish and Wildlife Service.

5) *To the extent data are available; briefly describe how the research, performance, or creative activity in your unit compares nationally with respect to these activities.*

There is no national ranking of Natural Resources programs by the NRC or any other U.S. organization. Forestry programs are ranked by the NRC, but forestry is just one of many components of NRE and we are not considered a forestry program by the NRC. Unlike many disciplines at the University of Connecticut, top natural resources programs do not necessarily coincide with top research universities, although there are some exceptions (e.g. the University of Wisconsin-Madison and UC Berkeley). When comparing NRE to peers and aspirants, it becomes obvious that we are smaller (10-12 faculty FY05-FY12) than any other peer and aspirant institutions (Appendix B7). In addition, some universities have colleges or schools named Natural Resources, all of which are larger than NRE.

The Department of Natural Resources and the Environment is currently adding two faculty members as part of the *Climate and Sustainable Water Resources* cluster hire initiative collaboratively with the School of Engineering. Through growth and enhanced scholarly activity, NRE has an opportunity to compete nationally with our peers and aspirants.

6) *Indicate what the unit does to encourage and develop research, performance, or creative activity?*

There are several strategies used to foster research and scholarly activity within the Department. New assistant professors begin with fewer teaching responsibilities than tenured faculty. They also are encouraged to obtain graduate assistantship support through Federal Hatch and McIntire-Stennis programs that are available in the Department. The seminar program brings in potential colleagues from other institutions for possible collaboration. The Head of the Department has a standing offer to support visits by potential colleagues for collaboration. He also supports sending faculty of all ranks to Washington, DC to meet with agency Program Directors and other agency personnel. Support is also available to attend grant writing workshops. Funds for these activities largely come from recovery of indirect funds. Over the past eight years, \$146,272 in Departmental indirect funds recovered have been used to support research activities. Merit has been used to reward scholarly activities. Over the past eight years, 9 of 10, and 11 of 12 faculty have received merit awarded by the Dean and Department Head. From two to four faculty per year have received merit awarded by the Provost when such merit was available. Over the past eight years there were three years when merit was not awarded due to union concessions.

NRE faculty have made developing international collaborations a priority for enhancing research activity. In May 2011, with fund support through the College and Department, seven faculty with expertise primarily in water resources research visited several universities, institutes, and laboratories in China and participated in the Sino-US Forum on Eco-hydrology and Water Resources including China Agricultural University (CAU), and the Institute of Soil and Water Conservation, Chinese Academy of Sciences. They also visited the State Key laboratory of Soil Erosion and Dryland Farming on the Loess Plateau. Important collaborations for research were initiated. In response, a Professor from CAU has visited NRE. A graduate student from CAU spent one year in NRE. Collaborators are currently developing a research plan and proposal for NSF support.

The Department and the College understand the importance of investing in state-of-the-art equipment for NRE faculty. For example, funds have been used to develop a genomics lab for bacterial source tracking. Field vehicles are an essential component of NRE research; often the most used piece of equipment used in a study. The lack of a University motor pool (i.e., vehicles for rent) affects the ability of the Department to conduct research. Recently, two of four Department vehicles have been taken off the road because they are worn out and need major repairs. Funds to replace those vehicles are not available. In addition, there has been a policy by the University to not allow purchases of additional vehicles. This policy has adversely impacted the research programs of new faculty in NRE as they are conducting mostly field-directed research. Furthermore, the Department's Laboratory for Earth Resources Information Systems (LERIS), principal center at The University of Connecticut for conducting remote sensing and GIS research oriented toward natural resources, ecology, and the environment, lacks

sufficient funds to upgrade and maintain state-of-the-art high performance computers. Funds for hardware purchases, annual software license renewal, and personnel to manage LERIS would be desirable.

*7) Describe and evaluate the unit's participation, leadership, and influence in the academic profession through such avenues as professional associations, review panels, and advisory groups.*

NRE faculty lead the natural resources and the environment academic community as editors, association officers, review panel members, and members of prestigious international groups. Since 2005, NRE faculty have held 18 editorships (Appendix B12). Six of these have been on editorial boards and five are as associate editors. In addition, in the past eight years faculty have held 19 leadership positions in national and regional professional associations including one as president of an organization, and another as president of a regional section (Appendix B9). NRE faculty have chaired or co-chaired 23 conferences and workshops regionally, nationally, and internationally. Several others have served on program committees. NRE hosts an annual "Connecticut Conference on Natural Resources." This conference was co-founded by Profs. Rudnicki and Vokoun and is attended by over 200-300 participants each year. Faculty have served on 15 grant review panels (Appendix B8) and have conducted numerous ad hoc reviews. NRE faculty hold 55 distinguished positions on national and international committees, scientific review panels, and honorary academic appointments at other institutions (Appendix B8-B11).

*8) Describe the unit's potential for responding to changing directions and new external opportunities. What indicators show the level of morale, commitment, and sense of continuing self-improvement of the unit?*

NRE faculty recognize that the research climate is changing. They also recognize that sources of research support are not as available as previously. As such, they have responded with innovative relationships with other units and sources of support. The collaboration between NRE and the School of Engineering on the NU Center of Excellence on Storm Hazards Mitigation & Power System Resilience program with Northeast Utilities is one example. NRE has also expanded its private gifts by more than \$2M.

NRE faculty come together periodically for retreats on important issues. In the past eight years, retreats were held at: 1). the Branford House at Avery Point in 2007 where faculty developed a new vision for NRE. 2). In October 2008, at a retreat in Essex, CT, faculty worked on graduate programs in the Department, developing a focus; and 3). In August 2011, faculty conducted a retreat at the Inn at Woodstock Hill in Woodstock, CT and reviewed the strategic plan and metrics, investigated authentic assessment (an Institutes for Teaching and Learning-lead discussion), shared 3-minute research presentations, and reflected on Research and Time Management.

NRE faculty and staff have the reputation of camaraderie and willingness to help each other. Sharing of equipment, laboratories, and sometimes student assistants is common. Both undergraduate and graduate students are well aware of this Departmental vibe, and it draws them to the Department. Faculty frequently contribute their time to further the whole of the Department including volunteering for open house, recruiting visits, Cornucopia (an annual College sponsored open house), and service commitments.

### **C. Undergraduate Programs**

*1) Show summary table of enrollments and credit hours by major, campus, etc., as appropriate.*

Summary data on enrollments by major and concentration offered by NRE faculty are presented in detail in Appendix Table C1 and C2. In addition to the Natural Resources major, we include the shared CANR/CLAS Environmental Science major in these statistics as appropriate (*i.e.*, only counting CANR concentrators in student numbers). The majority of our courses are taught on the Storrs campus with only two being taught at regional campuses. We regularly teach 48 different NRE course offerings, and 30 of these have a field, laboratory, or in 1 case, discussion, components. Faculty in NRE now participate in the General Education program in an increased capacity since the previous program review. We now offer GenEd courses in Content Areas 1, 3, and 4. In addition, two 'W' (writing-intensive) courses are offered.

Graduate teaching assistant support (3.5 TA's) is provided to five courses (four of the five core courses) as well as one course offering (0.25 TA) in the Ratcliffe Hicks School of Agriculture. The remaining courses that have field or laboratory sections are taught solely by NRE faculty. We also offer a minor in Wildlife Conservation for non-NRE majors.

*2) What proportion of these courses are taught by full-time faculty, part-time faculty, and graduate students? How is the quality of general education instruction assessed? Where graduate assistants have a primary instructional role, how are they supervised?*

As described in Section A.1a, full-time NRE faculty members teach almost all courses offered in the Department. Only two courses are taught by adjuncts and both are experienced practitioners. Advanced Ph.D. students have instructed a course while taking NRE6450 Teaching Practicum, under faculty supervision and one graduate course, Geospatial Processing Techniques (NRE 5585), is primarily taught by a highly experienced graduate student. Graduate students teach laboratory and discussion sections of certain courses as graduate teaching assistants and in these situations are supervised by lecturing faculty.

*3) With respect to the undergraduate major(s) curriculum and courses:*

*a. How does the undergraduate major reflect the goals of the academic program? What evidence is available to compare the curriculum with that of similar programs nationally? Does an accrediting body prescribe any portion of the curriculum? If so, how?*

The majors, one offered exclusively by NRE, Natural Resources, and the other heavily supported by NRE, Environmental Science (9 academic departments and 2 colleges), share some basic overlapping goals in that they desire to prepare students for careers in an environmentally-themed workforce. Further, the Environmental Science major offers a Natural Resources concentration, which is consistently one of the top two concentrations by enrollment in that major. Natural Resources and Environmental Science both have a structure with core courses and then give students choices among concentrations. In general the Natural Resources core prescribes fewer credits, and the concentrations are larger at 19-23 credits, while the Environmental Science major has a larger, broader core, with smaller concentrations at 12-14 credits.

The Natural Resources major is structured similarly (core of courses with concentrations) to some other programs nationally, however, many of the aspirant peers of UCONN (especially larger units at land grant institutions) offer multiple majors in Forestry, Wildlife and Fisheries, and Water Resources. There has been a recent national trend, however, to consolidate historical majors (and departments) towards a structure similar to the one employed here since 2005.

There are no accredited programs for NRE. The Society of American Foresters does accredit college programs, and the Wildlife Society and The American Fisheries Society certify individuals rather than programs. Some NRE students can qualify for these certifications.

*b. How are courses in the undergraduate major(s) coordinated? How do the courses in the major contribute to its student learning outcomes?*

Course coordination within the Natural Resources major has been evolving since the last review. In 2004, a series of concentrations within the major were developed to support the long standing core set of courses required for all of our natural resource majors. This restructure occurred subsequent to a Departmental retreat and reflects the process in which the Department addresses major curricula issues as a single faculty. The concentrations go through periodic review and occasional revision by the faculty, which included adding a new concentration in 2013 that reflected the growing importance of international experiences for environmental and natural resource-oriented students.

In general, student learning outcomes are linked to the common core courses through a curriculum map as shown in the NRE Assessment Plan on the Online Assessment Tracking System (OATS).

*c. What specific efforts are made to incorporate new knowledge and perspectives into the curriculum? What efforts are made to involve students actively in their learning through internships, research projects, seminars, independent study, studio courses, etc.? Describe any innovations added to instructional programs since the last review.*

The Natural Resources major was ahead of its time in regards to active learning methods and courses designed to develop needed skills in real-world contexts, both outside in nature and in the laboratory. These types of courses have always been hallmarks of the curriculum. Students have traditionally acquired summer work at state and federal agencies, and these opportunities were always considered part of career preparation. Since the previous review, we revised NRE 3690 Field Internship to be more explicit about desired learning outcomes and more accommodating of summer jobs in the discipline. (Our Internship Guide, Learning Contract, Student and Employer Forms have been widely adopted by other Departments within the College.) Students have recently interned with US Fish and Wildlife Service, USDA-NRCS, Connecticut Audubon, the CT Forest and Park Association, CT Dept. of Energy and Environmental Protection Divisions of Forestry, Water, Wildlife, and Fisheries, CT DEEP Bureau of Air Management and the Student Conservation Association.

The NRE faculty have been particularly attentive to skill sets needed by its students. For example, since the last review, we created and offer a new course in Human Dimensions of Natural Resources, and are currently searching for a new faculty member with expertise in this area. This course was created in response to several national reports and documents indicating that federal and state natural resources and environmental agencies desired new employees to have increased knowledge of social dynamics, improved communication skills and knowledge of stakeholder-driven decision processes. The faculty also added NRE 4697W Undergraduate Research Thesis to formalize a process for the culmination of the increasing emphasis on undergraduate research in the Department (and nationally). The focus on undergraduate research has led to more NRE students winning Summer Undergraduate Research Fellowships in recent years, with three awarded for summer 2013.

*4) Concerning the undergraduate major cohort:*

*a. Explain any significant changes in the undergraduate major enrollment and in degrees granted since the last review. What are the implications of the average lengths of time required for degree completion? What are the retention rates for the undergraduate majors? Explain low enrollment or low graduation rates, if below Board of Regents (BOR) criteria. What efforts are underway to improve performance in these areas?*

Enrollments in both the CANR portion of Environmental Science and the Natural Resources majors have grown substantially in recent years (Table C1) and total student enrollments in our courses have doubled (Figure C2). We have found that the majority of new Natural Resources and Environmental Science majors enroll throughout the school year (which are not reflected in the 10-day numbers), with numerous transfers among majors and from Academic Center for Exploratory Students (ACES) (i.e., undeclared majors). Relatively few incoming freshmen declare Natural Resources on arrival, but rather find the majors through course offerings, promotional activities and word of mouth. Since most of our students transfer in from their sophomore year or later and coupled with our more than doubling of natural resource majors and extremely large increases in non-major student enrollments in NRE courses, we have experienced pressure on being able to find seats in many of our lower division courses. Some growing pains are evident particularly among three of the core courses in the Natural Resources major. In response to these pressures we have greatly increased the number of laboratory/discussion sections for these courses (without additional TA support) and in the case of NRE 1000, now offer it both semesters (we have also substantially increased Early College Experience Environmental Science courses at more than 30 high schools throughout Connecticut, and offer Environmental Science on the UConn Avery Point campus as well). Limits to growth are particularly acute in NRE 2000, which is limited by the seats in a computer-based laboratory and availability of GPS receivers. We recently moved back into the renovated Young Building and had the forethought to allocate more square footage to the computer lab, but have not

been allocated monies to purchase computers to capitalize on the available space. Additional sections have been covered by existing TAs and faculty as no new TA lines have come to NRE to offset this growth. In addition the tuition account within the Department has remained flat through the period of review, even though enrollments have more than doubled. Nonetheless, two-year retention rates are high and have ranged from 57 to 75% (Table C4). Since NRE faculty have been particularly accommodating in increasing the number of sections they offer, we have been able to keep the average length of time to degree completion steady and it has not increased. However, in lieu of receiving greater TA support, in order to continue maintaining the high retention rates and very good average length of time to degree completion, we are in the process of changing course catalog descriptions on a few of our particularly heavily enrolled courses so that they will become largely limited to natural resource and environmental science majors, with exceptions as warranted.

*b. What indicators does the unit utilize to monitor the success of its graduates? How does the quality of these graduates compare with student quality in this field nationwide? Describe any honors or awards received by the unit's graduates.*

We annually reach out to our graduates through our newsletter "The Caliper," and periodically through UConn Foundation contact lists. We are aware that our graduates compete well with other graduates for professional positions. However, we continually need to improve our communications with our graduates.

Other measures of success include successful employment. We have two formal sources of information on employment. The first, a survey of graduates attending commencement from 2010-2013, indicates that 16% would be attending graduate school and 29% had jobs (Table C5). The second, an Alumni Survey from 2005-2012 indicates that 79% of our graduates are either full or part-time employed (Table C6). A listing of actual positions is given in Tables C5 and C7, and indicates a mix of professional positions related to the major and other employment, including education.

*c. Comment on the quality of the unit's efforts to attract, support, and graduate traditionally underrepresented groups. How does the proportion of degrees granted to underrepresented gender and minorities compare to the university as a whole and to the field nationwide? What specific plans and programs does the unit have in place for increasing the proportion of graduates from traditionally underrepresented groups? Include measures taken to provide special advice and support for such students while enrolled.*

Over the past five years undergraduate students have been 35.3% female, 4.4% Hispanic/Latino, 0.9% Asian, 0.7% African American, and 0.4% American Indian (Table C8). The race is unknown for 15.9% of undergraduates. There is a recent trend in increasing Hispanic/Latino students. Natural Resource programs have traditionally been poorly represented by underrepresented groups including women, and our Department has not been an exception. We have taken several steps to attract, support and graduate traditionally underrepresented groups in our major. In our 2009 Strategic Plan, we included a fifth category, specifically on diversity. In this document we outlined several goals and strategies to attract and support more underrepresented groups (Appendix A5). Some small steps include actively recruiting at every university-sponsored open house, majors fair and through regularly occurring presentations to the ACES (i.e., undeclared majors) program. In addition, we recruit potential students through UConn's Early College Experience (ECE) program. We direct and advise the Environmental Science ECE, and in this capacity, we visit up to 32 high schools each year and use these visits as opportunities for recruitment. There are 550 high school students across the State currently enrolled in this course. We assisted in an articulation agreement with Three Rivers Community College and have recruited several students to natural resources after they have completed their Associate's degree. Since 2007 we have directed two endowed Departmental undergraduate scholarships, the Hoarce C. Eriksson Forestry Scholarship and the George F. Cloutier Scholarship Award, to be used as 4-year recruitment scholarships, with a focus on underrepresented groups. We have had modest success in using these scholarships to recruit a limited

number of female students to major in natural resources. In 2012 we started a new conservation program targeted to High School students in Connecticut called the Natural Resources Conservation Academy ([www.nrca.uconn.edu](http://www.nrca.uconn.edu)). The NRC Academy actively recruits 22-24 high school students each year to engage in a weeklong summer field experience at UConn followed by a 7-month individual conservation-related community project. The top three student projects are awarded the Eriksson scholarship should they be accepted to UConn and major in Natural Resources. From our 2012 class (which presented their results in March 2013), our top winner began her college career this fall semester in NRE (the other two awardees are still in high school). Students in the program range across the socioeconomic spectrum. In the first year, 24 students were accepted into the NRC Academy, of which 12 (50%) were awarded financial aid to assist them in participating in the program. Six of these applicants (25% total) were enrolled in the Federal Free/Reduced Lunch Program and received substantial assistance through the Academy and the remaining six applicants received partial need-based scholarships. In the second year, summer 2013, of 22 students in the program 14 (64%) received financial aid, and seven of these students were in the Federal Free/Reduced Lunch Program.

*d. What is the unit doing to serve nontraditional and parttime undergraduate students?*

Like other programs, NRE is experiencing an increase in nontraditional and part-time undergraduate students. A portion of these students come through articulation agreements with Three Rivers Community College. NRE has advisors that understand the challenges associated with attending college for these students and has been able to successfully help them navigate a path to graduation.

*e. Describe the process and structure of the undergraduate advising in the unit. What is the quality of advising for undergraduate majors? How has the advising process been evaluated?*

The Natural Resources major features advising by tenure-track faculty. Students entering the major are assigned a faculty advisor by the Department head with knowledge of the student's chosen concentration area, and are often then the student's instructor in related coursework in the concentration. Advising varies somewhat from faculty to faculty, but is predominantly accomplished face-to-face each semester in the weeks leading up to registration. We pride ourselves on our advising and one faculty member has received the University Outstanding Student Advising Advocacy Award. Honors students have been advised by several faculty in the department for both NRE and ENVS majors, but the Honors program typically puts restrictions on who can advise these students. We have found this practice to be restrictive and suggest that the Honors program consider greater freedom in advising.

*5) Where are program graduates placed, or what do they do after graduation? How do graduates of the program view their experience, and how are their views solicited? What program modifications do these views suggest?*

As indicated above, we annually reach out to our graduates through the newsletter "The Caliper," and periodically through UConn Foundation contact lists. In addition, we obtain exit information with graduating seniors. Based on available information, 79% of our students have full or part-time jobs. Students indicate in the Alumni satisfaction survey that they mostly choose Natural Resources as a sophomore or junior, prefer courses in the major over courses outside the major, were nearly extremely satisfied with the accessibility of instructors, and were satisfied with advising (Table C6). They also would like more help in career preparation and finding a position. Overall, 99% of our respondents would recommend UConn. We have recognized that increasing abilities are desired in oral and written communications, as well as decision making. This feedback will inform our next evaluation of our curriculum. Nevertheless, we continually need to improve our communications with our graduates.

#### **D. Graduate Programs**

1) *Show summary table of enrollments by specialization, campus, etc., as appropriate.*

Student enrollments in the Natural Resources: Land Water Air M.S. and Ph.D. graduate programs are reported in Appendix D, Table D1. All students in the program are enrolled at Storrs, and the programs do not feature formalized specializations.

*2) Overview of the graduate program(s):*

*a. Describe, in general terms, the graduate program(s) offered by the unit. How do the graduate programs reflect the basic goals of the academic program?*

Graduate degrees offered within the Department include M.S. and Ph.D. degrees in Natural Resources: Land, Water, and Air. The graduate program is primarily research based, and the majority of students complete a research project and a thesis or dissertation (i.e., plan A). We also offer a Plan B non-thesis option for M.S. students, the newly approved graduate certificate, and a new 3+2 program with Chinese universities. Many disciplines within natural resources and environmental sciences require a M.S. degree to be competitive for career advancement beyond entry level positions, and the Department continues to attract and graduate M.S. students, recently comprising 50% of the graduate study body. Our doctoral graduate students generally seek careers in research positions within the same environmental agencies and organizations as the M.S. students, as well as careers in academia. In addition to more traditional teaching/research professorships, our Ph.D. graduates are also competitive for faculty positions in university extension at land grant institutions.

*b. What evidence is available concerning the quality of the unit's graduate program(s)? How is this information used to strengthen the graduate program(s)? Describe, in particular, extramural awards and grants for the purpose of graduate education, either to individual students or to the program.*

A direct measure of the quality of our graduate program is the placement of graduates. Placement of 8 Ph.D. graduate students in the last 5 years includes tenure-track faculty members at Clemson University (Y. Kanno), Bemidji State University (B. Hiller), and Eastern Connecticut State University (M. Metcalf), two Research Biologists with CT-DEEP (M. Huang and H. Kilpatrick), and a lecturer at Tufts University (C. Zimmerman). Recent Ph.D. students also include the first successful Ph.D./J.D. dual degree student at UConn (R. Schimmer).

*c. What changes in the program(s) have occurred since the last review? What changes (especially innovations) are now underway?*

The Plan A thesis and dissertation students continue programmatically much the same as before. New innovations in the graduate program revolve around newly developed course-based graduate offerings. We, along with several departments in CANR, have entered into a '3+2' agreement with Sichuan University in China in which highly qualified Chinese students complete 3 years study at their home university and then come to UCONN where they finish their BS and acquire a plan B M.S. in two years. We are also currently developing this agreement with China Agricultural University. Another innovation is a new Professional Graduate Certificate entitled "Sustainable Environmental Planning and Management" that was just approved (November 2013) by the University of Connecticut Board of Trustees. The Professional Certificate Program will begin offering classes in August 2014 (Appendix A4) and explicitly address the communication, decision-making, and problem-solving skills desired by natural resource agencies and industry. These innovations represent both a broadening of the graduate program and embracing of new clients, while ensuring that our students graduate with core competencies in natural resources including discipline-specific fundamental and applied knowledge, technical proficiency and communication skills, and the ability to apply knowledge in the workplace.

*3) With respect to the graduate curriculum and courses: a. What evidence is there of sufficient offerings and balance among the unit's various specialties? Is there sufficient breadth of course offerings and sufficient depth for specialization? How are the courses in the graduate program coordinated? What plans are underway to modify the graduate curriculum in light of available information?*



Lacking formal specialties and prescribed curricula, graduate student plans of study are constructed with input from the advisory committee and are tailored to each student's intended career area. Some commonalities among plans of study do occur however. Natural Resources graduate students usually take graduate courses taught in statistics, and the program depends on those regular offerings. Particularly in the water resources discipline, we have adequate course offerings within the Department; we are also deepest in faculty in this area. In other areas, graduate students are able to take key courses within the Department and then capitalize on courses offered by other departments (fisheries, wildlife and forestry students often complete some of their coursework in EEB, for example). The newly approved graduate certificate program will also open new opportunities for more course offerings in the near future. Courses for the certificate will be offered online, and graduate students will be able to occupy available 'seats', but faculty might offer some of the courses in a blended or traditional in-person format as well. The courses under development for the certificate contain broadly appealing content in areas such as decision methods and communication for environmental decision makers, which will complement existing courses quite well. The faculty will also revisit the sequencing of graduate course offerings in 2014 in part to accommodate 3+2 students, who will need a strategically diverse suite of courses offered to complete a plan B M.S. degree in one year (note that they take 3-6 graduate credits during their first year here while also taking upper division undergraduate courses to complete their BS degree).

*b. What evidence is there of whether the courses meet student needs?*

Each semester we meet with graduate students to discuss various issues facing them and the Department. Occasionally, coursework suggestions are made by students. We note that graduates continue to find placement and are competitive in the job market.

*c. In what ways besides individual thesis or dissertation research are students involved actively in their learning; for example, through internships, practica, and/or graduate assistantships?*

Many NRE graduate students are funded on research grants and thesis/dissertation projects often feature collaboration with the sponsor (often a governmental environmental/natural resource agency). Several Ph.D. students have engaged with the UConn's Institute for Teaching and Learning teaching certificate program and have en route instructed a NRE offering through our practicum course. Many students are active in professional societies (e.g., The Wildlife Society) and have completed workshops and continuing education opportunities often associated with conferences and symposia. A Graduate Student Council is organized at the College level. This organization promotes learning opportunities for graduate students including an annual conference and poster session.

*d. Do students have adequate resources to carry out their studies (e.g., library, office and lab space, supplies, equipment, travel, photocopying, etc.)?*

The Department has been able to maintain a high level of support for graduate students, but it has increasingly become difficult through the recent tight budget cycles. We offer all Plan A M.S. and Ph.D. students a desk with a PC and printing resources in a communal office outside of their research laboratories. These communal offices facilitate interactions among our professionally diverse graduate student body and foster a sense of community, thereby helping to develop strong graduate student cohorts, which are a hallmark of our program. Monies available for equipment and travel are primarily handled by major advisors, and vary with specific grants, although the Department will provide matching funds for students to present their research at professional scientific conferences when needed. Because the vast majority of students are brought into the program to work specifically on a project directly linked to a grant, the nature of the grant often dictates the amount of project resources available.

*4) Concerning the graduate student cohort:*

*a. Assess the quality of the graduate student cohort, based on collective GRE/GMAT or other test scores, collective grade point averages, or other admissions criteria. How does the quality of students in the*

*graduate program compare with student quality in other similar programs? How does the quality of current students compare to the students in the program since the last review? Base the answer on objective and anecdotal data.*

Descriptive measures of the graduate student cohort are presented in Table D3. Average GRE scores for M.S. students have been 570 for Q and V tests; Ph.D. scores have been 618. Admitted GPAs for M.S. students have been 3.09 and for Ph.D. students have been 3.47. Over the period of review, there appears to be no trend in the measures. Small sample sizes make such measures unreliable and the OIRE reporting of fall cohorts does not count January admits; which regularly occur in the program. Because students are not admitted as a cohort, but rather individually to work on research related to grants, faculty are often looking for specific (often field-based) skills, which are extremely important in our fields of study, but difficult to track objectively.

*b. What is the current gender and race/ethnicity composition of the graduate student cohort? How do these figures compare with those for undergraduates within the unit and for similar graduate programs at other peer and aspirational schools? What efforts are underway to attract and retain well qualified students from underrepresented groups? What mechanisms are used to support these students?*

Table D3 show the graduate enrollment by ethnicity and gender. Over the past 5 years, the NRE graduate student composition was 50% female and 23% international students, which mirrors the university-wide proportions.

*c. What is the current composition of the graduate student cohort with respect to geographic origin? How do these figures compare with figures for similar graduate programs at other peer and aspirational schools?*

The current composition of the cohort is presented in Appendix Table D4 and shows that the program has a strong international component, particularly at the Ph.D. level. While M.S. domestic students are largely sourced from the northeast region, there are some notable exceptions.

*d. What mechanisms are used to recruit students? Is the program competing well for top students?*

NRE faculty use a variety of methods to recruit students. Some advertise positions primarily online with professional societies or the Department website, and others solicit applicants from colleagues. Because our graduate program is not supported by a large TA pool, and graduate students are wholly or in large part supported on grants, we do not recruit students *en masse* annually. Rather individual faculty recruit students as they need them and can support them on grants. Inquiries into the program instruct potential applicants to contact faculty they might like to work with prior to application to the graduate school. TA positions (only 3.75) are typically split in half and often matched with RA support. Our experience is that we compete well with other institutions when the timing is such that we are in direct competition.

*e. Are stipend levels adequate? Is stipend availability adequate? In addressing this, consider how many of the total number of graduate students have a teaching or research assistantship (both full and half). Also address other forms of support available to graduate students (i.e., pre-doctoral fellowships). What sources and amount of funding is available for summer support?*

We find that stipend levels are competitive with other programs, especially when we provide adequate summer support. Of the current pool of full-time graduate students, ~50% are supported on split TAs & RAs, and ~50% are supported solely on RAs: only one full-time graduate student is currently not receiving financial support. It should be noted that several NRE graduate students on split TA/RA support often obtain their TA support in other Departments. We generally use research funding to support graduate assistants in the summer.

*f. What is the nature and quality of the advising for graduate students and how has advising been assessed? What is the average ratio of student/faculty during thesis and/or dissertation supervision?*

Except in rare cases, the major advisor for Natural Resource graduate students is a NRE professor. Faculty members in the Department typically advise from 1-6 graduate students, with a mean around 2.5 over the period of review. Faculty advising starts at entrance into the program and continues through to graduation.

*g. What are the retention rates in the graduate program for both master's and doctoral students? What is the average time to degree completion? How do these figures compare with those from the last review?* Retention rates for our graduate students are very high with over 90% retention for the 2<sup>nd</sup> year through the 4<sup>th</sup> year (Appendix D, Table D6). From 2005-11, 40 students (11 Ph.D. and 29 M.S.) graduated from the NRE Program. Of those students, 19 (48%) were female. Mean time to completion of a Master's degree was equal among females and males (average 3.2 yrs) and less for international students (2.7 yrs) than Caucasian students (2.9 yrs). Mean time to completion for a Ph.D. was 6.2 yrs for females and 6.3 years for males, and less for international students (5.0 yrs) than Caucasian students (7.7 yrs). Two Caucasian Ph.D. students worked part- or full-time while completing their dissertation. The 2001 NRME review reported that only 3% of graduate students left without completing the degree, however, it is unknown where that information came from as compared to current OIRE information. It should also be noted that in 2012 and 2013, which is not included in the OIRE data, that NRE faculty graduated another five M.S. and three Ph.D. students (one of the Ph.D. student also received his J.D.).

*h. Explain any significant changes in graduate student enrollment and in degrees granted since the last review. How do these figures compare to peer programs? Explain low enrollment or low graduation rates, if below BOR criteria. What efforts are underway to improve performance in these areas?* At the time of the 2001 review, the Ph.D. program had just been approved and was in its infancy. We have graduated 14 Ph.D. students since 2005 (Table D6). This rate of graduation is double the minimum used for review under the Sunset Criteria.

*5) Describe the extent to which this unit interacts programmatically with other units (both within and without the university) at the graduate level. Cite other units where students frequently take coursework or other program options in your unit. List courses in your unit that are frequently taken by students within other graduate degree programs.*

In addition to the aforementioned Statistics courses and EEB graduate courses, Natural Resources graduate students also enroll in Geography, Civil and Environmental Engineering, GeoSciences, and Plant Science courses as well as Psychology statistics. Graduate courses in Natural Resources that routinely attract student from other degree programs are in Remote Sensing and GIS, and in climate and water resources. These courses are listed in Table D5. We also offer one cross-listed graduate course with Plant Science. There is no formal programmatic interaction with other graduate units.

*6) Provide a list of all graduate students from the last three to five years and indicate to the extent possible where they have been placed. How do graduates of the program view their experience, and how are their views solicited? What program modifications do these views suggest?* Appendix Table D.2 lists the placement of NRE graduates from 2005-2013.

## **E. Student Outcomes Assessment**

*1) Referring to the Learning Outcomes document, describe what the graduates of the program should know and be able to do when they leave the university, and how the unit measures or otherwise assesses actual student achievement.*

**Undergraduate Program.** As described in the 2006 NRE Assessment plan, the program goals of the Natural Resources BS program are that graduates will 1) Develop a basic knowledge of the environment and sustainable natural resources, 2) Develop interpersonal skills for natural resources management, 3) Develop technical writing and public communication skills, 4) Understand how to develop and use spatial

information, 5) Be proficient in quantitative problem solving, and 6) Embrace the values of honesty and integrity, diversity of people and ideas, and a respect for the environment. For each goal, a method has been developed to assess whether the six objectives/outcomes have been achieved. These methods vary with individual goals and include embedded questions within exams; assessment rubrics for writing (W course), speaking and GIS expertise; surveys of team proficiency; reflective essays; and the use of portfolios.

**Graduate Program.** A goal of the graduate program is to “Develop a nationally ranked and internationally recognized graduate program in natural resources and environmental science” (NRE Strategic Plan 2009-2014). The Department includes both M.S. and Ph.D. students. Masters of Science students can be either Plan A or Plan B. Plan A M.S. students must develop advanced mastery of a subject area in natural resources and the environment through coursework and research. Assessment occurs through an oral exam that defends their thesis. Plan B M.S. students are required to have additional coursework of a more general nature, and must satisfactorily complete a written exam followed by an oral examination which tests their understanding of the subject in a more comprehensive manner.

Most Ph.D. students have already obtained a M.S. degree before they begin their program of study. Ph.D. students must all develop knowledge of research methods in natural resources (NRE 6000), develop professional communication skills (NRE 5800: Graduate Seminar), as well as pass a general examination (both written and oral) that assesses the students’ comprehensive knowledge and understanding of their subject area. Advanced course work and a dissertation representing a significant contribution to research in the candidate’s field are also required. An oral final examination deals primarily with the subject matter of the dissertation. Students are expected to contribute to the primary literature while a candidate.

The new NRE graduate certificate in Sustainable Environmental Planning and Management will use informal and formal performance assessments to measure and report performance outcomes and impacts. Formal assessments will target primarily performance outcomes of progress, products, and networking. Success of the program will be measured in terms of changing knowledge, actions, and conditions with respect to program outcomes.

*2) Specify how student outcomes are aligned with the mission and goals of the unit, the college (if appropriate), and the university.*

**Undergraduate Program.** The mission of the Natural Resources BS program is to prepare undergraduate students for a career in natural resources fields by educating them with the knowledge, skills, and values fundamental to natural resources management while also developing their appreciation for natural resources. This follows the mission of the College of Agriculture and Natural Resources, which has as its primary mission education based on research, conducted in laboratories and in the field that focuses on agriculture, the environment, food, families, and quality of life. The College provides high-quality, broad-based, relevant educational opportunities that prepare graduates to address the challenges of life today; it expands the frontiers of knowledge through research; and it enhances economic opportunities and quality of life for people of Connecticut and beyond. The 2009-2014 Strategic Plan for CANR aligns well with the Department and includes GOAL 3. “Continuously improve teaching and learning.” One of the strategies to achieve this goal is to: “1. implement the assessment of all academic majors.”

The Academic Plan for the University of Connecticut: “Our World, Our People, Our Future” includes as part of its mission that it “...prizes excellence not only in teaching and learning...” and “Through teaching and learning, we help students grow intellectually and becoming contributing members of the state, national, and world communities.” Part of the University of Connecticut’s mission statement reads: “...As our state’s flagship public land and sea grant institution, we promote the health and well-being of Connecticut’s citizens through enhancing the social, economic, cultural, and natural environments of the state and beyond.” In addition the current UConn Academic Plan has three Focused Area of Excellence.

One area is 'The Environment', which includes: Environment and Human Health, Environment and Sustainable Ecosystems and Environment and Sustainable Energy.

**Graduate Program.** A goal of the graduate program is to "Develop a nationally ranked and internationally recognized graduate program in natural resources and environmental science" (NRE Strategic Plan 2009-2014). This goal is consistent with that of the CANR strategic plan to "GOAL 1. Develop and sustain graduate and professional programs of national and international prominence in areas of high workforce demand." The Academic Plan for the university includes GOAL 2 for graduate education which is: "Sustain and develop select graduate and professional programs of national and international distinction."

*3) Describe measures of student learning used in the program.*

Student achievement is assessed through embedded questions in exams, rubrics for writing and oral presentations, survey instruments, reflective essays, and portfolio evaluations.

*4) How do you use assessment of student learning outcomes to make curricular offerings more effective at meeting the goals set for the students? How has it been used in formulating the unit's strategic plan?*

Through annual assessment updates, action items are developed for each outcome to modify the manner in which assessment tools are used as well as to change course instruction as a result of students reaching insufficient minimal proficiency for any one of our goals. The NRE Strategic Plan includes Goal 3: Improve teaching and learning. One of the strategies to achieve that goal is to annually review and update the NRE assessment plan.

*5) How will the results of the student outcomes assessment be incorporated in strategic planning and curricular review process?*

The results of annual assessment updates will inform updates to strategic planning in NRE consistent with our goal to continually improve teaching and learning.

## **F. Outreach and Public Service**

*1) Describe the nature of academic outreach and public service activities in the unit.*

The College of Natural Resources and the Department exemplify outreach and public service at the University of Connecticut. NRE faculty are highly committed to academic outreach and public service. The College of Agriculture and Natural Resources has a major mission in outreach through Extension programs. Six of twelve faculty in NRE have formal extension roles ranging from 10% to 35% of their total appointments. Examples of these activities include statewide extension programming, numerous workshops, assisting State and Federal agency partners, and responding to requests from the citizens of the state.

Some of the exceptional programs in the Department are highlighted below:

A) **CLEAR.** The mission of the Center for Land Use Education and Research (**CLEAR**) is to provide information, education and assistance to land use decision makers, community organizations and citizens on how to better protect natural resources while accommodating economic growth. Prof. Dan Civco is the director of CLEAR and is a NRE faculty member. The activities of CLEAR are substantial. Since 2008 the center has obtained \$4.5M in extramural grants. CLEAR faculty are supported primarily by extramural grants, which account for 60% - 70% of the Center's annual budget. The remaining support comes from the Department, CANR and CT Sea Grant. The CLEAR website is a multifaceted resource for a wide range of users; in 2012, the website had almost 84,000 visits from over 52,000 unique visitors, who stayed an average of 3.5 minutes. Since 2009, CLEAR has developed and delivered 20 webinars. CLEAR's Geospatial Training Program (GTP) regularly offers seven different hands-on courses several times yearly. CLEAR also is home to the National NEMO network, a collection of outreach education

programs across the U.S. that educate local land use decision makers about protecting water quality as communities grow. National NEMO grew out of CT NEMO, created in 1991 at the University of Connecticut, as a collaboration of the Cooperative Extension System, the Connecticut Sea Grant College Program and the NRE Department. CLEAR programs have received national recognition and have received numerous awards (<http://clear.uconn.edu/about.htm>).

B) **Centers and Institutes.** In addition to CLEAR, NRE houses an additional three centers and institutes which have outreach and public service as major components of their missions. They include the Connecticut State Climate Center, the Connecticut Institute of Water Resources, and the Wildlife and Fisheries Conservation Center.

C) **Geodesy workshops.** Since 2005, T. Meyer (30% Extension) has delivered 47 workshops, short-courses, and specialty seminars on GPS and related areas for surveyors throughout the U.S. (Appendix B4).

D) **CT Institute of Water Resources.** Director G. Warner has been an invited member of State of Connecticut review and technical committees including: CASE (Connecticut Academy of Science and Engr.), CT Dept. of Agriculture's Task Force on Governor's Sub-Committee on Climate Change Adaption strategies; CT DEP Instream Flow Science & Tech Workgroup, CT Water Planning Council-Technical Committee, and CT DEP's Review of Engineering Practices in Hydrologic Analysis.

E) **Natural Resources Conservation Academy.** This program, which is focuses on outreach to high school students, began as a gift from a private foundation in 2011. For the past two years, 46 students have attended the academy for one week during the summer. They then follow up the summer field experience with a seven-month individual conservation-based project in their home community. Sixteen of these students presented posters of their community projects at the Connecticut Conference on Natural Resources in spring 2013, and the summer 2013 class are currently working on their projects.

F) **Advanced Continuously Operating Reference Network (ACORN).** In cooperation with Connecticut Department of Transportation, T. Meyer operates the Connecticut real-time GPS positioning network ([acorn.uconn.edu](http://acorn.uconn.edu)). This network constitutes the geodetic-control network for Connecticut and aligns Connecticut with the national and global geodetic reference frames. State citizens use ACORN for survey-accuracy positioning both in real-time and with post processing methodologies. The ACORN users include land surveyors, engineers, town planners, academics, first responders, environmental professionals, and real-estate professionals.

The contribution of NRE faculty to service for the University of Connecticut is substantial and often in leadership roles. Faculty contribute to 90 University committees, 45 College committees, and 68 Departmental committees (Appendix F3).

*2) How do these activities reflect the goals of the university Academic Plan, and the particular needs of the state and region? What evidence is available to document the quality and effects of these activities?*

The 2009-2014 Academic Plan: Our World, Our People, Our Future identifies in "GOAL 5: Public Engagement - Enhance the contributions of UConn faculty, staff, and students to the state, nation, and world through appropriate collaboration with partners in both the public and private sectors." Strategy E of the plan is to: "Engage communities in collaborative efforts to address pressing environmental issues." NRE has an exceptional record in engagement activities with public and private sectors in the state, nation, and world as evidenced by the activities summarized in Appendix B4. NRE faculty have been involved with 12 state committees, commissions or panels (Appendix F2). The annual CCNR has drawn 200-300 attendees each year. CLEAR has 21 webinars in its library, most of which have been attended by 50-100 individuals. The National NEMO network, which is part of CLEAR has members in 30 states. CLEAR's Land Use Academy, a partnership with CT Office of Policy and Management and the CT Bar Association, is the state's official land use commissioner training program. The Land Use Academy has trained over 900 people from 149 of the state's 169 towns.

NRE faculty engage international partners, such as those in China, Africa, and South America. Even study abroad offerings include engagement activities. For example, the "African Field Ecology" course

taught by I. Ortega has taken 205 students to a game reserve in South Africa from 2005 to 2013. Another 75 students participated in research expeditions to the Chilean Patagonia from 1999 to 2009.

*3) Are students involved in activities that are outreach related, and are these activities aligned with the Academic Plan?*

NRE students are actively engaged in Departmental outreach and public service activities. Graduate and undergraduate students participate in several regional conferences (e.g. Wildlife Society, Soil & Water Conservation Society). Undergraduate student Wildlife Society members have hosted the annual Northeast Student Conclave. At the K-12 level graduate students have involved E.O. Smith H.S. students in a field research project in a Town of Mansfield park. Natural Resource Conservation Academy students engage local community members by conducting a local environmental project, once they have completed their on-campus training. They return each spring to the CCNR to describe their activities. Local sponsors often accompany them to this event. These activities are all encouraged by the Academic Plan and in particular, the Strategy to engage communities in collaborative efforts to address pressing environmental issues.

## **G. Collaboration with Other Units**

*1) What are the other departments, schools/colleges, and centers with which the members of the unit collaborate most frequently? Describe the nature of those efforts and an assessment of successes and disappointments.*

Much of the research conducted by NRE faculty is collaborative in nature and extends beyond the departmental and college units. Collaborative interactions span a range of departments, including Agricultural and Resource Economics, Geography, Plant Science, Ecology and Evolutionary Biology, Statistics, and Extension. NRE regularly and consistently collaborates with the School of Engineering and the Center for Environmental Science and Engineering.

*School of Engineering* – Five NRE faculty are affiliate faculty in Civil and Environmental Engineering; these include Drs. Anyah, Clausen, Helton, Robbins, and Warner. Collaborations between NRE and Engineering faculty have resulted in several proposals and funded research projects. Departments of Civil and Environmental Engineering, Agricultural Resources Economics, and NRE were recently approved for a cluster hire initiative in “Climate and Sustainable Water Resources,” which will further strengthen collaborative research among these units.

*Center for Environmental Science & Engineering (CESE)* – Two faculty members hold joint positions. A. Helton is a Landscape Ecologist with a focus in Biogeochemistry began Fall 2013. We are currently refilling a position in ecotoxicology. The joint hires between NRE and CESE maintain offices in the Young Building near NRE faculty and use extensive laboratory space within CESE. M. Willig, Director of CESE, also holds an Joint Faculty appointment in NRE and all NRE faculty are affiliate faculty members of CESE. CESE sponsors awards which have enhanced collaboration among units. For instance, nine NRE graduate students have received Multidisciplinary Environmental Research Award’s totaling \$48,550 and eight NRE faculty have received Multidisciplinary Environmental Activities Faculty Awards totaling \$67,308. These awards have not been available for the last two years.

NRE faculty members contribute extensively to interdisciplinary educational opportunities for our students. Since 2005, three NRE faculty have served as co-directors of the Environmental Science Program at UConn. Furthermore, students from the Environmental Science Program complete a capstone course in conjunction with NRE students. Two courses are cross-listed NRE 5455/GSCI 4735, which is taught by NRE faculty member G. Robbins and NRE 3305 was cross listed in EEB from 2002-2005, but since then has been only offered as NRE 3305. NRE5252/PLSC5252 is a cross-listed graduate course and is co-taught by M. Rudnicki with a faculty member from Plant Sciences. ENVE 291W is co-taught by Dr. Warner without official credit to NRE. NRE faculty members serve on Doctoral and Master Committees for graduate students within the College of Agriculture and Natural Resources (ARE, ANSI,

PLSC), College of Liberal Arts and Sciences (EEB, GEOG, GSCI, MARN) and School of Engineering (CEE, CMBE). NRE graduate students also have members from these departments on their committees.

*2) In what ways (if any) do disciplinary or unit boundaries inhibit or enhance the ability of the unit to develop new approaches to research, grant competitions, teaching, or service?*

NRE is currently involved in a hiring initiative centered around water as a critical natural resource warranting increased research effort. Unit boundaries place new hires with colleagues who expect scientific rigor and technical skills from that discipline. Yet the initiative will bring faculty to UConn who are tackling the same research need and thus encourage interdisciplinary approaches to emerging issue of water resources.

NRE faculty members regularly collaborate as co-PIs in research projects that cross unit boundaries. The assignment of expenditures only to the department of the lead PI means that NRE is not recognized for the collaborative efforts of these faculty members. We believe this lack of recognition underrepresents substantial NRE contributions as co-PIs on collaborative efforts. Collaborative teaching across unit boundaries also has institutional barriers. For instance, when two faculty members co-teach a course, at the university level each faculty member is only given credit for and evaluated by the students who enroll under their Department course heading.

*3) Under ideal circumstances, what kinds of collaborations (e.g., research and teaching, grants, alumni programs) with other units would be desirable?*

Co-taught graduate seminar courses among units could become a mechanism to encourage collaboration that is not currently being realized. These courses could lead to more regular interactions, new graduate programs, and potentially lead to increased success on interdisciplinary research proposals such as NSF-IGERT grants.

NRE collaborators extend beyond UConn to state and federal partners, including the Department of Energy and Environmental Protection, Department of Transportation, and the Natural Resources Conservation Service, etc. Collaborative relationships within in the state are strong and are continually supported. We desire expanding the depth of federal collaborations. Ideal circumstances would include co-locating a federal research office here in Storrs, CT. The development of the new UConn Technology Park provides an upcoming opportunity to enhance federal and industry collaborations.

*4) What opportunities are there for conducting interdisciplinary research projects with other units on campus or with other universities or agencies? How successful is the unit in accommodating these needs? How desirable are these kinds of interdisciplinary relationships?*

Opportunities for conducting interdisciplinary research projects are abundant. The diverse scientific disciplines represented within NRE include water resources, geomatics, remote sensing and GIS, forest and wetland ecology, climate science, ecotoxicology, biochemistry, and fisheries and wildlife science. Interdisciplinary research is a central tenet of this Department and the unit accommodates needs whenever possible.

A key priority for NRE faculty is to strengthen interdisciplinary international research. For example, seven faculty from NRE traveled to China in 2011 to initiate research collaborations. They held two conferences with Chinese colleagues, entitled the “Sino-US Forum on Eco-hydrology and Water Resources.” The first conference was held at China Agricultural University in Beijing and the second at the State Key Laboratory of Soil Erosion and Dryland Farming and Northwest Agricultural and Forestry University in Yangling, China. From these efforts we currently have a research project underway that is being conducted on the UConn campus, and a parallel study is planned with Chinese colleagues in northeastern China.

*5) Does the unit have any interdisciplinary academic programs? How are these aligned with the goals of the university’s Academic Plan?*



NRE is a vested participant of the undergraduate Environmental Science Program. NRE faculty members have served as a co-director of this program since its initiation (from 1994 – 2013) and now J. Volin serves as the director (from 2013-present). The Environmental Science program is housed under both the College of Agriculture and Natural Resources and the College of Liberal Arts and Sciences. Other interdisciplinary programs include the EcoHouse Learning Community and the development of an Environmental Studies Major and Minor. One faculty member also helped initiate the Global House Learning Community and served as its first director.

The new NRE Professional Certificate Program in Sustainable Environmental Planning and Management is an interdisciplinary program that will develop intellectual capital in social-ecological systems, communications, and decision-making, with the explicit purpose of fostering soft skills and merging them with data-driven scientific methods, all within an interdisciplinary, collaborative framework.

NRE is also dedicated to providing study abroad opportunities to undergraduates that expose students to the diverse cultural and political systems providing the framework by which natural resources are managed. Some of our students attend the Sustainable Food and Environmental Systems study abroad experience in Florence, Italy. This program is in its 5th year and team-taught by CANR faculty from NRE, Animal Science, Plant Science and Landscape Architecture, and Allied Health Sciences. African Field Ecology (NRE 3305) taught by M. Ortega continues to expand enrollment with a total of 205 students traveling to South Africa since 2005 (64 of these in summer 2013). Most recently, NRE approved a new concentration, which started in fall 2013 in “International Studies in Sustainable Natural Resources.” The curriculum for this concentration is designed for students who will study abroad for a semester. We have also developed a new 2014 summer study abroad opportunity entitled: *Environmental and Natural Resources of China* (NRE3675).

## **H. University-wide Support and Facilities Services**

*1) Describe and appraise the current institutional support services and facilities for the unit's:*

*a. teaching programs;*

The Institute for Teaching & Learning (ITL) provides valuable services to all UConn Faculty, including workshops, lunchtime seminars, and individual consultation, and NRE faculty take great advantage of these opportunities. In addition, Dr. Vokoun received the 2009 Provost's General Education Course Enhancement Grant (\$7,725) from ITL to re-develop NRE 1235 into a General Education Area 1 Arts and Humanities course, which traces the history and ethics of the conservation movement and its expansion into the modern environmental movement.

*b. research, creative production, or other scholarly activities;*

*Research Funds* – Several internal grant opportunities support research in NRE. Grant opportunities sponsored by CESE (graduate student and faculty), UConn Faculty travel awards, UConn Large Faculty Grants have provided intramural funds received by NRE faculty for a total of \$110,407.

Indirect costs received by University are allocated to units to support research by faculty and graduate students. Prior to 2009, PIs and the Department each received a return of 5% of indirects on each external grant. The return was subsequently increased to 10%. The total indirect costs returns to NRE from 2005 – 2012 were \$146,272 (Appendix H1). The indirect funds to the Department are allocated on an ad hoc basis by the Department Head and support crucial activities (e.g., bring groups of collaborators to UConn, faculty travel to conferences), equipment (e.g., computers for faculty and graduate students or repair of large equipment), and salary (e.g., salary for Research Associate who maintains the Laboratory for Earth Resources Information Systems) for computing facilities used by undergraduate and graduate students.

*Laboratory Facilities at CESE* – This facility provides a variety of analytical services, including metals, nutrients, biofuels, and organics. We regularly use this facility and anticipate increased usage of these facilities with recent joint hires between NRE and CESE.

*Animal Care Facilities* - UConn maintains all research animals in two centralized animal care facilities. Two NRE faculty members work within the aquatics facility. Benefits of the facility include daily oversight of animals, access to cold rooms and water treatment equipment, and security systems. The location in center of campus, sterilization procedures, and costs of working within the facility constrain some types of fish and wildlife research. Using start up funds, T. Rittenhouse recently established an outdoor mesocosm facility with electrical capacity for temperature manipulations of replicate experimental wetlands that will house amphibians or small fish.

*c. recruiting of students, faculty, and staff;*

*Students* – The Office of Undergraduate Research provides funding opportunities for undergraduate research. For instance, since the last review 11 NRE students have received funding for faculty-mentored research by the Summer Undergraduate Research Fund (n = 11 students; ~ \$4,000 each), and Holster Scholars program (n = 1, ~ \$4,000) (Appendix H.2). NRE graduate and undergraduate students commonly receive scholarships administered through CANR. A total of \$399,850 was awarded to 263 NRE students since 2005 (Appendix H3). Since many of the graduate students are recruited into NRE as research assistants on funded research projects, scholarships are not used as a recruiting tool but rather to reward high performing students.

*Faculty* – The Dean of CANR has provided a total of \$542,336 in start-up funds and \$250,000 in GA support to the four faculty hires since 2005. CESE has provided a total of \$184,430 in start-up funds and 1,444 square feet in laboratory space.

*Staff* – NRE staff have been reduced from five to two since the last Self-study.

*d. outreach, including professional and community service;*

There are no University-wide support and facilities services to support outreach.

*e. administration.*

NRE has undergone a reduction from five support staff to two staff positions. We currently function with an Administrative Assistant and a Secretary. Two important positions that were lost were technicians who assisted faculty in their research. Most notably they assisted in the fabrication and maintenance of research equipment. We now have no technicians in the Department to assist faculty in their research. We are therefore reliant on support provided by other units. Additionally, UConn does not have a motorpool. Field vehicles are a crucial and often limiting component for research in natural resources. Vehicles were rented from Hertz last year and will be needed in the upcoming year. Renting is a viable option when study designs require daily use of a vehicle. Renting greatly inhibits research with study designs that requiring interval sampling such as every three days or once a week, as personal allocate too much time picking up and dropping off rental vehicles. Therefore, the lack of a motorpool and/or Department vehicles are currently affecting research designs.

The following administrative units are viewed as extremely valuable support services to NRE.

*CANR Grants Development Office* – CANR established the Grants Development Office led by Nancy Abbott in 2006. This office provides a valuable service to faculty and has enhanced communication with the Office of Sponsored Programs.

*Academic Renovations* – This unit covers small repairs to full lab renovations. Academic renovations completed laboratory renovations on 2nd floor Klinck, as well as, electrical wiring and a wall to create a teaching laboratory on 1st floor Klinck.

*Farm Services* – This unit primarily serves the animal sciences department, but provides assistance to NRE faculty when one time construction or maintenance activities are needed for field research projects such as fence construction for outdoor amphibian research facility or mowing experimental switchgrass fields. We are grateful for their assistance but realize that their responsibilities primarily involve crop and animal management activities. Staff of the Plant Sciences Agronomy Farm also will assist in a

professional manner when requested but again their primary responsibilities involve supporting faculty in the Plant Sciences and Landscape Architecture Department.

*Technical Services* – Periodically we have had the Technical Services unit at the Depot Campus manufacture specialized research equipment. They have been very helpful and professional in this regard, and provide their technical services for reasonable prices.

2) *Has the unit engaged in any entrepreneurial activities, through grants or fundraising, to augment institutional support?*

NRE has 13 (4 non-endowed and 9 endowed) accounts managed by the UConn Foundation. The mission of the University of Connecticut Foundation, Inc. is to solicit, receive, invest and administer gifts and financial resources from private sources.

The Department Head has been very proactive in working with the College of Agriculture and Natural Resources' Development Officer in the UConn Foundation, as well as several other Foundation Development Personnel. Since 2007, we have more than doubled the Department endowment. Following is a list of several notable gifts that have been received or committed to the Department.

- First-ever endowed Chair in the College: "The George F. Cloutier Endowed Chair in Forestry" (\$1.5 million deferred gift in 2008)
- The endowed "George F. Cloutier Forestry Scholarship Award" (\$100,000 in 2008)
- The endowed "David B. Schroeder Scholarship" (\$10,000 in 2008)
- The non-endowed "The James V. Spignesi, Jr. Graduate Fellowship" (\$60,000 in 2010)
- The Natural Resources Conservation Academy (\$50,000 per year for up to 10 years; (2010-2020)
- Alumnus non-endowed gift of \$100,000 in 2013 to be used in support of forestry programs.

Recently we have also developed several academic programs that are considered entrepreneurial at UConn, in that a percentage of the tuition paid for these programs are directed to the Department. These include a College of Agriculture and Natural Resources 3+2 program with Sichuan University (Appendix H4). The 3+2 program resulted from Cooperative Agreement with Sichuan University and China Agricultural University (CAU) in 2010 that our Department Administration along with College Administration facilitated. We are currently finalizing another 3+2 program with CAU's College of Water Resources and Civil Engineering. We have also developed a new Professional Certificate Program in *Sustainable Environmental Planning and Management* that received final approval in November 2013 from the University Board of Trustees (Appendix A.4). Like the 3+2 programs, a percentage of the tuition from certificate programs goes directly to the Department.

Our Department is in charge of managing the 2,100 acre UConn Forest, but we receive no budget or personnel in which to manage the Forest. We manage the UConn Forest through the volunteer efforts of faculty. As an educational opportunity we have recently begun developing management plans throughout the forest and to offset some of our costs we contract with private timber companies to carry out the timber harvests. The funds obtained from these activities goes largely to salaries of soft money forestry personnel or to provide paid internships to NRE undergraduates.

## **I. Summary Assessment and Future Directions**

1) *Summarize the major strengths and weaknesses of the unit and the problems it faces in the foreseeable future.*

As alluded to in the Executive Summary our major strengths lie in the unity, collegiality and productivity of our faculty, staff and students. The tradition and sense of belonging to something greater as we work toward contributing to solutions to natural resource and environmental problems is exceptional. In the last several years we developed a new strategic plan, implemented strategies to increase our undergraduate student numbers, steadily increased our extramural funding, more than doubled our

endowment, reconnected to our alumni and constituencies, and sought to position ourselves to make greater contributions to the solution of environmental problems with new initiatives, from K-12 programs to international opportunities. Our successes have also opened up new challenges. We have dramatically increased our course enrollments, largely on the backs of faculty, because our graduate assistantships, which historically have always been inadequate, have actually gone down slightly (from 4.0 to 3.75 per year); our infrastructure support, such as our “high” tech geospatial teaching and research laboratory is out of date, and our field support vehicles are down to just one remaining truck. Our staff is down from five to just two since our last Review in 2001. Faculty and staff are constantly being asked to do more with less, which can be viewed as a potential weakness as this inevitably negatively affects productivity. Eventually these challenges will begin to erode the foundation from which we have built a strong productive Department and will need to be attended to in the near future.

*2) The quality of an academic unit can be assessed in many ways. In terms of the three criteria below, describe the overall quality of the unit.*

*a. Resource criteria (e.g., student selectivity or demand; faculty prestige, training, and teaching loads; grants and contracts; library; equipment; and support staff).*

*b. Reputational criteria (e.g., national or international ranking, or other judgments of the program's students, faculty, resources, and productivity).*

*c. Outcomes criteria (e.g., faculty scholarly productivity, awards and honors, research contributions, teaching performance, service to state and nation; student gains in knowledge, students' professional achievements, personal placement/or career development, program alumni opinion).*

Currently there are no national rankings for natural resource departments. However, since 2005 when the size of our faculty ranged between 10-11 in number our total extramural support was just under \$20 million. When compared to the Department of Ecology and Evolutionary Biology at UConn, which is a nationally ranked top 10 EEB program, over this same time period with an average of 25-27 faculty members their extramural support was just over \$28 million. Since 2007 we have averaged 44 active or approved grants per year. Of our 197 peer-reviewed manuscripts since 2005, 59, ~30% of the total, have been cited over 50 times or more. In addition to the strong research productivity, faculty have been equally recognized for their teaching and service, having received more than 17 honors and awards in the past eight years, including several at the national level.

*3) In what areas has the unit improved or changed since the last review? Describe the evidence used to support the conclusions.*

By most measures our unit has improved since our last review. We provide the following bullet summary as evidence:

- Students majoring in our Department have more than doubled since 2005.
- Our course enrollments for both majors and non-majors have increased steadily and dramatically.
- Our extramural grant support continues to steadily increase.
- Private giving, both endowed and non-endowed gifts, have more than doubled since 2005. This includes the first Endowed Chair in the College of Agriculture and Natural Resources - a \$1.5 million deferred gift received in 2008.
- Our international programs have increased dramatically both for teaching and research activities. These include a 3+2 program with universities in China, summer abroad programs in South Africa (the largest summer abroad experience at UConn), and active participation in developing and teaching a semester long Sustainability study abroad program in Italy.
- Our faculty numbers have increased from 11 to 13 with two additional faculty searches currently underway. This increase is largely the result of the development of strong partnerships with the Center for Environmental Science and Engineering (which resulted in two new hires) and the cluster in Climate and Sustainable Water Resources with the Departments of Civil and Environmental Engineering and Agricultural Resource Economics (which will result in an additional two positions).

- We have strengthened our environmental and natural resources leadership in research, outreach and extension through our four Centers and Institutes (i.e., Center for Land Use Education and Research, Connecticut Institute of Water Resources, Wildlife and Fisheries Conservation Center, and the Connecticut State Climate Center), our Advanced Continuously Operating Reference Network, our 8th annual Connecticut Conference on Natural Resources and our new transformative conservation and land use program targeted to high school students, the Natural Resources Conservation Academy.
- In November 2013 we received final approval from the University of Connecticut Board of Trustees for a new online Graduate Certificate program we proposed entitled: “Sustainable Environmental Planning and Management.” The anticipated start date is August 2014.
- We make substantial and leadership contributions to service and outreach, at the University, state, national and international levels.

*4) Describe new directions in curriculum, resources, research, reorganization, staffing or student clientele planned for the next few years aimed at strengthening the unit, in conjunction with your strategic plan.*

In 2009 we developed a comprehensive strategic plan that was separated into five key focal areas: 1) Undergraduate Education, 2) Graduate Education, 3) Research and Scholarship, 4) Outreach and Engagement, and 5) Diversity. We developed a set of goals and developed strategies to achieve them. The strategic plan has been a living document, not a simple litany of goals and strategies that is just updated every five years. It has been a guiding document that has allowed us to be nimble when opportunities arose or assisted us to refocus on areas that we haven’t been as engaged in.

The Department plans to revisit the curriculum to assess whether we are teaching the right mix of courses to meet student needs. Increased enrollments in our Department, as well as elsewhere at the University are causing fewer opportunities for undergraduates. We also plan to increase communications with our graduates and make increased strides in our diversity.

*5) What plans are underway to capitalize on individual faculty strengths and to overcome weaknesses?*

On the whole our faculty members have been very productive in research, teaching and service. We continue to seek ways in which to support faculty advancement, such as providing seed funds to bring in individuals or groups of potential collaborators to work on proposals together. The Department provides funds for those interested in attending teacher workshops or to meet with grant program managers in Washington, D.C. The Department will seek to obtain funds to support faculty to be able to present at least one conference per year if the faculty member doesn’t have the funding to do so. The Department fully supports sabbatical or Fulbright leave requests. The Department often provides support (or advocates for at higher administrative levels) to graduate students in their last semester or two if their grant funding has run out. Similarly, although still not sufficient, the Department either provides or strongly advocates securing additional funding for graduate teaching assistants when course enrollment demands become pressing. The Department has also greatly supported past research associates, such as for the Center for Land Use Education and Research. In the last several years the Department has been able to successfully retain senior faculty members by being able to provide competitive counteroffers.

*6) Are there new ways that the unit can enhance programs for undergraduate and graduate students, for research, service, and University operations?*

Historically we have had a long tradition of student-centered programming within natural resources, which includes the development of the six natural resource concentrations, active student club opportunities (there are currently 6 clubs advised by NRE faculty), high percentage of student participation in internships and independent study, an increasing number of honors students, weekly graduate student brown bag science discussions, etc. Like many of our activities, however, all of these enhanced programs come largely from the extra efforts of the faculty. We instituted a graduate coordinator several years ago, and fall 2013 an undergraduate coordinator position, but without financial

support either directly or through other means, such as increased number of funded graduate assistantships and staff, these positions just become one more thing to add to the list. Securing a greater number of graduate assistantships and staff would greatly increase our ability to enhance our overall program.

**Appendix 1: Natural Resources and the Environment Program Review**

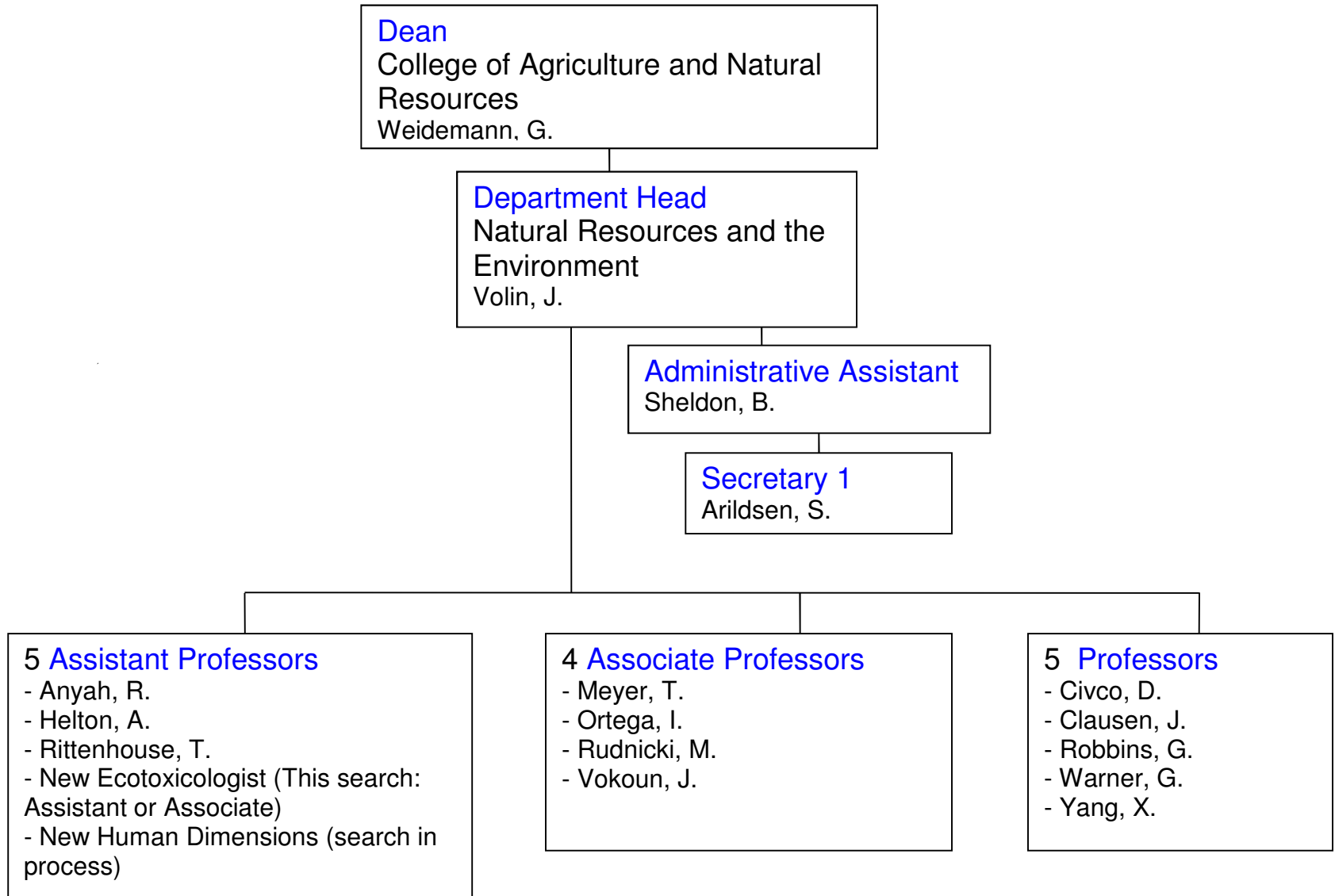
| Element                              | FY 05-06     | FY 06-07     | FY 07-08     | FY 08-09     | FY 09-10     | FY 10-11     | FY 11-12      | FY 12-13      |
|--------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|
|                                      | Fall 2005    | Fall 2006    | Fall 2007    | Fall 2008    | Fall 2009    | Fall 2010    | Fall 2011     | Fall 2012     |
| <b>Faculty, FTE</b>                  |              |              |              |              |              |              |               |               |
| <b>Storrs Campus</b>                 |              |              |              |              |              |              |               |               |
| Full-time Permanent                  | 12.00        | 12.00        | 11.00        | 11.00        | 10.00        | 10.00        | 12.00         | 12.00         |
| Part-time Permanent                  | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00          | 0.00          |
| <b>FTE Permanent</b>                 | <b>12.00</b> | <b>12.00</b> | <b>11.00</b> | <b>11.00</b> | <b>10.00</b> | <b>10.00</b> | <b>12.00</b>  | <b>12.00</b>  |
| Full-time Non-Permanent              | 1.00         | 1.00         | 1.00         | 2.00         | 2.00         | 2.00         | 1.00          | 0.00          |
| Part-time Non-Permanent              | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00          | 0.00          |
| <b>FTE Non-Permanent</b>             | <b>1.00</b>  | <b>1.00</b>  | <b>1.00</b>  | <b>2.00</b>  | <b>2.00</b>  | <b>2.00</b>  | <b>1.00</b>   | <b>0.00</b>   |
| <b>Regional Campuses Undergrad</b>   |              |              |              |              |              |              |               |               |
| Full-time Permanent                  | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00          | 0.00          |
| Part-time Permanent                  | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00          | 0.00          |
| <b>FTE Permanent</b>                 | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>   | <b>0.00</b>   |
| Full-time Non-Permanent              | 0.00         | 0.00         | 1.00         | 0.00         | 0.00         | 0.00         | 0.00          | 0.00          |
| Part-time Non-Permanent              | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00          | 0.00          |
| <b>FTE Non-Permanent</b>             | <b>0.00</b>  | <b>0.00</b>  | <b>1.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>   | <b>0.00</b>   |
| <b>Enrollment, Undergraduate</b>     |              |              |              |              |              |              |               |               |
| <b>Storrs Campus - Primary Major</b> |              |              |              |              |              |              |               |               |
| Full-time                            | 71           | 80           | 80           | 70           | 71           | 89           | 96            | 120           |
| Part-time                            | 4            | 4            | 3            | 2            | 5            | 5            | 10            | 10            |
| <b>FTE</b>                           | <b>72.33</b> | <b>81.33</b> | <b>81.00</b> | <b>70.67</b> | <b>72.67</b> | <b>90.67</b> | <b>99.33</b>  | <b>123.33</b> |
| <b>Storrs Campus - Dual Major</b>    |              |              |              |              |              |              |               |               |
| Full-time                            | 0            | 2            | 1            | 0            | 3            | 5            | 9             | 6             |
| Part-time                            | 0            | 0            | 0            | 0            | 0            | 0            | 0             | 0             |
| <b>FTE</b>                           | <b>0.00</b>  | <b>2.00</b>  | <b>1.00</b>  | <b>0.00</b>  | <b>3.00</b>  | <b>5.00</b>  | <b>9.00</b>   | <b>6.00</b>   |
| <b>Storrs Campus - Double Major</b>  |              |              |              |              |              |              |               |               |
| Full-time                            | 0            | 0            | 0            | 0            | 0            | 0            | 0             | 0             |
| Part-time                            | 0            | 0            | 0            | 0            | 0            | 0            | 0             | 0             |
| <b>FTE</b>                           | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>   | <b>0.00</b>   |
| <b>Storrs Campus - Minor</b>         |              |              |              |              |              |              |               |               |
| Full-time                            | 0            | 0            | 0            | 0            | 0            | 0            | 1             | 0             |
| Part-time                            | 0            | 0            | 0            | 0            | 0            | 0            | 0             | 0             |
| <b>FTE</b>                           | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.00</b>  | <b>0.10</b>   | <b>0.00</b>   |
| <b>Storrs Campus Total FTE</b>       | <b>72.33</b> | <b>83.33</b> | <b>82.00</b> | <b>70.67</b> | <b>75.67</b> | <b>95.67</b> | <b>108.43</b> | <b>129.33</b> |

|                                          |             |             |             |             |             |             |             |             |
|------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Regional Campuses - Primary Major</b> |             |             |             |             |             |             |             |             |
| Full-time                                | 2           | 3           | 0           | 5           | 5           | 7           | 3           | 4           |
| Part-time                                | 0           | 2           | 1           | 0           | 1           | 1           | 2           | 0           |
| FTE                                      | 2.00        | 3.67        | 0.33        | 5.00        | 5.33        | 7.33        | 3.67        | 4.00        |
| <b>Regional Campuses - Dual Major</b>    |             |             |             |             |             |             |             |             |
| Full-time                                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| Part-time                                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| FTE                                      | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| <b>Regional Campuses - Double Major</b>  |             |             |             |             |             |             |             |             |
| Full-time                                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| Part-time                                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| FTE                                      | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| <b>Regional Campuses - Minor</b>         |             |             |             |             |             |             |             |             |
| Full-time                                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| Part-time                                | 0           | 0           | 0           | 0           | 0           | 0           | 0           | 0           |
| FTE                                      | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| <b>Regional Campuses Total FTE</b>       | <b>2.00</b> | <b>3.67</b> | <b>0.33</b> | <b>5.00</b> | <b>5.33</b> | <b>7.33</b> | <b>3.67</b> | <b>4.00</b> |
| <b>Enrollment, Graduate/Professional</b> |             |             |             |             |             |             |             |             |
| <b>Master's</b>                          |             |             |             |             |             |             |             |             |
| Full-time                                | 8           | 16          | 18          | 17          | 12          | 10          | 9           | 8           |
| Part-time                                | 8           | 7           | 5           | 6           | 6           | 6           | 6           | 6           |
| FTE                                      | 10.67       | 18.33       | 19.67       | 19.00       | 14.00       | 12.00       | 11.00       | 10.00       |
| <b>Doctoral</b>                          |             |             |             |             |             |             |             |             |
| Full-time                                | 11          | 9           | 10          | 9           | 13          | 13          | 9           | 11          |
| Part-time                                | 2           | 5           | 6           | 4           | 6           | 4           | 6           | 4           |
| FTE                                      | 11.67       | 10.67       | 12.00       | 10.33       | 15.00       | 14.33       | 11.00       | 12.33       |



| Degrees Awarded                                                                                                          |             |             |                    |             |             |             |                |       |
|--------------------------------------------------------------------------------------------------------------------------|-------------|-------------|--------------------|-------------|-------------|-------------|----------------|-------|
| Bachelor's                                                                                                               | 20          | 29          | 28                 | 22          | 24          | 28          | 35             | 48    |
| Master's                                                                                                                 | 3           | 10          | 2                  | 6           | 8           | 7           | 8              | 3     |
| Doctoral                                                                                                                 | 0           | 2           | 3                  | 0           | 2           | 3           | 2              | 1     |
| Budget and Grants                                                                                                        |             |             |                    |             |             |             |                |       |
| Instructional Expenditures                                                                                               | \$1,491,698 | \$1,402,157 | \$1,469,840        | \$1,730,386 | \$1,705,239 | \$1,577,331 | \$1,716,670    | NA*   |
| External Grant Expenditures                                                                                              | \$2,462,392 | \$2,671,503 | \$1,970,397        | \$1,454,183 | \$1,082,432 | \$1,160,820 | \$746,977      | NA*   |
| Graduate Assistantships                                                                                                  |             |             |                    |             |             |             |                |       |
| State Funded FTE                                                                                                         | 7.40        | 5.50        | 8.00               | 8.50        | 11.50       | 5.08        | 6.72           | 8.92  |
| Externally Funded FTE                                                                                                    | 8.50        | 9.50        | 11.00              | 7.50        | 8.00        | 13.92       | 9.28           | 7.58  |
| Other Funded FTE                                                                                                         | 0.00        | 2.50        | 2.50               | 2.50        | 0.50        | 0.50        | 0.50           | 0.00  |
| Total FTE                                                                                                                | 15.90       | 17.50       | 21.50              | 18.50       | 20.00       | 19.50       | 16.50          | 16.50 |
| Post Doc Fellows                                                                                                         |             |             |                    |             |             |             |                |       |
| State Funded FTE                                                                                                         | 0.00        | 0.00        | 0.00               | 0.00        | 0.00        | 0.00        | 0.00           | 0.00  |
| Externally Funded FTE                                                                                                    | 0.00        | 0.00        | 0.00               | 0.00        | 0.00        | 0.00        | 0.00           | 1.00  |
| Other Funded FTE                                                                                                         | 0.00        | 0.00        | 0.00               | 0.00        | 0.00        | 0.00        | 0.00           | 0.00  |
| Total FTE                                                                                                                | 0.00        | 0.00        | 0.00               | 0.00        | 0.00        | 0.00        | 0.00           | 1.00  |
| Student Credit Hours: Subject Based                                                                                      |             |             |                    |             |             |             |                |       |
| Undergraduate                                                                                                            |             |             |                    |             |             |             |                |       |
| For Storrs Majors                                                                                                        | 999         | 1,206       | 1,014              | 962         | 1,152       | 773         | 1,704          | 1,797 |
| For Storrs Non-Majors                                                                                                    | 968         | 1,181       | 1,251              | 1,440       | 1,741       | 2,932       | 2,389          | 2,304 |
| For Regionals Majors                                                                                                     | 0           | 0           | 0                  | 3           | 0           | 0           | 6              | 0     |
| For Regionals Non-Majors                                                                                                 | 15          | 51          | 93                 | 132         | 69          | 79          | 45             | 48    |
| Graduate/Professional                                                                                                    |             |             |                    |             |             |             |                |       |
| For Storrs Majors                                                                                                        | 226         | 275         | 375                | 274         | 278         | 205         | 187            | 175   |
| For Storrs Non-Majors                                                                                                    | 47          | 101         | 137                | 45          | 75          | 67          | 108            | 123   |
| For Non-Storrs Plus Majors                                                                                               | 0           | 0           | 0                  | 0           | 0           | 0           | 0              | 0     |
| For Non-Storrs Plus Non-Majors                                                                                           | 0           | 0           | 0                  | 0           | 0           | 0           | 0              | 0     |
| Student Credit Hours Beyond Unit's Subjects: Faculty Taught Subjects Outside Unit                                        |             |             |                    |             |             |             |                |       |
| Subject Area Outside Natural Resources & the Environment Unit                                                            | GEOL        | EEB GSCI    | ARE GSCI INTD PLSC | GSCI INTD   | INTD GSCI   | INTD GSCI   | INTD GSCI PLSC |       |
| Undergraduate Storrs                                                                                                     | 48          | 0           | 746                | 85          | 49          | 2           | 20             | 0     |
| Undergraduate Regionals                                                                                                  | 0           | 0           | 186                | 0           | 0           | 0           | 0              | 0     |
| Graduate/Professional Storrs                                                                                             | 3           | 7           | 18                 | 0           | 18          | 30          | 54             | 0     |
| * FY 12-13 expenditure information will be finalized by Budget Office and Office for Sponsored Programs in January 2014. |             |             |                    |             |             |             |                |       |

## Appendix A1: CANR / NATURAL RESOURCES AND THE ENVIRONMENT ORGANIZATIONAL CHART



**Appendix A1. Fulltime-time and part-time faculty, including adjuncts and graduate assistants in the teaching programs of the unit.**

| <b>Storrs tenure track faculty</b> | <b>Title</b>        | <b>Hire Date</b> |
|------------------------------------|---------------------|------------------|
| Richard Anyah                      | Assistant Professor | August 2008      |
| John Barclay                       | Associate Professor | September 1985   |
| John Bartok                        | Extension Professor | July 1966        |
| Thijs Bosker                       | Assistant Professor | August 2011      |
| Daniel Civco                       | Professor           | July 1976        |
| John Clausen                       | Professor           | September 1990   |
| Ashley Helton                      | Assistant Professor | August 2013      |
| Thomas Meyer                       | Associate Professor | August 1998      |
| David Miller                       | Professor           | October 1974     |
| Isaac Morty Ortega                 | Associate Professor | August 1997      |
| Tracy Rittenhouse                  | Assistant Professor | August 2011      |
| Gary Robbins                       | Professor           | July 2004        |
| Mark Rudnicki                      | Associate Professor | August 2004      |
| Jason Vokoun                       | Associate Professor | August 2004      |
| John Volin                         | Professor           | August 2007      |
| Glenn Warner                       | Professor           | November 1990    |
| Xiusheng Yang                      | Professor           | September 1991   |

**Adjuncts**

Thomas Harrison, J.D.  
Col. Kyle Overturf

**Graduate Assistants (Note 7 of the 8 GA's below receive TA funding for just one semester each. One GA teaches a graduate course gratis)**

Lindsay Dreiss  
Megan Floyd  
Jan-Michael Hessenauer  
Qian Lei  
Kelly O'Connor  
Jason Parent (gratis)  
Alexander Pivarnik  
David Rosa

Appendix A3: Enrollment in NRE undergraduate courses by semester offered spanning 05-06 through 12-13. Course numbers listed are the new 4-digit coding- and track individual courses through the re-numbering which occurred in 06-07.

| Course Number | Title                            | Fall 05 | Spring 06 | Fall 06 | Spring 07 | Fall 07 | Spring 08 | Fall 08 | Spring 09 | Fall 09 | Spring 10 | Fall 10 | Spring 11 | Fall 11 | Spring 12 | Fall 12 | Spring 13 |
|---------------|----------------------------------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
| 1000          | Environmental Science            | 81      |           | 108     |           |         |           | 144     |           | 129     | 63        | 119     | 120       | 120     | 120       | 118     | 120       |
| 1235          | Environmental Conservation       |         | 30        |         | 26        |         | 34        |         | 73        |         | 93        |         | 100       |         | 109       |         | 84        |
| 1315          | Intro Wildlife Ecol & Consev     | 71      |           | 73      |           |         |           |         |           | 46      |           |         |           |         |           |         |           |
| 2000          | Introduction to Geomatics        |         | 32        |         | 49        |         | 39        |         | 32        |         | 34        |         | 45        |         | 63        |         | 58        |
| 2010          | Natural Resources Measurements   | 29      |           | 43      |           | 37      |           | 30      |           | 41      |           | 55      |           | 63      |           | 63      |           |
| 2215          | Water Res Assess Dev & Mgmt      |         |           |         | 13        |         |           |         |           |         |           |         |           |         | 40        |         | 57        |
| 2315          | Intro to Wildlife Ecol & Conserv |         |           |         |           |         |           | 66      |           |         |           |         |           |         |           |         |           |
| 2325          | Fish & Fisheries Conservation    |         |           |         |           |         |           |         |           |         | 20        |         |           |         |           |         |           |
| 2345          | Intro. Fisheries and Wildlife    |         |           |         |           |         |           |         |           |         |           | 79      |           | 99      |           | 104     |           |
| 2415          | Dendrology                       | 27      |           | 29      |           |         |           | 28      |           | 32      |           | 30      |           | 28      |           | 30      |           |
| 2455          | Forest Ecology                   | 5       |           | 13      |           |         | 15        |         |           | 10      |           | 5       |           | 13      |           | 10      |           |
| 3105          | Wetlands Biol & Conservation     |         |           | 35      |           |         |           |         | 57        |         |           |         |           | 59      |           |         |           |
| 3115          | Air Pollution                    |         |           |         |           |         |           |         |           |         | 9         |         | 7         |         | 11        |         | 11        |
| 3125          | Watershed Hydrology              |         | 27        |         |           |         | 30        |         |           |         | 32        |         | 22        |         |           | 39      |           |
| 3145          | Meteorology                      | 32      |           | 33      |           | 39      |           | 39      |           | 42      |           | 51      |           | 50      |           | 50      |           |
| 3146          | Climatology                      |         |           |         |           |         |           |         |           |         | 28        |         | 19        |         | 30        |         | 32        |
| 3155          | Water Quality                    |         |           |         |           | 19      |           |         |           |         |           | 47      |           |         |           | 40      |           |

|       |                                   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|       | Management                        |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3201  | Conserv. Law Enforcement          |    |    |    | 31 |    | 39 |    | 43 |    | 50 |    | 58 |    | 61 |    | 61 |
| 3205  | Stream Ecology                    |    | 26 |    | 33 |    | 30 |    | 29 |    | 34 |    | 30 |    |    |    |    |
| 3218  | Water Res. Assess Dev. & Mgmt.    |    | 5  |    |    |    |    |    | 6  |    |    |    |    |    |    |    |    |
| 3245  | Environmental Law                 | 65 |    | 68 |    | 81 |    | 69 |    | 64 |    | 80 |    | 77 |    | 75 |    |
| 3246  | Human Dimen. Nat. Resources       |    |    |    |    |    |    |    |    |    |    | 26 |    | 39 |    | 39 |    |
| 3305  | African Field Ecology             |    |    |    | 16 |    |    |    | 16 |    | 28 |    | 31 |    | 43 |    | 58 |
| 3315  | Intro. to Aquaculture             |    |    | 4  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3335  | Wildlife Management               |    | 30 |    | 40 |    | 30 |    | 19 |    | 23 |    | 41 |    | 44 |    | 39 |
| 3345W | Wildlife Management Techniques    | 9  |    |    |    | 8  |    | 7  |    | 6  |    | 6  |    |    |    | 15 |    |
| 3355  | Public Lands Wildlife Mgmt.       | 18 | 18 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3365  | Private Lands Wildlife Mgmt.      |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 3500  | Exurban Silviculture              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 7  |
| 3535  | Remote Sensing of the Environment | 17 |    |    |    |    |    |    |    |    |    |    |    | 31 |    | 22 |    |
| 3674  | Intro. Agric. & Environ. of China |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 4  |
| 3690  | Field Study Internship            | 5  | 4  | 6  | 7  | 7  | 2  | 4  | 3  | 2  | 4  | 2  | 10 | 2  | 15 | 6  | 10 |
| 3699  | Independent Study                 | 6  | 10 | 6  | 5  | 5  | 9  | 2  | 7  | 5  | 6  |    | 12 | 5  | 7  | 3  | 11 |

|       |                                         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------|-----------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 4094  | Seminar                                 |    | 25 |    | 31 |    | 19 |    | 30 |    | 20 |    | 37 |    | 45 |    | 51 |    |
| 4135  | Intr. to Ground-Water Hydrology         | 5  |    | 6  |    | 6  |    | 6  |    | 11 |    | 16 |    | 16 |    | 12 |    |    |
| 4165  | Soil and Water Mgmt. & Eng.             |    |    |    |    |    |    |    |    |    |    |    |    | 5  |    |    |    |    |
| 4170  | Climate-Human-Ecosystem Interactions    |    |    |    |    |    |    |    |    |    |    | 14 |    | 15 |    | 14 |    |    |
| 4335  | Fisheries Management                    | 5  |    | 10 |    | 11 |    | 7  |    | 10 |    |    |    | 11 |    |    |    |    |
| 4370  | Population Dynamics                     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 8  |    |
| 4475  | Forest Management                       |    |    |    |    | 9  |    |    |    | 9  |    | 7  |    | 7  |    | 8  |    |    |
| 4535  | Remote Sensing Image Process            |    | 13 |    |    | 7  |    | 9  |    | 10 |    | 9  | 24 | 6  |    | 12 |    | 11 |
| 4544  | Application Surveying Nat. Resources    |    |    |    |    |    |    |    |    |    |    |    |    |    | 5  |    |    |    |
| 4545  | Geodesy                                 | 6  |    | 3  |    | 7  |    | 4  |    | 6  |    | 6  |    |    | 5  |    | 3  |    |
| 4575  | Natural Resource Appl of GIS            |    |    | 11 |    | 26 |    |    |    | 8  |    | 15 |    | 13 |    | 6  |    |    |
| 4600  | Current Topics Environ & Nat. Resources |    |    |    |    |    |    |    |    | 12 |    | 9  |    |    |    |    |    |    |
| 4665  | Nat. Resources Modeling                 | 15 |    | 10 |    | 7  |    | 10 |    | 9  |    |    |    |    | 9  |    | 12 |    |
| 4689  | Ugrd Research in Nat. Resources         | 1  | 3  | 3  | 1  | 2  | 2  | 4  | 3  | 1  | 2  | 3  | 3  |    | 4  | 2  | 4  |    |
| 4695  | Special Topics                          | 4  | 14 |    |    | 2  |    | 17 | 8  | 9  |    |    | 10 |    | 26 |    |    |    |
| 4000W | Nat. Resources Planning &               |    | 32 |    |    | 46 |    | 36 |    | 44 |    | 30 |    | 50 |    | 57 |    | 70 |

|       |                                               |   |   |   |  |   |   |  |   |   |   |   |   |   |  |   |   |
|-------|-----------------------------------------------|---|---|---|--|---|---|--|---|---|---|---|---|---|--|---|---|
|       | Mgmt                                          |   |   |   |  |   |   |  |   |   |   |   |   |   |  |   |   |
| 4697W | Undergrad Rsch<br>Thesis in Nat.<br>Resources | 3 | 1 | 2 |  | 3 | 3 |  | 2 | 1 | 2 | 1 | 3 | 1 |  | 1 | 1 |

**APPENDIX A.4 Sustainable Environmental Planning and Management  
Professional Graduate Certificate Program Proposal.**

**Proposal was formally approved by the University of Connecticut Board of Trustees November 13, 2013.**

**Request for New/Modified UConn Academic Degree Program or Name Change****General Information**

Name of proposed academic degree program (If solely a Name Change, indicate old and new names):  
**Graduate certificate in Sustainable Environmental Planning and Management**

Name of sponsoring Department(s): **Department of Natural Resources and the Environment**

Name of sponsoring School(s) and/or College(s): **College of Agriculture and Natural Resources**

Campuses (Storrs and/or regional[s]) proposed to offer this degree program:  
**Online**

Contact person and contact details:

**Dr. Chadwick Rittenhouse**  
**Assistant Research Professor**  
**Chadwick.Rittenhouse@uconn.edu**  
**(860) 486-0335**

Type of Proposal (New/Modified/Name Change/Discontinuation):  
**New program**

Type of Program (B.A./B.S./M.S./Ph.D./Certificate, ETC):  
**Graduate certificate (12 credits)**

Anticipated Initiation Date:  
**Fall 2014**

Anticipated Date of First Graduation:  
**Summer 2015**

CIP Code:

DHE Code (if available):

**Submittal Information**

Name of Department Head(s): **Dr. John C. Volin, Professor and Head**

Department(s): **Department of Natural Resources and the Environment**

Signature of Department Head(s):

Date:



Name of Dean: **Dr. Gregory Weidemann**

School/College: College of Agriculture and Natural Resources

Signature of Dean:

Date:

Name of Document Recipient in Provost's Office:

Date:

**Please include the following applicable documents upon delivery to Provost's Office:**

Course and Curriculum Committee Minutes (One set for all involved departments)

Undergraduate Program Review Committee Minutes (Undergrad Only)

Graduate Faculty Council Executive Committee Minutes (Grad Only; not for the Law School)

Board of Trustees Resolution (Template available on Provost's website)

The Provost's Office will submit the proposal to the Council of Deans, the Board of Trustees, the Advisory Committee on Accreditation (if necessary), and the Board of Regents.

**Program Proposal Instructions**

Please populate the following fields with all applicable information for your proposed program, modification, or discontinuation. The information below will be shared with the Council of Deans, the Board of Trustees, the Connecticut Board of Regents and the Advisory Committee in Accreditation (if necessary). If you have any questions, please contact the Provost's Office.

Please submit the Program Proposal in WORD format.

Further instructions are available here: <http://policy.uconn.edu/?p=1024>

**CONSENT CALENDAR**

Institution: University of Connecticut

Item:

Date:

**Background & Description**

The Sustainable Environmental Planning and Management Graduate Certificate Program provides the skills and techniques to lead our society to a sustainable future. The program is designed for working professionals, engaged citizens, and post-bachelor's students who want to take their career to the next level. Students learn what is sustainable planning and management, and how to achieve them by developing skills in communication, decision-making, and geospatial techniques. These skills will help individuals, groups and organizations to approach sustainable environmental planning and management in a creative, innovative and comprehensive manner. Throughout the process, students will learn how to work past the associated conflicts and disputes that often accompany the planning process. Students will learn to use tools like GIS and GPS, to draw from natural resource and ecosystem science, and to synthesize disparate information to ultimately navigate the regulatory environment to protect the actual environment.

Our primary audience is working professionals and engaged citizens with interests in sustainable environmental planning and management at local, regional, or national levels, in public or private sectors, and at for-profit or non-profit organizations.

**Reasons for the Proposed Program/Modification/Discontinuation**

Communication, decision-making, and problem-solving skills have been identified as critical needs of professionals in environmental and natural resource positions (Manolis et al. 2009, Muir and Schwartz 2009, Crawford et al. 2011, Blickley et al. 2013). The graduate certificate in Sustainable Environmental Planning and Management meets these needs in Connecticut, regionally, and nationally. No comparable program exists at UConn.

**Curriculum & Program Outline**

The graduate certificate program in Sustainable Environmental Planning and Management has a flexible design to accommodate non-resident and resident students alike. All students will complete the following courses:

- NRE 5200 - Sustainable Natural Resources Management (3 credits; Online; Fall)
- NRE 5220 - Environmental Planning for Sustainable Communities and Regions (3 credits; Online; Summer)

And complete two of the following three courses:

- NRE 5205 - Decision Methods in Natural Resources and the Environment (3 credits; Online; Spring)
- NRE 5210 - Communications for Environmental Decision Makers (3 credits; Online; Spring)
- NRE – 5215 - Geospatial Techniques for Environmental Management (3 credits; On-site workshops; Spring)

### **Learning Outcomes**

Upon completion of the program, students will be able to:

1. Describe how ecological systems operate and change
2. Describe how social, economic, and political systems affect ecological systems
3. Identify essential components of decision processes
4. Recognize effective communication methods
5. Apply geospatial skills in a planning context
6. Operate effectively in a team-based planning process
7. Analyze an existing environmental management plan in a sustainable context
8. Prepare an environmental management plan with sustainability objectives
9. Evaluate an environmental management plan for sustainable outcomes

### **Enrollment & Graduation Projections**

The \$750/credit hour comprehensive fee applies to enrollments in this certificate program.

It is anticipated that the program will have approximately 40 enrollments per year. This figure is based on approximately 10 students taking four courses each year. It is expected that the revenue generated by program enrollments will cover expenses incurred. Enrollment will be reserved for students matriculated in the graduate certificate program with seats made available to other matriculated graduate students on the basis of availability.

### **Graduation Projections**

The typical student will be able to complete all requirements for the certificate in one year.

### **Financial Resources**

The graduate certificate program in Sustainable Environmental Planning and Management will be coordinated by Dr. Chadwick Rittenhouse. eCampus will provide instructional design support and stipends to course developers. A portion of revenue generated by student fees will be returned to the College of Agriculture and Natural Resources, allowing the program to be self-sustaining.

### **Facilities//Equipment/Library/Special Resources**

Students in the program will have access to UConn library resources and other resources available to other matriculated students (HuskyCT, technical support, etc.).

As an online certificate program, the program requires no other facilities or resources other than those provided by UConn eCampus or the Department of Natural Resources and the Environment.

**Program Administration**

Lead program administration will be provided by the Department of Natural Resources and the Environment.

**Faculty**

The course instructors are:

Dr. Chadwick Rittenhouse, Associate Research Professor, Natural Resources and the Environment

Dr. John Volin, Professor and Department Head, Natural Resources and the Environment

Potential course instructors include:

Dr. Daniel Civco, Professor, Natural Resources and the Environment

Dr. Thomas Meyer, Associate Professor, Natural Resources and the Environment

**Similar Programs in Connecticut or Region**

There are no similar programs in Connecticut. Within the New England region, the University of Southern Maine<sup>1</sup> has a certificate program that focuses on traditional, human-centric planning, with less emphasis on natural resources.

Based on the preceding commentary, the Graduate certificate in Sustainable Environmental Planning and Management meets a substantial need in Connecticut and regionally, no comparable academic programs exist in CT and only one exists in the region.

**Literature Cited**

Blickley, J.L., K. Deiner, K. Garbach, I. Lacher, M.H. Meek, L.M. Porensky, M.L. Wilkerson, E.M. Winford, and M.W. Schwartz. 2013. Graduate student's guide to necessary skills for nonacademic conservation careers. *Conservation Biology* 27:24-34.

Crawford, P., S. Lang, W. Fink, R. Dalton, and L. Fielitz. 2011. Comparative analysis of soft skills: What is important for new graduates? Association of Public and Land-grant Universities, Washington, D.C.

Manolis, J.C., K. M. Chan, M.E. Finkelstein, S. Stephens, C.R. Nelson, J.B. Grant, and M.P. Dombeck. 2009. Leadership: a new frontier in conservation science. *Conservation Biology* 23:879-886.

Muir, M.J., and M.W. Schwartz. 2009. Academic research training for a nonacademic workplace: a case study of graduate student alumni who work in conservation. *Conservation Biology* 23:1357-1368.

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<sup>1</sup> <http://usm.maine.edu/muskie/certificate-graduate-study-community-planning-development>

## Appendix A.5

### Department of Natural Resources and The Environment

#### Strategic Plan 2009-2014

#### Undergraduate Education

#### Goal 1. Recruit, retain and increase size of a high quality and diverse population of undergraduate students

Strategy A. Increase engagement of faculty and students in the recruiting process.

Increase faculty participation in recruiting events (setting calendar at start of each academic year).

Organize a welcome fall picnic.

Organize council of NRE student club officers, which will collaborate on at least one special event each semester.

Create communal lounge for NRE undergraduate students that portrays natural resources and environmental ethic.

Deliver “recruitment visits/guest lectures” by department head or undergraduate coordinator in department-taught freshman general education courses with high ACES enrollment.

Strategy B. Build stronger bridges with the state’s high schools, community colleges and regional campuses to facilitate enrollment and showcase NRE opportunities.

Continue to expand environmental science Early College Experience (ECE) to include more high schools.

Provide one faculty seminar per semester at a community college.

Add link on NRE website for potential community college and branch transfers.

Explore funding opportunities to develop and submit collaborative educational proposals.

Strategy C. Increase the visibility of NRE

Place articles in University media outlets including the *Advance*, *Traditions*, and the *Campus Daily*.

Increase oral and written information in public media by faculty discussion of “newsworthy” happenings at faculty meetings with assigned duties for follow-up.

Maintain and update on a weekly basis the news items for the video monitor in hall and on the NRE website.

Strategy D. Create faculty position of undergraduate program coordinator.

**Goal 2. Expand student and faculty participation in study abroad and exchange programs.**

Strategy A. Develop strategic alliances with selected international institutions.

Create committee to explore strategic opportunities for international exchange.

Secure long-term financial support for international programs.

Strategy B. Enhance international educational programs.

Increase faculty participation in existing faculty-led short term credit courses that involve international travel.

Increase number of CA IV courses offered.

**Goal 3. Improve teaching and learning.**

Strategy A. Annually review and update NRE assessment plan.

Strategy B. Seek new ways to keep teaching innovative and creative.

Encourage more team teaching – seek full credit for team taught courses.

Seek financial support for faculty to attend teaching and learning workshops.

Support scholarship in teaching and learning through promoting scientific publication, including in “education” journals.

Explore funding opportunities to develop and submit higher education teaching grants.

Strategy C. Optimize and enhance curricular offerings.

Increase honors courses by adding 1 or 2 honor sections.

Organize course offerings on a two-three year rotating schedule and post on NRE website.

Develop a new general education course.

Increase the use of technology in teaching. Examples include: developing one or two on-line or blended courses, distance learning and/or continuing education courses.

Add a 1000 level or 2000 level W course.

Seek full time instructor-in-residence.

Teach NRE 1000 and NRE 3245 both semesters.

Reintroduce FYE course.

Develop conservation law minor.

Develop Captive Wild Animal Management inter-departmental minor with the Departments of Animal Science and Pathobiology & Veterinary Science.

Pursue natural resources program offering for the Ratcliffe Hicks two-year programs.

Examine and optimize teaching load responsibilities of faculty members to include research considerations.

Increase the number of students obtaining extramural field internships.

Develop natural resources field course.

Explore funding opportunities and develop and submit proposals, such as REUs.

Critically examine the current number of undergraduate concentrations.

**Goal 4. NRE will maintain a leadership role in interdisciplinary undergraduate education in environmental programs.**

Strategy A. Encourage student participation in living-learning communities and in emerging areas of interdisciplinary excellence

Expand our participation in the Ecohouse community and in interdisciplinary environmental programs.

Strategy B. Maintain role in environmental science program.

Obtain additional program financial support.

**Metrics for Undergraduate Education**

| <b>Metric</b>                              | <b>UConn Baseline</b> | <b>UConn 2014 Goal</b> | <b>CANR Baseline</b> | <b>CANR 2014 Goal</b> | <b>NRE Baseline</b> | <b>NRE 2014 Goal</b> |
|--------------------------------------------|-----------------------|------------------------|----------------------|-----------------------|---------------------|----------------------|
| Freshman average SAT (math & verbal)       | 1192                  | 1220                   | 1192                 | 1220                  | 1192                | 1220                 |
| % Students in top-10% of high school class | 40%                   | 45%                    | 45%                  | 50%                   |                     | 50%                  |
| 6-year Graduation rate                     | 74%                   | 78%                    | 79%                  | 78%                   |                     | 78%                  |
| First-year retention rate                  | 93%                   | 95%                    | 95%                  | 95%                   |                     | 95%                  |
| # Annual GAP transfer students             | 0                     | 30                     | 0                    | 5                     |                     | 1                    |
| % International students in entering class | 5.5%                  | 7.0%                   | 1%                   | 3%                    |                     | 3%                   |
| Study-abroad participation rate            | 18%                   | 30%                    | 7%                   | 15%                   |                     | 20%                  |

|                                        |       |       |      |      |      |      |
|----------------------------------------|-------|-------|------|------|------|------|
| Student-Faculty ratio                  | 17:1  | 15:1  | 16:1 | 15:1 | 10:1 | 15:1 |
| Undergraduate credit hours per faculty | 422   | 470   | 335  | 373  | 189  | 210  |
| % Classes with fewer than 20 students  | 44%   | 47%   | 51%  | 47%  |      | 47%  |
| # Students entering honors annually    | 290   | 550   | 10   | 20   |      | 5    |
| # Students in internships annually     | 2,000 | 2,300 | ?    | ?    |      | 30   |
| % First year students in LLCs          | 17%   | 25%   | 3%   | 10%  |      | 25%  |
| Percent of under-represented students  | 18%   | 22%   | 15%  | 20%  |      | 20%  |
|                                        |       |       |      |      |      |      |

## Graduate Education

### Goal 1. Develop a nationally ranked and internationally recognized graduate program in natural resources and environmental science.

Strategy A. Explore focusing identity on one major theme.

Strategy B. Explore opportunities for interdisciplinary graduate program in environmental science.

Strategy C. Examine graduate course offerings to strengthen the trans-disciplinary nature of the educational program.

Strategy D. Explore ways to improve the quality of student applicants for the graduate program.

Strategy E. Increase the number of Ph.D. students in the graduate program.

Strategy F. Explore developing of a 5-year BS/MS degree program.

Strategy G. Expect M.S. students to produce at least one peer-reviewed publication and Ph.D. students to produce at least three.

### Goal 2. Secure more consistent funding support for graduate students.

Strategy A. Submit more proposals for fellowships, for research and graduate education (e.g. IGERT, USDA Challenge Grants, NSF Doctoral Dissertation Improvement Grants, etc.).

Strategy B. Seek endowments for graduate support.

Strategy C. Pursue more graduate assistant support from the university.

### Goal 3. Ensure timely completion of students in the graduate degree program.

Strategy A. Departmental support for full time graduate students will be limited to four semesters for M.S. student and 8 semesters for Ph.D. students.

## Graduate and Professional Education



| Metric                                                                                                           | UConn<br>Baseline | UConn<br>2014 Goal | CANR<br>Baseline | CANR<br>2014<br>Goal | NRE<br>Baseline | NRE<br>2014<br>Goal |
|------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|------------------|----------------------|-----------------|---------------------|
| #Graduate and professional programs ranked in top-25 among public institutions                                   | 9                 | 14                 | 1                | 3                    | 0               | 1                   |
| #Entering students holding national fellowships/scholarships                                                     | 6                 | 15                 | 3                | 6                    |                 | 1                   |
| #Federally funded training programs at the university                                                            | 2                 | 6                  | 4                | 7                    |                 | 1                   |
| Median time to degree-Masters                                                                                    | 3.0 yrs.          | 2.0 yrs.           | 2.4 yrs.         | 2.0 yrs.             |                 | 2.0 yrs.            |
| Median time to degree-PhD (assumes no Masters)                                                                   | 6.0 yrs.          | 5.5 yrs.           | 5.7 yrs.         | 5.0 yrs.             |                 | 5.0 yrs.            |
| Mean Number of peer-reviewed manuscripts resulting from masters thesis                                           |                   |                    |                  |                      |                 | 1                   |
| Mean Number of peer-reviewed manuscripts resulting from PhD dissertations                                        |                   |                    |                  |                      |                 | 3                   |
| %Doctoral students receiving full-time (20-hour/week) assistantships funded through extramural grants, contracts | 5.8%              | 10.0%              | 28%              | 38%                  | 14%             | 50%                 |
| Extramural proposals submitted per year per FTE (2.1 to 2.5) min 2                                               |                   |                    |                  |                      |                 |                     |
| Pass rates on national licensure exams                                                                           | 85%-100%          | 95%-100%           | 80-90%           | 80-90%               | N/A             | N/A                 |
| *Doctoral degrees awarded per 100 faculty                                                                        | 19                | 23                 | 30               | 32                   | 25              | 32                  |
| *Graduate & professional credit hours per faculty                                                                | 80                | 90                 | 28               | 40                   | 43              | 45                  |

## Research

### Goal 1. Develop a nationally and internationally recognized research program in natural resources and environmental science.

Strategy A. Explore focusing identity on one major theme.

Strategy B. Explore opportunities for interdisciplinary research in environmental science.

### Goal 2. Increase scholarship to national/international prominence.

Strategy A. Increase peer-reviewed publication in high impact journals.

Strategy B. Obtain more Federal grants.

Strategy C. Increase collaborative multidisciplinary environmental research.

Strategy D. Increase number of post-docs in the department.

Strategy E. Increase editorships, Federal proposal reviews and panels, etc.

**Goal 3. Enhance extramural research funding.**

Strategy A. The Department will facilitate proposal preparation.

The Department will seek to provide travel funds for faculty visits to funding agencies.

The Department will seek to provide seed monies to facilitate collaborations on team research (bring in other co-PIs).

Develop team grant mentoring programs through current ad hoc peer mentoring.

Balance research opportunities with teaching and service responsibilities.

Strategy B. Obtain more Federal grants.

**Goal 4. Seek affiliate and joint-appointment of additional faculty members in related fields such as resource economics, extension, and other environmental disciplines.**

Strategy A. Prioritize the facilitation of affiliate and joint-appointment faculty to advise graduate students in Natural Resources degree programs.

**Goal 5. Seek adjunct faculty appointments from within federal and state partnership environmental and natural resource agencies.**

**Research and Scholarship**

| Metric                                                         | UConn Baseline | UConn 2014 Goal | CANR Baseline | CANR 2014 Goal | NRE Baseline | NRE 2014 Goal |
|----------------------------------------------------------------|----------------|-----------------|---------------|----------------|--------------|---------------|
| Recruit net additional faculty                                 | 0              | 145             | 0             | 20             | 0            | 3             |
| *External research expenditures (\$) per faculty               | \$90k          | \$100k          | \$207k        | \$300k         | \$164k       | \$300k        |
| Extramural research awards (\$)                                | \$186M         | \$220M          | \$16M         | \$27M          | \$2.0M       | \$3.5M        |
| *Post-doctoral appointees per 100 faculty                      | 14             | 18              | 16            | 20             | 8            | 20            |
| #Fellows                                                       | 139            | 150             |               |                |              |               |
| # Articles in refereed journals                                | 2,154          | 2,400           | 200           | 250            | 24           | 36            |
| # Books published                                              | 183            | 200             | 8             | 10             | 1            | 2             |
| #Annual patent applications                                    | 23             | 30              | 4             | 7              | 0            | 0             |
| # Annual commercial development agreements (options, licenses) | 9              | 15              | 1             | 2              |              |               |

**Outreach and Engagement**

**Goal 1. Promote the wellbeing of Connecticut citizens and enhance the environmental resources of the state through outreach.**

Strategy A. Improve the measurement and assessment of individual faculty outreach activities.

Strategy B. Continue excellence in the “Connecticut Conference on Natural Resources” and expand the discipline diversity of participants.

**Goal 2. Better integrate outreach, teaching, and research efforts.**

Strategy A. Create research projects that include a significant outreach component (*e.g.* Jordan Cove, green roof, Fenton R. study, others....)

**Goal 3. Support the missions of state and Federal partners.**

Strategy A. Where appropriate, increase involvement of NRE centers with state and Federal partners.

**Goal 4. Focus outreach activities in natural resources and the environment core responsibilities.**

Strategy A. Reduce number of unrelated outreach activities.

**Public Engagement**

| Metric                                                              | UConn Baseline | UConn 2014 Goal | CANR Baseline | CANR 2014 Goal | NRE Baseline | NRE 2014 Goal |
|---------------------------------------------------------------------|----------------|-----------------|---------------|----------------|--------------|---------------|
| # Expert consultancies to private and public sector organizations   | 941            | 1,100           | 86            | 100            | 31           | 36            |
| # Students participating in service-learning and volunteer programs | 1,300          | 2,000           | 155           | 178            | 36           | 41            |
| # Formal outreach programs for schools or businesses                | 449            | 550             | 350           | 400            | 4            | 5             |

**Diversity**

**Goal 1. Increase the diversity of faculty, staff, and students from underrepresented groups.**

Strategy A. Recruit aggressively for a wide applicant pool in faculty and staff openings.

Strategy B. Target recruitment efforts in schools with large underrepresented populations.

Increase ECE environmental science courses in Connecticut in targeted high schools.

Enhance recruitment from Connecticut’s community colleges.

**Goal 2. Increase funding for underrepresented students.**

Strategy A. Increase number of applicants for Erickson scholarship

Strategy B. Seek alternative funding sources such as NSF REU, USDA Challenge grants, etc.

**Goal 3. Increase the number of international undergraduates in natural resources.**

Strategy A. Recruit through courses and experiences in foreign countries.



University of Connecticut  
Office of the Chancellor

**MEMORANDUM OF UNDERSTANDING BETWEEN THE DEPARTMENT OF NATURAL RESOURCES MANAGEMENT AND ENGINEERING, THE DEAN OF THE COLLEGE OF AGRICULTURE AND NATURAL RESOURCES, AND THE CHANCELLOR'S OFFICE**

The combined academic assessment review and USDA On Site Program Review of the Department of Natural Resources Management and Engineering took place November 5-7, 2001. The reviewers were Richard Hegg (USDA), Barbara Knuth, (Cornell University), William McComb (University of Massachusetts), Daniel Schmoltdt (USDA) and George Hoag (University of Connecticut).

**Summary of Findings**

The Department's mission and program align well with the College of Agriculture and Natural Resource's plan as described in "Learning for a Sustainable Future". The graduates of the program are meeting the natural resources needs of the state and region. The Department is made up of capable and productive faculty who are well respected by staff and students. Overall, the morale and mutual respect among faculty, staff and students is outstanding. There is strong departmental leadership as voiced by faculty, staff, and students. All levels of the Department feel that they are well supported and represented extremely well by the Department Head. The Center for Land Use Education and Research program is an excellent opportunity for the Department to improve visibility and exemplify team success. The average number of publications per faculty is about average or slightly lower when compared to peer institutions. The faculty is very successful at obtaining competitive extramural grants.

**Reviewer Recommendations**

- The Department should consider developing an external Advisory Board
- The Department should revise its Strategic Plan
- The Faculty should consider how to define two or three Areas of Emphasis for the Department. Within each Area of Emphasis, the department should identify Target Areas for Investment.
- The establishment of an Endowed chair has the potential to rapidly increase the national stature and research capacity in the department
- The Department should consider how to build more formal collaborations with the EEB department.
- The Department should establish Adjunct faculty relationships with scientists at the Connecticut Agricultural Experimental Station in New Haven
- The Department is encouraged to expand research and teaching ties with the Marine Sciences Department.
- The Department should increase the number of graduate students (especially PhD) and research funding.
- Additional resources are required to carry out the mission of the Climate Center, or the Center should be moved out of NRME
- Revert the Wildlife Conservation Research Center to an individual faculty research program until more sustainable financial resources are in place
- The establishment of a Co-op Unit should be the top research development priority of the Department
- A reduction in the number of curriculum sequences from 6 to 3 may provide more focus to the undergraduate curriculum
- The Department should seek to increase enrollment with focused recruiting strategies
- The Department should integrate graduate students among disciplines through desk space allocation, seminars and social functions.

*An Equal Opportunity Employer*

Gulley Hall  
352 Mansfield Road, U-86  
Storrs, Connecticut 06269-2086

Telephone: (860) 486-4037  
Facsimile: (860) 486-6379

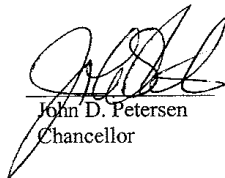
- The Department should seek to fill a faculty position in Forest or Landscape Ecology
- The department needs to develop a funding mechanism through research activities and teaching allocations to ensure that hardware and software upgrades can be maintained.
- The renovations underway on the second floor of the Klinck building should be completed as soon as possible.
- Allow for extension educators to have a home base in an existing academic department
- Seek a wildlife-fisheries extension educator.

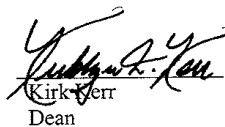
#### Departmental Commitments

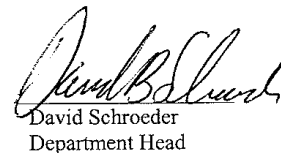
1. The Department Head will initiate an independent review of the Wildlife Conservation Research Center.
2. The department will develop an external advisory board.
3. The department will revise its strategic plan. Part of the revision process will be defining two or three areas of emphasis, and within those areas, identifying target areas for investment.
4. The department will continue to try to secure private funding for an endowed chair.
5. The department will continue to strengthen its collaboration with the department of Ecology and Evolutionary Biology and the Connecticut Department of Environmental Protection.
6. The Department will work with the Dean and the Vice Provost for Research and Graduate Education to secure external research grant support for more graduate students, especially at the doctoral level.
7. The Department Head will work collaboratively with the Dean to secure more funding to establish a Fish and Wildlife Co-op Research Unit. Establishment of this unit will be a top research priority of the Department
8. The Department will continue its efforts to increase its enrollment.
9. The Department has a long-term identified need to hire a faculty member in forest science. It will work with the Dean in the short-term, to find resources to fill this position.

#### Decanal and Chancellor's Office Commitments

1. The Dean will work with the department to gain the needed support to continue the Climate Center, perhaps from the Extension Division.
2. The Dean, in collaboration with NRME and the Chancellor's Office, will work to investigate the possibility of hiring a faculty member specializing in Forest Science when a new position becomes available.
3. The Dean and the Vice Provost for Research and Graduate Education will work with the department to achieve departmental commitments 4, 5, 6, 7, and 9.
4. The Department requires resources to support its computing facilities, especially for geospatial data processing. The Dean will work with the department and Chancellor to obtain funding for the maintenance (annual software licensing) and upgrade of its computer hardware and software.
5. The Dean will work to integrate Extension faculty more fully into the NRME department.
6. The Dean and department acknowledge a long-term need for a Wildlife/Fisheries Extension Educator.

  
John D. Petersen  
Chancellor

  
Kirk Ferr  
Dean

  
David Schroeder  
Department Head

**U.S. Department of Agriculture  
Cooperative State Research, Education,  
and Extension Service  
On-site Program Review  
Report**

REVIEW OF  
THE NATURAL RESOURCES MANAGEMENT  
AND ENGINEERING DEPARTMENT

University Of Connecticut  
Storrs, Connecticut  
November 5-7, 2001



On-site Program Reviews are provided as a service of the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, in cooperation with the State partners in a continuing commitment to maintain and improve program quality through merit reviews

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## Executive Summary

### Narrative

A combined CSREES and University of Connecticut Program Assessment review was conducted November 5-7, 2001 for the Department of Natural Resources Management and Engineering (NRME). The previous CSREES review was done in 1989 and a departmental strategic plan was developed in 1995. The response and actions from both of these documents along with the outline for the UConn Program Assessment served as a format for the faculty to develop their self-study report. The Department's mission and programs align well with the College of Agriculture and Natural Resource's plan as described in "Learning for a Sustainable Future." The graduates of the program are meeting the natural resources needs of the state and region.

The Department is made up of capable and productive faculty who are well respected by staff and students. The overall morale of the department is quite good. The Review Team appreciates the efforts by the faculty and staff in preparing the departmental self-study report and the departmental, college, and university hospitality during the visit.

The recommendations in this report are based on the material provided, discussions with administration, faculty, staff, extension partners, agency partners, and students. It should be recognized that the Review Team does not have the advantage of knowing the complete history and culture of the university. Many of the Team's recommendations contain implications for resource allocation within the Department, College, and University. This is merely coincidental and should not convey any intent on the part of the Team to usurp the authority of those institutions. The major findings listed below are items that the Review Team felt were most significant. These are not in a priority order. There are many additional recommendations included in subsequent sections of the report.

### Major Findings

#### Administration

- There is strong Departmental leadership as voiced by faculty, staff, and students.
- The Department should consider developing an external Advisory Board to assist with strategic planning and departmental visibility.
- The position of Associate Dean for Research in the College should be filled as soon as possible to ensure that the College is proactive in identifying funding streams for new initiatives.
- The College should work with the University Administration and Legislature to begin a process of replacing formula funds allocated to faculty salaries with state funds, thus freeing formula funds to address research needs.

- Securing funding and initiating construction of a Sustainability Building should continue to be a high priority for the College.
- The Academic Planning Baseline Data prepared by the University and used as the basis for decision making should be consistent with Departmental information.

#### Research

- The Department should establish Adjunct faculty relationships with scientists at the Connecticut Agricultural Experimental Station in New Haven
- The University should work to establish a United States Geological Survey (USGS) Cooperative Fish and Wildlife Research Unit as soon as possible.
- The Center for Land-Use Education and Research (CLEAR) program is an excellent opportunity for the Department to improve visibility and exemplify team success.
- The Department should increase the number of graduate students (especially Ph.D.) and research funding.
- Additional resources are required to carryout the mission of the Climate Center, or the Center should be moved out of NRME.

#### Teaching

- A reduction in the number of curriculum sequences from 6 to 3 may provide more focus to the undergraduate curriculum, while still retaining the flexibility needed to meet the needs of individual students.
- The Department should seek to increase enrollment of undergraduates.
- The Department should integrate graduate students among disciplines through desk space allocation, seminars, and social functions.
- The establishment of a USGS Coop Unit would enhance graduate teaching and advising capabilities.
- The Department should seek to fill a faculty position in Forest or Landscape Ecology.

#### Extension/Outreach

- Extension educators should be placed into departments.
- An extension position in Wildlife and Fisheries would facilitate interactions with the Connecticut Department of Environmental Protection (DEP) Information and Education Division and enhance the UConn-DEP relationships.

#### Facilities

- The Department needs to develop a funding mechanism through research activities and teaching allocations to ensure that hardware and software upgrades can be maintained.
- The renovations underway on the second floor of the Klinck Building should be completed as soon as possible.

- The Nathan Hale Inn should be used by the Department as a conference center to host an annual conference that can bring attention and visibility to an area of NRME emphasis.

## Administration

The Review Team had the opportunity to meet with representatives from all levels of administrative structure within the University. Summary information on the Department was provided from the Chancellor's Office, Dean's Office, and the Department within the self-study document. It is apparent that all levels of administration view these academic reviews seriously and truly seek to find avenues to improve the productivity and effectiveness of each program. Within this section we provide an overview of the positive aspects of administration as they relate to the NRME Department as well as suggestions for improvement.

### Departmental Administration

The faculty, graduate students, undergraduates, and administrative support staff are unanimous in their support for the Department Head. It is clear that he is viewed as a fair, caring, and insightful leader. All levels of the Department feel that they are supported and represented extremely well by the Department Head. The consistency and strength of support for the Department Head sincerely impressed the Review Team. The Department Head, faculty, and students are also served by three administrative support staff and a departmental technician who are all regarded highly by the faculty and students. It is clear that the staff take their positions very seriously and work very hard for the Department. They also expressed a high level of respect for the faculty and recognized the importance of the students to the department. Overall, the morale and mutual respect among faculty, staff, and students are outstanding.

The Department could benefit from more aggressive representation of departmental initiatives and successes to upper level administration, leaders of collaborating agencies, and other external constituencies. Care should be taken to accomplish this without diminishing the effectiveness of the Department Head as a strong internal leader. The Department Head may need to find the right balance between external activities and maintenance of a strong presence within the Department. The undergraduate students and faculty appreciate his availability, so this balance may be difficult to attain. Alternatively, another senior faculty member could assume responsibilities for promoting the Department. Finally, we suggest that the Department consider strongly the formation of an Advisory Board, which would have as its charges:

1. Provide advice to the Department with respect to new initiatives in teaching (e.g., core curriculum structure), research, (e.g., USGS Coop Unit) and outreach (e.g., demand for continuing education and collaborative relations),

2. Provide a mechanism for identifying sources of support for programs beyond what is available through existing state sources that will benefit the Department and the cooperators, and
3. Serve as an advocate for the Department both internal and external to the university and assist with the promotion of the successes of the Department.

An Advisory Board could help the identify areas of emphasis for the department and prioritize faculty lines to fill positions as they come available. The Review Team suggests that the faculty, with advice from an advisory board, reconsider how to define two or three **Areas of Emphasis** for the Department that cut across disciplines and are issue-driven. For instance, it would seem that areas such as (1) Protection of Air and Water Quality; (2) Forested Landscape Planning at the Urban-Rural Interface; and (3) Biotic Resource Conservation could be three areas of emphasis that would require expertise from a range of disciplines working in interdisciplinary teams. Such Areas of Emphasis would be the focus of departmental promotion efforts both internal and external to the Department, and would provide areas of focus in what otherwise might seem to be an exceedingly broad assemblage of disciplines. Within each Area of Emphasis, the department should identify **Target Areas for Investment**. These investments represent the positions or initiatives that clearly advance the Department to allow it to be recognized regionally and nationally in each Area of Emphasis. This will entail a prioritization of investments that is not apparent in the self-evaluation document. For instance, the self-evaluation document did not identify clearly high priority positions to be filled in the future, with the exception of a forestry position. The specific focus of forestry expertise that would be sought and the relative importance of a Human Dimensions or Planning position vs. a Fisheries position, vs. some other discipline could be discussed within the context of specific investments in these areas of emphasis.

The Department may also wish to consider how to build more formal collaborations with the Ecology and Evolutionary Biology (EEB) department. The arrangement may be something as simple as the formation of a steering committee that would have representatives from both departments to discuss prioritization for positions. Then be able to seek support from the respective Deans to fill positions of benefit to both departments., Establish agreements to form interdisciplinary research teams to address agency needs. , Develop joint General Education courses to recruit undeclared majors into the departments..

The suggestions expressed above should be considered within the context of revising the strategic plan for the Department. We expect that the lack of prioritization of positions and other initiatives identified in the self-evaluation document represents an intent to attend to these prioritizations and identification of future goals for the department during a forthcoming planning process.

The Department might also consider some changes that would address concerns expressed by the support staff, and allow them to be more effective and efficient in serving the needs of the Department. One possibility would be to house all of the administrative support staff in one area. Given email file transfer capabilities, proximity of a support person to a faculty member may not be so critical as it once was and would

minimize the amount of time that staff spend going back and forth between the current offices. Simply locating faculty and staff all on one floor would help ensure efficiency and communication among faculty, staff, and students. Further, given the workload faced by the staff, having faculty phone numbers listed in the University directory and allowing phone calls to go directly to faculty offices (rather than routing all calls through the front office) would free some time for staff to address the increasing number of administrative tasks assigned to them that formerly were conducted elsewhere on campus. Because of the new tasks being assigned to the staff, they could use additional assistance. Finally, the grants that are administered through the Environmental Research Institute (ERI) become problematic for the support staff when they attempt to purchase items without easy access to account information. Either limited access to ERI account information or ideally co-location of ERI and the NRME Department would allow the staff to be more efficient.

### College Administration

The Dean of the College and his staff expressed support for the Department and recognized the importance of the Department in addressing teaching, research and outreach in environmental issues. We were impressed by the ability of the College Administration to effectively lead the College with very limited resources. There also was an awareness on the part of the entire Dean's staff faculty initiatives and their effectiveness in all three aspects of academic endeavor. The Review Team identified a few points that the College might address that could influence the effectiveness of the Department.

The Associate Dean for Research position is currently vacant in the College. Given what we see as the potential for an effective person in this position to serve as a catalyst for research initiatives, we feel that it is very important that the position be filled as soon as the College is able. Clearly this person could regularly meet with legislators and cooperators in Hartford and Washington to identify high priority issues, and develop research teams to address these contemporary issues. In so doing, the research income and productivity for the College could be increased substantially. Currently there seems to be the expectation that those collaborations will evolve from faculty-driven initiatives (facilitated by the Dean during formation of teams). Identifying the set of funding sources that collectively can move team productivity forward could be greatly facilitated by the Associate Dean. Such an approach might also provide evidence that teams can become more productive, while also making it clear to faculty that the reward structure for the University values such team activities. It was apparent to the Team that the faculty do not view team activities as being recognized seriously during merit evaluations by the Department and College. Finally, a person in this position could facilitate efforts to establish development and fund-raising priorities within the College of Agriculture & Natural Resources (CANR).

Although the Dean's office recognizes the problems associated with allocation of formula funds to faculty salaries (salaries increase, but formula funds do not), we suggest the Dean begin to work with the Chancellor and State Legislature to resolve this situation

and stem the erosion of faculty lines. An addition to the University budget sufficient to cover the portions of salaries currently covered by formula funds would allow the College to move faculty salaries off of formula funds and free those funds for use within the College. Hatch, McIntire-Stennis, and Smith Lever funds could then be allocated to approved projects as they are now, though allocations would then be sufficient to provide the basis for conducting research by young faculty and proven researchers. Allocation to PIs could be made based on the PI's potential for or record of leveraging external funds from formula fund allocations to ensure that formula funds do not become viewed as an entitlement by some faculty.

The Department has expressed the desire to establish a Cooperative Fish and Wildlife Research Unit. This would add two (or three) federal employees to the Department who could provide graduate teaching, graduate advising, and an avenue for federal funds to the Department. This is a nationwide program administered through USGS that is a high priority for the Department and should be supported at all levels of university administration. Because the existing 27 Coop Units at universities across the country are now fully staffed (after decades of being under-staffed), the timing is right to apply for a Unit in Connecticut. USGS is considering the establishment of new Units so it is imperative that the University moves quickly to work with the state agencies and the USGS administration to secure a Unit. Such a Unit would be a win-win situation for the University and the Department.

The Department also identified the desire to establish an Endowed Chair. The Department should work with the Development Officer for the College to identify potential donors to begin this Capital Campaign effort. It will take time on the part of the Department Head and Development Officer to culture potential donors, and should begin as soon as possible. However it would be helpful for the Department to identify potential targets for such a capital campaign during their strategic planning process before working with the development office. The establishment of an Endowed Chair has the potential to rapidly increase the national stature and research capacity in the Department.

Finally we were very encouraged that the Dean identified the construction of a Sustainability Building to house NRME and some other departments. As NRME research and outreach efforts continue to grow, so will their needs for quality space. Such a building initiative is needed now and the demands will only increase. There also is the potential to construct a building that would provide space for ERI and facilitate co-location of NRME and ERI. The College seems to have received limited funds from the UConn 2000 initiative. The College should place a high priority on securing university capital building funds.

### University Administration

The University administration clearly wishes to help the Department improve, and that was apparent at the introductory meeting and subsequent meetings with University leadership. We offer a few suggestions that might facilitate efforts to assist the Department. First, the communication from the Department to the Provost and Chancellor's office could be more regular and clear. Priorities for the Department should

be articulated to upper level administrative offices in short concise statements reflecting Target Areas for Investment and this should be done periodically. For example, the establishment of the USGS Cooperative Fish and Wildlife Research Unit should be recognized at all levels as a high priority for the Department, College, and University to enhance federal presence on the campus. Communication can be improved by more frequent discussions between the Department Head and upper level leaders (via the Dean), as well as through periodic requests from the administration for this information.

There was some inconsistency in data reported through various levels of administration. It was not clear which data were accurate, which were not, and why they were not consistent. For instance, the numbers of Ph.D. students reported in the Academic Planning Baseline Data provided by the Institutional Research Office were not accurate for 99-00 and 00-01 according to Departmental records. Further, Ph.D. students in other departments but yet advised by departmental faculty were not reflected in these data. These inconsistencies led us to question the degree to which groups using the Academic Planning Baseline Data as the basis for decision making were accurately viewing the Department. Clearly, there should be an effort on the part of the Department to inform the administration whenever these inconsistencies become apparent, and an effort by the administration to improve its statistical record keeping.

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#### Summary Findings: Administration

- All levels of the Department feel that they are supported and represented extremely well by the Department Head.
- Overall, the morale and mutual respect among faculty, staff, and students is outstanding.
- The Department could benefit from more aggressive representation of departmental initiatives and successes to upper level administration, leaders of collaborating agencies, and other external constituencies.
- The Department should consider strongly the formation of an Advisory Board.
- The Review Team suggests that the faculty consider how to define two or three Areas of Emphasis for the Department that cut across disciplines and are issue-driven.
- The Department should consider how to build more formal collaborations with the EEB department.
- Revise the strategic plan for the Department.
- House all of the administrative support staff in one area.
- The establishment of an Endowed Chair has the potential to increase rapidly the national stature and research capacity in the Department.
- The position of Associate Dean for Research in CANR should be filled as soon as possible to ensure that the College is proactive in identifying funding streams for new initiatives.
- The College should work with the University Administration and Legislature to begin a process of replacing formula funds allocated to faculty salaries with state funds.
- Securing funding and initiating construction of a Sustainability Building should continue to be a high priority for the College.

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- The Academic Planning Baseline Data used as the basis for decision making should be consistent with Departmental information.
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## Research

### Faculty Programs

The faculty in the NRME department are generally productive researchers exhibiting a high degree of scholarship through peer-reviewed publications and participation in national professional meetings and conferences. Research publication productivity as well as research funding varies among the faculty. The average number of publications per faculty is about average or slightly lower when compared to peer institutions.

The faculty are very successful at obtaining competitive extramural grants. The department statistics indicate a competitive level of funding per faculty (i.e., \$118,000 per faculty per year of research expenditures). When comparing the department research expenditure statistics with those provided in the institutional academic planning baseline data, significant discrepancies exist. For example, the institutional statistics cite \$56,617 per faculty per year of research expenditures. It is indicated in the self-study that the faculty research conducted with ERI is not reflected in institutional statistics. It is important for the institutional statistics to reflect accurately the actual research expenditures of the NRME faculty.

It should be noted that a high percentage of NRME's research expenditures are obtained from extramural sources. Equipment-intensive department faculty are encouraged to apply for University of Connecticut Research Foundation (UCRF) annual equipment competitions, as the Department has only had limited awards from UCRF funds.

The Department's external funding goals have identified that they wish to grow at about the rate of inflation over the next five-year period. The Review Team believes that there is room for external funding growth beyond inflation in the department. As with many academic departments a certain portion of the faculty have considerable room for growth in funded research.

The Department has submitted a proposal to create a United States Geological Survey (USGS) Coop Unit. This review committee believes the establishment of this Coop Unit should be the top research development priority of the Department. The Department Head is strongly encouraged to pursue actively the development of this Unit, at all levels within the university, within USGS and through support of UConn's Washington-based federal communications firm. A Coop unit would create a federal research presence in the department, virtually expand the faculty by twenty percent (i.e., 10 to 12 faculty), and expand greatly linkages to the Connecticut Department of Environmental Protection (DEP) and other natural resource agencies in Connecticut.



It should be noted during the interview with external agency partners, that strong support existed for the establishment of a Coop unit. There were indications, however, that the agencies (USGS, DEP, and NRCS) may have difficulty in providing long-term year-to-year funding for the required agency match. The department may need to establish consortia of agencies to provide the agency match.

Many faculty report very positive interactions and benefits of their associations with the Environmental Research Institute (ERI). The faculty are encouraged to continue this productive relationship. The administrative support staff of the NRME department praised the responsiveness and abilities of the ERI administrative support staff with whom they interact on NRME faculty projects. They also indicate frustration, however, because they lack access to university-level financial accounts for their faculty's ERI projects. The remote location of ERI further makes their administrative interaction with ERI staff more difficult. The remote location of ERI's high quality laboratory facilities also hampers interaction of NRME faculty and students with ERI's laboratory, technical and administrative staff. The review committee recommends that ERI consider either co-locating some facilities within NRME or moving to a main campus location.

The review team noted that the department has an outstanding, well-funded, and productive program in land-use planning. The NRME and Extension faculty participating in this activity should be commended. The department, college, and university can further enhance this research group by approving this group's proposal to create the Center for Land-Use Education and Research (CLEAR). This area of research, outreach, and education is rapidly emerging and has strong market pull for the types of products under development by these faculty. The review team concurs with the College of Agriculture and Natural Resources (CANR) Dean's recommendation that the faculty should be encouraged to participate, when appropriate, in the agricultural biotechnology thrust area emerging at UConn.

Connecticut's unique arrangement of having two agricultural experiment stations, one at UConn-Storrs in the College of Agriculture and Natural Resources and one free-standing in New Haven could be linked more optimally than at present. At a minimum, a greater number of New Haven researchers should be encouraged to hold adjunct faculty status in the NRME department, teach undergraduate or graduate courses, and serve as advisors to graduate students. Because of the significant expertise and facilities housed at the Connecticut Agricultural Experiment Station in New Haven, faculty and graduate students should be encouraged, when appropriate, to conduct some of their research in New Haven.

The initial collaborations between the NRME and Extension and staff of the Marine Sciences Department (MSD) and the Sea Grant Program, housed at the UConn Avery Point Campus are presently taking shape. The NRME head and faculty are encouraged to expand research and teaching ties with the MSD head and faculty, particularly in the areas of marine fisheries, aquaculture and the interface of land-use planning and coastal resources.

Faculty in the NRME department participate in Institute of Water Resources and other extension-related seminar programs. Both undergraduate and graduate students communicated their wishes for the department to create its own seminar series. Faculty, students, and non-NRME speakers would be encouraged to participate and make presentations. Such a seminar series would help to facilitate communication and interaction among students, particularly between those in different focus areas.

### Centers/Institutes

There are several centers/institutes based in the Department. The current ones are: Institute of Water Resources (IWR), Wildlife Conservation Research Center, and the Climate Center. There is also the possibility for additional centers such as the Center for Land Use Education and Research (CLEAR) that is described in the Research section of this report. The Review Team feels that this center has great potential for dealing with current and future natural resource issues of land use planning. A center/institute has several positive factors, such as increasing visibility for the particular program, increasing visibility for the Department and university, providing recognition for the faculty, facilitating the use of external funds, providing opportunities for faculty from diverse backgrounds or disciplines to work together, and giving continuity to a priority program area.

The IWR provides visibility and connections with various agencies, organizations, and universities within CT. There is a relatively small amount of resources (approximately \$75,000) to carry out a competitive grant program. It is suggested that IWR continue to seek additional funds to expand the funding base. One suggestion is to consider leveraging IWR with USGS regional funding sources.

The Climate Center has a long history at UConn. Its mission is to provide climate information and services to individuals and to private and governmental agencies in a timely fashion. The Climate Center is a very small program with an estimated 25% of a faculty FTE and a half time assistantship provided by the Dean. A web site has been recently updated and is maintained by the half time assistantship. It is the recommendation of the Review Team that there should be more resources (staff, graduate students, operating budget) for the Climate Center program to help carry out its mission, or the Center should be moved out of NRME. >

The Wildlife Conservation Research Center originated in 1996 and had an initial infusion of funds. Its mission is appropriate for the state and region. It currently has very few funds to support programs. The Review Team recommendation is that until there are resources to justify a Center, the mission and intent of the Center might be better served by reverting to an individual faculty research program.

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### Summary Findings: Research

- The average number of publications per faculty is about average or slightly lower when compared to peer institutions.
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- The faculty is very successful at obtaining competitive extramural grants.
  - The Review Team believes that there is room for external funding growth in the Department.
  - The establishment of a Coop Unit should be the top research development priority of the Department.
  - The Center for Land Use Education and Research (CLEAR) is endorsed highly by the Review Team.
  - Connecticut Agricultural Experiment Station at New Haven researchers should be encouraged to hold adjunct faculty status in the NRME department, as appropriate.
  - The Department should create its own seminar series.
  - The NRME department is to be congratulated on the recent approval of its Ph.D. program.
  - The graduate student to faculty ratio (3.3) is about average or slightly below that for peer institutions.
  - Consider leveraging IWR with USGS regional funding sources.
  - Additional resources are required to justify the mission of the Climate Center.
  - Revert the Wildlife Conservation Research Center to an individual faculty research program until more sustainable financial resources are in place.
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## Teaching

### Undergraduate Program

NRME offers a Bachelor of Science degree. The Department offers no General Education course, but does offer several courses that meet skill requirements in writing, quantitative, and computing skills. The Department also contributes to course offerings for the Environmental Sciences major, and advises students in this area. It appears, however, that little administrative recognition (e.g., Academic Planning Baseline Data record-keeping methods) is given to NRME's participation in this area. We recommend (see Administration section) that such record-keeping lapses be remedied.

NRME has a strong undergraduate teaching program. Of the 10 tenure-track faculty in the Department, 4.0 FTE's are assigned to teaching. We calculated teaching loads based on the number of every-year and alternate-year courses taught per faculty member (counting alternate-year course as 0.5/year). Teaching load ranges from 1 course per year to 3.5 courses per year. Many courses in the department (more than half) are alternate-year. Students remarked that this makes it complicated to plan their undergraduate curriculum, and leads to timing problems. Effectively, this also increases the teaching "load" of each faculty member – i. e., it is more challenging to keep current with the subject matter for 4 alternate-year courses than it is for 2 every-year courses. This teaching load is somewhat heavier than that known for peer units at other institutions

NRME makes good use of special lecturers or adjunct faculty to teach specialty courses not covered by tenure-track faculty. These include environmental law, conservation law enforcement, and stream ecology. In our agency partner interviews, at

least two DEP Division Directors indicated that DEP staff would be interested in teaching or co-teaching a NRME Practicum class. We recommend exploring this option to potentially reduce the teaching load of tenure-track faculty and provide more professional networking opportunities for students. In addition, cross-listing appropriate EEB (or other UConn courses) may be useful.

A need identified in the self-study focused on coursework (and possibly a new faculty position) in natural resource policy, planning, and human dimensions. Interviews with NRME faculty revealed, however, that support for such a faculty emphasis might not be shared among all faculty. Such a faculty line could be addressed potentially through strategic hiring for the Cooperative Fish and Wildlife Research Unit faculty, should that Unit be approved (see Research section). In the meantime, NRME, with CANR support, might explore possibilities for a joint faculty appointment for one or more of the Rural Sociologists in CANR, who could offer an environmental sociology or environmental policy course within NRME. An agency partner, the Director of the Inland Fisheries Division in DEP, indicated a Human Dimensions in Fisheries faculty would be a very high priority. Such a position could also contribute to the Research and Extension needs in NRME (see those sections).

Another need identified in the self-study was a faculty line in forestry, whose responsibilities would include teaching forestry courses. Given student interests in the management of forested landscapes and terrestrial wildlife and ecology, as well as Research and Outreach needs (see those sections), a faculty hire in a forest ecology/landscape ecology area seems quite appropriate. Currently, the Department has only one faculty line in forestry (the Department Head whose research and teaching contributions are necessarily limited), and the Department of Extension has an extension forester. As noted in the Outreach section, substantial benefits and efficiencies may accrue if these faculty were in the same department.

Some faculty indicated dissatisfaction with the quantitative preparation NRME students demonstrate when entering upper-level NRME courses. The Department should assess whether it is possible and desirable to provide more quantitative exposure and training within the freshman and sophomore-level courses to help ensure students are better prepared by the time they get to upper-class courses. More emphasis on quantitative skills may be fostered by supporting two curriculum tracks within the major, one heavily quantitative, and one less so.

Students we interviewed (both undergraduate and graduate) were very enthusiastic in their support for the Department and its programs, faculty, and support staff. Many described the atmosphere as feeling "like a family" and the professors as being very accessible, including the Department Head. Students feel they are receiving a well-rounded education, and that faculty provide many opportunities for experiential learning outside of the classroom by including undergraduate students on their projects and in their fieldwork. Students indicated NRME faculty provide a great deal of help in making connections to secure internships or advising about job opportunities. Undergraduates are encouraged to enroll in graduate-level courses. One main weakness identified by students was the lack of a student lounge or other convenient gathering area at which

students could congregate, relax, and study between classes. Students noted the library was too far to walk to and back between classes, and also noted the lack of a vending machine or other snack options in the near vicinity of their classes in the Young building. Students also expressed a desire to have greater access to computers in the Young building, to work between classes.

Several students indicated they were following a "general" NRME curriculum, rather than specializing in a certain track. This is particularly noteworthy, as many of these students were seniors. NRME currently identifies six different course sequences, including Atmospheric Resources, Earth Resources Information Systems, Fisheries Management, Forestry, Water Resources, and Wildlife Management. Although two students expressed an interest in Conservation Law Enforcement, which is not a formal sequence, they indicated they were able to piece together a program with courses in other UConn units, in addition to the new Conservation Law Enforcement course to be offered next semester in NRME. Six course sequences offered by a faculty of 10 seems excessive. We recommend reducing the number of course sequences. Perhaps the overall organization of the Department could reflect fewer major themes, but still address the major mission of NRME in Teaching, Research, and Outreach. Major thematic areas may include (1) forested landscape management and development; (2) air and water quality protection; and (3) biotic resource conservation. We realize this move could be difficult for a department that has been organized traditionally along the lines of fisheries, wildlife, forestry, etc., but such a move has been undertaken by peer units identified in NRME's self study (e.g., Cornell University now has three undergraduate tracks: Applied Ecology, Resource Policy and Management, and Environmental Studies). Tracks at NRME would be necessarily different from tracks at NRME-identified peer units because NRME is unique in having a strong environmental quality and engineering emphasis whereas other units have different strengths (e.g., policy and human dimensions).

Enrollment of majors has declined in recent years, with a peak of 170 in 1992-93, to a low of 88 in 1997. Current enrollment is 94 students. The Department's goal is to increase enrollment, but the target is unclear (150 students noted on p.58 of the self-study, 200 students noted on p. 23 of the self-study). We believe increasing enrollment is both possible and desirable. Class sizes are currently moderate overall, and low in some areas. Most courses (except perhaps the computer-intensive GIS and modeling courses) could accommodate increased enrollment. Most NRME majors appear to enter the Department as internal transfer students. Therefore, a major recruiting pool is students already enrolled at UConn who are either undeclared majors or who are unsatisfied with the major into which they entered. We suggest strategies to increase enrollment include: (1) offering a General Education course through which to recruit students; (2) signing articulation agreements with Community Colleges in Connecticut; (3) cross-listing NRME courses in other departments to increase the visibility of what NRME has to offer; and (4) creating a marketing strategy (e.g., brochures, open house, seminars, information nights, etc.) that includes testimonials from current students and recent graduates. Transfer students who talked with us noted they switched to NRME because it was a "smaller department," "provided more hands-on experiences," "had a very accessible

faculty,” and because of the overall subject matter availability and atmosphere of the major. NRME students could be the best recruiting/marketing tool available!

An alumni survey of College graduates was conducted for the years 1998-2000. Approximately 1/3 of NRME graduates responded. NRME career preparation scores were consistently below College averages. When asked about this survey, the Unit leadership was unfamiliar with those results. The dissatisfaction expressed by respondents may be reason for the department to develop a more structured survey instrument to identify key issues. The Team further recommends that the Department examine this issue more closely, including (1) a closer analysis of the data with respect to survey design and (2) if meaningful differences exist, conduct follow-up focus groups to understand more fully why problems might exist. Other units at UConn and at NRME peer institutions conduct exit interviews with seniors. Given the manageable size of the NRME senior body, NRME faculty may consider instituting such a process to learn from student experiences.

All students we interviewed indicated they had ample opportunities to secure and participate in internship experiences. Conversely, the agency partners we interviewed indicated they had internship opportunities available that often went unfilled. It is possible that even more meaningful internship opportunities than exist currently could be cultivated and made available to students through better communication between NRME and agencies. Such improved communication might also foster a greater feeling of connection by the agencies with NRME (see Administration section). In addition to internship opportunities, undergraduates are encouraged to become involved in faculty and graduate student research efforts.

Several student organizations are available to enhance the undergraduate experience, including student chapters of The Wildlife Society, the Soil and Water Conservation Society, and the International Society of Photogrammetry and Remote Sensing. Students are exploring the possibility for creating a new student chapter of the American Fisheries Society. The array of student professional-development opportunities is impressive for a student body and faculty of NRME's size.

The undergraduate student body appears to be fairly diverse in terms of gender, but not so in terms of race and ethnicity. NRME should be recognized for securing a USDA Multicultural Scholars award which should help recruit under-represented students. Gender diversity among the faculty should be improved to help provide a female mentor/role model for students. Currently, the only woman on the faculty is 100% research, on a non-tenure track, so she has little visibility to undergraduates. The self-study includes several recruitment strategies that could be implemented to help diversify further the undergraduate student body. NRME should prioritize these and decide which have the most potential payoff, then put effort into implementing those priorities.

## Graduate Program

As noted for undergraduate students, graduate students appear to be very happy in their NRME programs. Those interviewed (11) indicate they share a very good rapport with their major advisor, and receive appropriate mentoring and other forms of support. A few noted computer access could be improved, as not all students have access to their own computer on which to work. However, we note it is not uncommon for graduate students at peer institutions to share computers or work in common computer labs.

The NRME Department is to be congratulated on the recent approval of its Ph.D. program. It is readily apparent that the institutional statistics in and Academic Planning Baseline Data do not account adequately for the past Ph.D. student production of the NRME faculty. Several faculty have served as major advisors to students in the Plant Science and Environmental Engineering Ph.D. programs. The number of graduated Ph.D. students is not included in the institutional statistics. Further, the present number of enrolled Ph.D. students in NRME is identified as 3 in the 1999-2000 and 1 in 2000-2001. The NRME head and graduate coordinator indicated that the Ph.D. student count in NRME is actually 8 in 2000-2001. This does not include any Ph.D. students in Environmental Engineering, presently advised by some NRME faculty.

The NRME faculty currently advise approximately 8 Ph.D. and 25 M.S. students. This represents about 3.3 graduate students per faculty member. This is about average to slightly below average for the department-cited peer institutions. The department should work to not decrease the present level of graduate students advised per faculty. It should be noted that a high percentage of Ph.D. students in the program are on full graduate assistant support. In fact, the two students not supported fully, are both employed full-time. It was noted that 20 percent of the M.S. students are supported only on 10 hour-per-week assistantships. The department should develop a goal to have all full-time graduate students (i.e., Ph.D. students and Plan A M.S. students) be supported on full graduate research or teaching assistantships.

NRME receives two teaching assistantships, which are divided into four half-time Teaching Assistantships. NRME faculty would like to receive additional TA's, but we did not identify evidence that the current allocation is unreasonable given other unit allocations at UConn.

Some concerns were evident about graduate student interaction, and integration between inter-departmental disciplines and other groups. We recommend several mechanisms to foster greater communication and integration across the several disciplines represented in NRME, and greater interaction between students and faculty: (1) institute a regular (e.g., weekly) seminar series featuring faculty and graduate students; and (2) house graduate students in offices that are integrated across disciplines (i.e., don't sequester all the "air" students in one lab and the "fish" students in another).

Students we interviewed indicated most are encouraged by their major professors to be active in their respective scientific and professional organizations, and to prepare and present the results of their research at scientific conferences. This type of professional development should continue to be encouraged.

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### Summary Findings: Teaching

- Give credit (in University record-keeping) to NRME for participating in Environmental Sciences major.
  - Maintain, or reduce somewhat, faculty teaching loads (number of courses taught per year per faculty).
  - Continue to use adjunct or special lecturers to teach specialty courses.
  - Pursue a Cooperative Fish and Wildlife Research Unit, considering a faculty emphasis in Human Dimensions.
  - Secure a faculty line in forest ecology or landscape ecology.
  - Provide more quantitative training to lower-level NRME students.
  - Create a student lounge/study space.
  - Reduce the number of undergraduate curriculum sequences.
  - Increase enrollment with focused recruiting strategies.
  - Develop strategies to diversify both the student body and the faculty.
  - Help foster a more integrated and collegial graduate student atmosphere through a regular graduate student-faculty seminar series, and by integrating graduate student office assignments.
  - Maintain or increase the current graduate student/faculty ratio (3:1).
  - Continue to support graduate student professional development through attending and presenting talks at scientific meetings.
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### Extension/Outreach

The outreach and public service of the Department has evolved over the years. Previously there were full-time extension specialists in the Department. Today there are no full-time extension appointments in the Department although almost every faculty has a portion of their time allocated to extension/outreach. There is a total of 1.9 extension FTEs distributed among 8 faculty with range from 0.1 to 0.2 FTEs. The self-study report (pages 36-40) describes numerous activities and programs, which cover most of the programmatic areas of the Department. The Review Team did not meet with any extension specialists, which are usually those who have a Ph.D. and are administered through a Department. The full-time extension educators are usually those who have a Master's degree and are administered through the Department of Extension under the Director of Cooperative Extension Service. There are three extension educators (extension forester, water quality, and remote sensing) who interact a great deal with the NRME Department. The Review Team met with those three individuals and was impressed with the quality and enthusiasm of these extension educators.



The faculty (both those with partial appointments and those with full-time appointments) are to be complemented for the number of outreach activities that they have either led or participated in. The topics have included air, water, land use, wildlife, forestry, and fisheries. Several of the faculty participate on one or more of the programmatic teams organized within the college. The two teams where faculty have been most active are the Water Resource Team and the Wildlife Resources Team. The extension educators are to be congratulated for seeking and obtaining external funds to carry out programs targeted for State's citizens. These funds have provided the opportunity for the extension faculty to carry out programs that would not be possible with only the full-time personnel.

There are several administrative structures for Cooperative Extension at the various Land Grant universities. The model at UConn has the extension educators administered under a Department of Extension separate from the other departments. Another model is to have the extension educators located within a department that is matched with either their discipline or program area. There are certainly positive aspects to both models and it is recognized that each institution has a history and rationale for the model that it is using. The Review Team realizes that it is a college and university administration decision for how the college is structured. Based on the discussion and experience of the Review Team they recommend that there are benefits to having the extension educators located administratively within the Department. There are already 1.9 extension FTEs within the Department so it would be logical to include at least the three other extension educators with the Department. This would provide more of an opportunity for the research and teaching faculty to work with the extension educators. One of the long-term benefits would be to maintain some of the priority programmatic areas as departmental faculty changes occur. A negative would be how the Department would handle such budget problems as the formula funds (Hatch, etc.) if the funding remains constant with no increase for inflation.

DEP has an Information and Education Division, which may need assistance in transferring and developing appropriate information for various issues pertinent to the state. It is suggested that the extension faculty, particularly with wildlife and fisheries, should interact with this unit as the UConn expertise as there may be a good match to address the state's issues. One of the extension needs identified by the Review Team was a wildlife and/or fisheries extension educator. For the wide variety of wildlife and fisheries needs throughout the state it was evident that there were few UConn personnel to work with the various agency and citizen groups to address the issues.

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#### Summary Findings: Extension/Outreach

- Allow for extension educators to have a home base in an existing academic department.
  - Interact with the DEP Information and Education Division on areas of mutual interest to the department.
  - Seek a wildlife-fisheries extension educator.
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## Facilities

### Existing Infrastructure

The Department is currently located in two buildings on campus, W. B. Young building and the Merle Klinck building. The Young building currently houses all faculty offices, College administrative offices, primary classrooms, several laboratories, and graduate student offices. The Department also shares the Young building with the departments of Plant Sciences and Agriculture & Resource Economics. The Department is spread across all three floors of the Young building.

Laboratory space in Young includes: (1) a basement lab containing many old desks and miscellaneous furniture/supplies/equipment; (2) a renovated basement wet lab for fisheries research (containing a small amount of electronic lab equipment); (3) two, atmospheric sciences computer laboratories (including graduate student space); and (4) two geographic information system (GIS)/remote sensing (RS) laboratories. In addition, there is a computer lab for graduate/undergraduate student use. This set of 3 computer labs is referred to collectively as the Laboratory for Earth Resources Information Systems (LERIS). The Department has priority use of one recently renovated high-tech classroom. Three other renovated classrooms are available in Young for departmental teaching. In addition, an off-campus storage facility houses large items of equipment, such as boats and trailers that are used for research.

On the first floor of the Klinck building is a shop facility that is managed and manned by a full time staff person. This is an important resource for the Department as it serves faculty and graduate student research needs for materials and equipment. The staff person in particular was singled out as being exceptionally skilled and helpful. The role of such a resource in the Department should not be underestimated.

The University provides a variety of facilities/services throughout campus for teaching, research, and outreach activities. These are available to the entire university community. They include:

1. The Institute for Teaching and Learning, which provides instructional workshops for faculty and teaching assistants, computer programming resources, and teaching fellowships and awards;
2. The Instructional Resource Center, which aids teaching efforts using information technology, audio/visual media preparation, writing-skill development, and microcomputer labs;
3. The Research Foundation and the Research Advisory Council, which supports the research mission and helps position faculty to compete more favorably for research funding, including large-grant competition, small grants and equipment funding, travel awards, and professional development;
4. Information Technology (IT) services housed in the Math Sciences Building and Babbidge Library and high-performance computer services in the Taylor Booth Center for Computer Applications and Research; and

5. The Environmental Research Institute (ERI), which conducts and collaborates on multidisciplinary pure and applied research in the environmental sciences and engineering.

The University of Connecticut Forest consists of approximately 1500 noncontiguous acres in the immediate and surrounding townships. This property is managed by one of the Extension Educators (see Extension). Part of the property is managed as an industrial forest, but the remainder serves as a valuable resource for teaching, research, and extension activities. Other university departments also realize benefits from ownership of the Forest. The proximity and diversity of these properties make them invaluable to the university's missions. The Department is encouraged to pursue federal dollars that can be used to further expand the use of the Forest, e.g., multifunctional (research, education, extension), multidisciplinary projects dealing with the Forest and adjacent-lands watershed would be particularly viable.

The Review Team has had an intimate opportunity to view/experience first-hand one of the university's newest facilities, the Nathan Hale Inn and Conference Center. The Team feels that this facility adds a new dimension to the University—one that gives it a commensurate position with other institutions—and will allow it to reach out, and draw in, the larger scientific and constituent communities. The Team strongly recommends that the Department make a concerted effort to secure scheduling at that facility to host a scientific conference in one of the Department's specialty areas as soon as possible. Hosting an *annual* national/international meeting should also be considered, as it will enable the University and the Department to attach name recognition to a regularly advertised scholarly event.

#### New/Updated Infrastructure

Department emphases on water resources and wildlife have created a need for additional laboratory space. Laboratory space for 3 NRME faculty is currently being renovated on the second floor of the Klinck building. These labs will provide excellent laboratory facilities for the Department. As of this review, only one of the three lab spaces has been completed, however. One lab is nearing completion, and the third is occupied by students, but has received only minimal renovation upgrades. Given the program emphases in water resources and wildlife, the Review Team encourages the completion of renovations as soon as reasonably possible. Because the least renovated lab belongs to a nontenured faculty member (with minority standing), we further urge the Department to apply reasonable efforts to move forward with those improvements. A fully equipped and operating lab would greatly assist that faculty member in building his program for eventual tenure review. Continued delays will eventually impact that faculty's research success.

While the Klinck building was expected to provide a wet-bench teaching capability, the lack of an elevator in that building—the necessary construction for this service, while adhering to historical-structure building guidelines, was prohibitively expensive—means that it is not universally accessible and cannot be used for teaching. It will be necessary

to convert or use other space for this purpose. Given the biochemical/biological nature of the Department's emphasis areas in teaching, such a facility is much needed.

Some renovations have also been completed recently in the Young building. Except for one high-tech classroom, few resources applied to these improvements have come from the university's UConn-2000 facilities fund. The Department is to be commended for its resourcefulness in obtaining funds elsewhere, and yet is encouraged to continue to pursue university-wide funds where possible to upgrade current facilities.

Experimental field research is an important part of graduate student work in this Department. As fieldwork must be conducted at some distance from the university and in remote locations, it is important that sufficient numbers and types of vehicles are available for graduate students and faculty. In some cases, those needs are not met and personal vehicles are sometimes used. This is not desirable for many reasons, not the least of which are insurance and liability concerns. The Review Team did not inquire of the Department during this review regarding formal motor pool policies/procedures, and current vehicle numbers. Nevertheless, the Team suggests that an examination of motor pool use by research staff in the Department would not be out of line. This could form the basis of a long-term motor pool plan by the Department.

An expressed, long-term plan for the College includes a "Sustainability" Building that would house Plant Sciences and NRME. The intense public interest regarding conservation and sustainable agriculture, forest, and urban systems in this state, and the Northeast in general, should drive and support the university's role in this important social issue. The Review Team feels that as a long-term goal, it should be pursued as aggressively as possible. Given the Department's close interaction with ERI, such a building might also provide the option of including space for ERI (they are currently located several miles off campus).

Hardware and software upgrades to student computer labs represent a substantial drain on Department resources annually. The alternative to not allocating these funds is antiquated Information Technology (IT) facilities that hinder the university mission. The Team recommends that the Department consider an IT services support model, which has been successful at other institutions. In this model, a services fund would be created to supply software/hardware upgrades to Department facilities, including LERIS and atmospheric sciences labs. Such a fund would be financed in small increments by each external grant proposal, wherein each proposal would be required to include a direct-cost line item for this service—calculated as a percent of the proposal's total direct costs.

Some relatively basic facilities needs are yet unmet for faculty and graduate student offices, e.g. A/C and separate desks for each graduate student.

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#### Summary Findings: Facilities

- The Shop facilities and staff support located in the Klinck building should continue to be supported by the Department.
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- The laboratory spaces being renovated on the second floor of the Klinck building should be completed as expeditiously as possible.
  - A wet-lab teaching facility is needed.
  - The Department has resourcefully funded some renovations, but should continue to pursue university-wide facilities funds, e.g. UConn-2000 and successor programs, as aggressively as possible.
  - A long-term motor-pool plan should be developed.
  - The “Sustainability” building envisioned by the College should be supported by Department efforts to muster broad-based support, both internal and external to the university.
  - The Department is encouraged to schedule a conference at the university’s new Nathan Hall Inn to increase Department and University notoriety.
  - Innovative measures are needed to ensure that computing facilities in the Department do not erode in quality and quantity. The Team has suggested a services-fund model, but other approaches might also be considered.
  - Efforts should be made to meet basic facilities needs for faculty and graduate students.
  - The Department is encouraged to advance the University Forest as an experimental laboratory in federal grant proposals.
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## Appendix B1: List of Publications by NRE faculty 2005-2013.

### Books (2)

- Bartok, J.W., Jr. 2008. Energy Conservation for Commercial Greenhouses NRAES-3). Natural Resource, Agriculture and Engineering Service. Cornell University. Translated into Japanese and published by Natural Institute for Rural Engineering, Tuskuba, Ibaraki 305-8609 Japan. 180 pages. June.
- Meyer, T. H. (2010) *Geometrical and Physical Geodesy: Foundations of Geomatics*. ESRI Press. 246 pp.

### Book Chapters (17)

- Angel, S., J. Parent, D.L. Civco, and A.M. Biel. 2011. Making Room for a Planet of Cities. Policy Focus Report, Lincoln Institute of Land Policy, Cambridge, MA. ISBN 978-55844-212-2. 72 p.
- Arroyo-Mora J.P., M. Kalacska, R.L. Chazdon, D.L. Civco, G. Obando-Vargas, and A.A. Sanchún Hernández. 2008. Assessing Recovery Following Selective Logging of Lowland Tropical Forests Based on Hyperspectral Imagery. Chapter 9 in *Hyperspectral Remote Sensing of Tropical and Sub-Tropical Forests*, M. Kalacska and G. Arturo Sanchez-Azofeifa (eds). [ISBN: 9781420053418], CRC Press, Boca Raton, FL. 352 p.
- Clausen, J. C. 2014. Water quality and monitoring. *Encyclopedia of Natural Resources* DOI: 10.1081/E-ENRW-120047558 Taylor & Francis.
- Clausen, J. C. and M. E. Dietz. 2014. Stormwater management. *Encyclopedia of Natural Resources* DOI: 10.1081/E-ENRW-120047552 Taylor & Francis.
- Fisher, W.L., M.A. Bozek, J.C. Vokoun, and R.B. Jacobson. 2012. Freshwater aquatic habitat measurements. Pages 101-161 in A.V. Zale, D.L. Parrish, and T.M. Sutton, editors. *Fisheries Techniques*, 3<sup>rd</sup> Edition. American Fisheries Society, Bethesda, Maryland.
- Gilmore, M.S., D.L. Civco, E.H. Wilson, N. Barrett, S. Prisloe, J.D. Hurd, and C. Chadwick. 2009. Remote sensing and in situ measurements for delineation and assessment of coastal marshes and their constituent species. Chapter 13 in *Remote Sensing of Coastal Environments* Y.Q. Wang (ed.). [ISBN: 9781420094411]. CRC Press, Boca Raton, FL. 504 p.
- Hurd, J.D., D.L. Civco, E.H. Wilson and C.L. Arnold. 2009. Coastal Area Land Cover Change Analysis for Connecticut. Chapter 17 in *Remote Sensing of Coastal Environments*, Y.Q. Wang (ed.). [ISBN: 9781420094411]. CRC Press, Boca Raton, FL. 504 p.
- Michel, U. and D.L. Civco (eds.) 2008. Remote Sensing for Environmental Monitoring, GIS Applications, and Geology VIII. Proceedings of SPIE Remote Sensing Europe, Cardiff, Wales. SPIE Volume 7110, Society of Photographic Instrumentation Engineers, Bellingham, WA. ISBN: 9780819473417.
- Peterman W.E. and Rittenhouse T.A.G.: Source-sink dynamics of wetlands. In: Finlayson M. (Ed.) *Encyclopedia of Wetlands: Structure and Function* (Vol. 1): SpringerReference ([www.springerreference.com](http://www.springerreference.com)). Springer-Verlag Berlin Heidelberg, 2013. DOI: 10.1007/SpringerReference\_327010
- Rittenhouse, C.D., S.R. Shifley, W.D. Dijak, Z. Fan, F.R. Thompson, III, J.J. Millspaugh, J.A. Perez, and C.M. Sandeno. 2011. Application of landscape and habitat suitability models to conservation: the Hoosier National Forest land-management plan. Pages 299 – 328 In C. Li, R. Laforzezza, and J. Chen, editors. *Landscape ecology in forest management and conservation: Challenges and solutions for global change*. Springer, USA.
- Rittenhouse T.A.G., and Peterman W.E.: Connectivity of wetlands. In: Finlayson M. (Ed.) *Encyclopedia of Wetlands: Structure and Function* (Vol. 1): SpringerReference ([www.springerreference.com](http://www.springerreference.com)). Springer-Verlag Berlin Heidelberg, 2013. DOI: 10.1007/SpringerReference\_327009
- Sklar, F.H. P. Balci, E. Cline, M. Cook, B. Cooper, C. Coronado, C. Edelstein, M. Ferree, C. Fitz, M.A. Furedi, B. Garrett, D. Gawlik, B. Gu, S. Hagerthey, M. Kobza, S. Miao, S. Newman, B. Orem, J. Palmer, K. Rutchey, E. Sindhoj, C. Thomas, J. Volin and N. Wang. 2007. *The Ecology of the*

- Everglades - Chapter 6. pp. 6.1-6.57. In: Redfield, G. (ed.) *The 2007 South Florida Environmental Report*. South Florida Water Management District, West Palm Beach, FL.
- Volin, J.C., J. Parent and L. Dreiss. 2013. Functional basis for geographical variation in growth among invasive species. In: Jose, S., Singh, H.P., Batish, D.R. and Kohli, R.K. (eds.) *Invasive Plant Ecology*, CRC Press, Taylor & Francis Group (ISBN13: 9781439881262).
- Wang Junming, April L. Hiscox, David R. Miller, Ted W. Sammis, Wenli Yang, and Britt A. Holmén 2009. A Note on the Measurement of Dust Emissions from Moving Source Agriculture Field Operations. NMSU Experiment Station Bulletin. Las Cruces NM.
- Wang, J., T.W. Sammis, and D.R., Miller. 2007. Eddy covariance measurements of crop water uses: the energy closure problem and potential solutions. pp1-7. *Agricultural Water Management Research Trends*. Nova Science Publishers, Inc. 400 Oser Avenue, Suite 1600. Hauppauge, NY 11788
- Warner G.S. , Garcia A.R., Scatena F.N. and Civco D.L.. 2002. "Watershed Characterization by GIS for Low Flow Prediction" in *GIS for Water Resources and Watershed Management*. Edited by John G. Lyon. Taylor and Francis Books, London.
- Zimmerman, C.L. and D.L. Civco. 2013. Impervious Surfaces and their Effects. In *Encyclopedia of Natural Resources*, Taylor & Francis, NY. (in press)

### Peer Reviewed Journal Articles

#### 2013 (37)

- Allen J.M., T. J. Leininger, J. D. Hurd Jr., D. L Civco, A. E. Gelfand, and J. A. Silander Jr. 2013. Socioeconomics drive woody invasive plants in New England through forest fragmentation. *Landscape Ecology* (in press)
- Awange J.L, Anyah, R.O., Agola, N.O, Forootan, E., and Omondi, P.O. 2013: Potential impacts of climate and environmental change on the stored water of Lake Victoria Basin and economic implications. *Water Resources Research* (accepted)
- Cassanelli, J., and Robbins, G.A., 2013, Road Salt Impact to Connecticut's Groundwater: A Statewide Centennial Perspective, *Journal of Environmental Quality*, *Journal of Environmental Quality*, v. 42, p.737-748.
- Chlebica, D., and Robbins, G.A., 2013, Altering Dissolved Oxygen to Determine Flow Conditions in Fractured Bedrock Wells, *Ground Water Monitoring and Remediation*, in press and published online (doi:10.1111/gwmmr.12019).
- Culbert, P.D., V.C. Radeloff, C.H. Flather, J.M. Kellndorfer, C.D. Rittenhouse, and A.M. Pidgeon. 2013. The influence of vertical and horizontal habitat structure on nationwide patterns of avian biodiversity. *The Auk*, in press.
- Dreiss, L.M. and J.C. Volin. 2013. Influence of leaf phenology and site nitrogen on invasive species establishment in temperate deciduous forest understories. *Forest Ecology and Management* 296:1-8.
- Ecker, Geoffrey, Meyer, Thomas, Auer, Carol (2013) Pollen longevity and dispersion models for switchgrass (*Panicum virgatum* L.). 53:1-8. *Crop Science*.
- Gilio Meina, E., Lister, A., Bosker, T., Munkittrick, K. R., MacLatchy, D. L. 2013. Effects of 17 $\alpha$ -ethinylestradiol (EE2) on reproductive endocrine status in mummichog (*Fundulus heteroclitus*) under differing salinity and temperature conditions. *Aquatic Toxicology*.134-135. 92-103.
- Glaser, P.H., B.C.S. Hansen, J.J. Donovan, T.J. Givnish, C.A. Stricker and J.C. Volin. 2013. Holocene dynamics of the Florida Everglades with respect to climate, dustfall and tropical storms. *Proceedings of the National Academy of Sciences* (in press).
- Jensen, T., and J.C. Vokoun. 2013. Using multistate occupancy estimation to model habitat use in difficult to sample watersheds: bridle shiner in a low-gradient swampy stream. *Canadian Journal of Fisheries and Aquatic Sciences*. 70:1429-1437. DOI: 10.1139/cjfas-2013-0011

- Kanno, Y., J.C. Vokoun, and B.H. Letcher. 2013. Paired stream-air temperature measurements reveal fine-scale thermal heterogeneity within headwater brook trout stream networks. *River Research and Applications* DOI: 10/1002/rra.2677.
- Kazi, F.A\*, Guiling, W., Silander, J., Adam, M. W., Jenica, M. A., Radley, H., Anyah, R.O., 2013: Statistical Downscaling and Bias Correction of Climate Model Outputs for Climate Change Impact Assessment in the U.S. Northeast. *Global and Planetary Change*, 100, 320-332
- Libby, J., and Robbins, G.A., 2013 An Unsteady State Tracer Method for Characterizing Fractures in Bedrock Well, Groundwater, status: in press and published online (doi 10.1111/gwat.12045)
- Lin J., R. Cromley, D. Civco, D. Hanink, and C. Zhang. 2013. Evaluating the Use of Publicly Available Remotely Sensed Land Cover Data for Areal Interpolation. *GIScience & Remote Sensing*. Published online: 14 Jun 2013. DOI:10.1080/15481603.2013.795304.
- Mehring A.S., R.R. Lowrance, A.M. Helton, C.M. Pringle, A. Thompson, D.D. Bosch, and G. Vellidis. 2013. Inter-annual drought length governs dissolved organic carbon dynamics in blackwater rivers of the western upper Suwannee River basin. *JGR-Biogeosciences*. DOI: 10.1002/2013JG002415
- Metcalf, M.J. and Robbins, G.A., 2013, Natural Buffering of Contaminants Related Development in Fractured Rock. *Groundwater Monitoring & Remediation*, accepted for publication.
- Metcalf M. and Robbins, G., 2013, Using Domestic Well Records to Determine Fractured Bedrock Watersheds and Recharge Rates, *Groundwater.*, accepted for publication.
- Metcalf, M. J. and Robbins, G.A., 2013, Evaluating Groundwater Sustainability for Fractured Crystalline Bedrock. *Water Science and Technology: Water Supply*, in press.
- Metcalf, M. J. and Robbins, G.A., 2013, Domestic Well Database Development and Integration into a GIS: An Approach for Managing Ground Water Resources. *Water Science and Technology: Water Supply*, v.13.5, p. 993-1006
- Meyer, Thomas. 2013. Root mean square error compared and contrasted to standard deviation (technical note). *Surveying and Land Information Science*. (in press)
- Meyer, T. H. and Pozdynakov, V. 2013. Checking GNSS-determined positions and baselines with EDM-observed distances. In *Survey Review*. (In press)
- Ortiz-Santaliestra, M.E., T.A.G. Rittenhouse, T.L. Cary, and W.H. Karasov. 2013. Interspecific and post-metamorphic variation in susceptibility of three North American anurans to *Batrachochytrium dendrobatidis*. *Journal of Herpetology*. 47: 286-292.
- Otieno, V.O\*, and Anyah, R.O., 2013: CMIP5 simulated climate conditions of the Greater Horn of Africa (GHA). Part II: Projected climate. *Climate Dynamics* (in press): DOI: 10.1007/s00382-013-1694-z
- Parent, J., M. Graziano, and X. Yang, 2013. The potential of using forest residue to offset coal use in co-fired coal power plants in the Eastern United States. *Front. Earth Sci.* 00: 000-000, (in press).
- Qu, L., J. Clausen, D. Civco and X. Yang, 2013. Remote sensing of suspended sediment concentration in river flow: A review. *Front. Earth Sci.* 00: 000-000, (in press)
- Peterman, W.E., T.A.G. Rittenhouse, J.E. Earl, and R.D. Semlitsch. 2013. Demographic network and multi-season occupancy modeling of *Rana sylvatica* reveal spatial and temporal patterns of population connectivity and persistence. *Landscape Ecology*. 28:
- Potter J.D., W.H. McDowell, A.M. Helton, and M.L. Daley. 2013. Incorporating urban infrastructure into biogeochemical assessment of urban tropical streams in Puerto Rico. *Biogeochemistry*. DOI 10.1007/s10533-013-9914-5
- Pozdynakov, Vladimir, Meyer, Thomas, Wang, Yu-Bo, Yan, Jun (2013) On Modeling Animal Movements Using Brownian Motion with Measurement Error. *Ecology*.
- Sammis, Theodore W., Manoj K. Shukla, John G. Mexal, Junming Wang, and David R. Miller. 2013. Pecan Research and Outreach in New Mexico: Logic Model Development and Change in Communication Paradigms. *Journal of Higher Education Outreach and Engagement*, Vol. 17(1):27-41.
- Starn, J.J., Bagtzoglou, A.C., and Robbins, G.A., 2013. Uncertainty in simulated groundwater quality trends in transient flow: *Hydrogeology Journal*, Volume 21, Issue 4, pp 813-827.



- Webb, V.A., Rudnicki, M., and Muppa, S.K. 2013. Analysis of tree sway and crown collisions for managed *Pinus resinosa* in southern Maine. *For. Ecol. Manage.* 302: 193-199.
- Witharana C., D.L. Civco, T.H. Meyer and T. Blaschke. 2014. Evaluation of Data Fusion and Image Segmentation in Earth Observation-based Rapid Mapping Workflows. *ISPRS Journal of Photogrammetry and Remote Sensing.* 87:1-18. (on-line 20 November 2013 at <http://www.sciencedirect.com/science/article/pii/S092427161300227X>)
- Witharana, C., D.L. Civco, and T.H. Meyer. 2013. Evaluation of pansharpening algorithms in support of earth observation based rapid-mapping workflows. *Applied Geography* 37(Feb):63-87.
- Witharana C., Daniel L. Civco, Thomas H. Meyer (2013) Evaluation of pansharpening algorithms in support of earth observation based rapid-mapping workflows. In *Applied Geography* 37, 63-87.
- Xue, Z., L. Qu and X. Yang, 2013. Spatial distribution and production potential of biofuel woody crops in the State of Connecticut. *Intl. Journal of Agric. and Biol. Engineering* 00: 000-000
- Yan, Jun; Chen, Yung-wei; Lawrence-Apfel, Kirstin; Ortega, Isaac; Pozdnyakov, Vladimir; Williams, Scott; Thomas Meyer. A Moving-Resting Process with an Embedded Brownian Motion for Animal Movements. *Population Ecology.* (in press) .

## 2012 (23)

- Angel, S., J. Parent, and D.L. Civco, and A.M. Biel. 2012. The fragmentation of urban landscapes: global evidence of a key attribute of the spatial structure of cities, 1990–2000. *Environment & Urbanization.* 24(1): 249-283.
- Chandra, K., Hogan, N., Bosker, T., Lister, A., MacLachy, D. L., Curry, S. 2012??. Sustained high temperature increases the vitellogenin response to 17 $\alpha$ -ethynylestradiol in mummichog (*Fundulus heteroclitus*). *Aquatic Toxicology* 118-119, 130-140.
- Culbert, P.D., V.C. Radeloff, V. St-Louis, C.H. Flather, C.D. Rittenhouse, T.P. Albright, and A.M. Pidgeon. 2012. Modeling broad-scale patterns of avian species richness across the Midwestern United States with measures of satellite image texture. *Remote Sensing of Environment* 118:140–150.
- Davis, J.P., E.T. Schultz, and J.C. Vokoun. 2012. Striped bass consumption of blueback herring during vernal riverine migrations: does relaxing harvest restrictions on a predator help conserve a prey species of concern? *Marine and Coastal Fisheries* 4:239-251.
- Gahagan, B.I., J.C. Vokoun, G.W. Whitley, and E.T. Schultz. 2012. Evaluation of otolith microchemistry for identifying natal origin of anadromous river herring in Connecticut. *Marine and Coastal Fisheries* 4:358-372.
- Giorgi, F., and Anyah, R.O., 2012: Evolution of regional climate modeling: The road towards RegCM4. *Clim Res.*, 52, 3-6
- Glaser, P.H., J.C. Volin, T.J. Givnish, B.C.S. Hansen and C.A. Stricker. 2012. Carbon and sediment accumulation in the Everglades (USA) during the past 4000 years: rates, drivers, and sources of error. *Journal of Geophysical Research Biogeosciences* Vol. 117, G03026, doi: 10.1029/2011JG001821, p. 1 -18. (in press online 7/14/12). Editors choice for Research Spotlight.
- Granucci, D.V., M. Rudnicki, A.L. Hiscox, Su, H.-B., and D.R. Miller (2012) Quantifying the effects of freezing on tree sway frequency. *Agricultural and Forest Meteorology.* 168 (2013) 10-14.
- Kanno, Y., J.C. Vokoun, K.E. Holsinger, and B.H. Letcher. 2012. Estimating size-specific brook trout abundance in continuously-sampled headwater streams using Bayesian mixed models with zero-inflation and overdispersion. *Ecology of Freshwater Fish* 21:239-251.
- Lawrence-Apfel Kirstin, Thomas H. Meyer, Kazi Arifuzzaman, Isaac M. Ortega. 2012. An accuracy assessment of global navigation satellite system wildlife-tracking collars in the southern Chilean Patagonia. *Anales del Instituto de la Patagonia (Chile).* 40(1):105-113
- Meiman, S. D.L. Civco, K. Holsinger and C. S. Elphick. 2012. Comparing Habitat Models Using Ground-Based and Remote Sensing Data: Saltmarsh Sparrow Presence Versus Nesting. *Wetlands* 32(4):725-736

- Miller, David. R., Lav R. Knot, April L. Hiscox, Masoud Salyani, Todd W. Walker, Muhammad Farooq. 2012, Effects of Atmospheric Conditions on Coverage of Insect Fogger Applications in a Desert Surface Boundary Layer. *Transactions of the ASABE Vol. 55(2): 351-361*
- Murphy, K.D. and Rudnicki, M. (2012) A Physics-Based Link Model for Tree Vibrations. *The American Journal of Botany* 99(12): 1918-1929.
- Omondi, P.A., Ogallo, L.A., Anyah, R.O., Muthama, J.N., and Ininda, J. 2012: Linkages between Global Sea Surface Temperatures and Decadal Rainfall Variability over Eastern Africa region. *Int. J. Climatol.* DOI: 10.1002/joc.3578
- Otieno, V.O\*, and Anyah,R.O., 2012: CMIP5 simulated climate conditions of the Greater Horn of Africa (GHA). Part I: contemporary climate. *Climate Dynamics*: DOI: 10.1007/s00382-012-1549-z
- Otieno, V.O\*, and Anyah, R.O., 2012: Observed and simulated influence of land use changes on the Greater Horn of Africa climate. Case study over Kenya. *Climate Research.*, 52,77-95
- Rittenhouse, C.D., A.M. Pidgeon, T.P. Albright, P.D. Culbert, M.K. Clayton, C.H. Flather, and V.C. Radeloff. 2012. Land-cover change and avian diversity in the conterminous United States. *Conservation Biology* 26:821–829.
- Rittenhouse, C.D., and A.R. Rissman. 2012. Forest cover, carbon sequestration, and wildlife habitat: policy review and modeling of tradeoffs among land use change scenarios. *Environmental Science & Policy* 21:94–105.
- Rittenhouse, T.A.G., D.M. MacFarland, K.J. Martin, T.R. VanDeelen. 2012. Downed wood associated with roundwood harvest, whole-tree harvest, and unharvested stands of aspen. *Forest Ecology and Management.* 266:239–245.
- Rollins, C. and Meyer, T. H. (2012) The Effect of Delta Epsilon on XYZ coordinates. *Survey Review*, 44(327) 282-284. DOI: 10.1179/1752270611Y.0000000029
- Shalaby, A.A., M.A. Wahab, Anyah, R.O. and A. Yousef: 2012: Non-hydrostatic Hybrid-Coordinate Modelling: Simulation of extreme weather event on 20-22 April 2005 in Cairo, Egypt, *Atmospheric Research*, 108, 74-85
- Starn, J.J, Bagtzoglou, A., and Robbins, G.A., 2012, Methods For Simulating Solute Breakthrough Curves in Pumping Groundwater Wells, *Computers & Geosciences* 48: 244-255
- Zhang, D., C. Zhang, R. Cromley, R. Travis, and D.L. Civco. 2012. An Object-Based Method for Contrail Detection in AVHRR Satellite Images. *GIScience & Remote Sensing* 49( 3):412–427. DOI 10.2747/1548-1603.49.3.412.

## 2011 (18)

- Albright, T.P., A.M. Pidgeon, C.D. Rittenhouse, M.K. Clayton, C.H. Flather, P.D. Culbert, and V.C. Radeloff. 2011. Heat waves measured with MODIS land surface temperature data predict changes in avian community structure. *Remote Sensing of Environment* 115:245–254.
- Ahrens, C., Chung, J., Meyer, Thomas, Auer, C. (2011) Bentgrass distribution surveys and habitat suitability maps support ecological risk assessment in cultural landscapes. In *Weed Science*, 59(2):145-154. DOI: 10.1614/WS-D-10-00094.1
- Angel, S., J. Parent, D.L. Civco, and A.M. Biel. 2011. The Dimensions of Global Urban Expansion: Estimates and Projections for All Countries, 2000-2050. *Progress in Planning* 75(2):53-108.
- Anyah R.O, and Weini Qiu\*\*, 2011: Characteristic 20th and 21st century precipitation and temperature patterns and changes over the Greater Horn of Africa. *Int. J. Climatol.*, 32(3), 347-363
- Aragon-Jose, A.T., and Robbins, G.A., 2011, Low-Flow Hydraulic Conductivity Tests at Wells that Cross the Water Table, *Ground Water*, V. 49, No. 2, p. 426–431.
- Bosker, T., Barrett, T. J., Munkittrick, K. R.. Response to Huebert et al. (2011) “Canada's environmental effects monitoring program: Areas for improvement”. *Integrated Environmental Assessment and Management* 8 (2), 381-382.
- Doyle, M. A., Bosker, T., Munkittrick, K. R. 2011. The potential use of Atlantic silverside (*M. menidia*) for monitoring estuarine pollution. *Journal of Environmental Management* 13, 3168-3177.

- Gregoire, B.G. and J.C. Clausen. 2011. Effects of a modular extensive green roof on stormwater runoff and water quality. *Ecological Engineering* 37:963-969.
- Jachowski, D.S., J.J. Millspaugh, D.E. Biggins, T.M. Livieri, M.R. Matchett, and C.D. Rittenhouse. 2011. Resource selection by black-footed ferrets in South Dakota and Montana. *Natural Areas Journal* 31:218–225.
- Kanno, Y., J.C. Vokoun, and B.H. Letcher. 2011. Fine-scale population structure and riverscape genetics of brook trout (*Salvelinus fontinalis*) distributed continuously along headwater channel networks. *Molecular Ecology* 20:3711-3729.
- Kanno, Y., J.C. Vokoun, and B.H. Letcher. 2011. Sibship reconstruction for inferring mating systems, dispersal and effective population size in headwater brook trout (*Salvelinus fontinalis*) populations. *Conservation Genetics* 12:619-628.
- Kasumba, J., B. Holmén, A. Hiscox, J. Wang, and D. Miller. 2011. Agricultural PM10 Emissions from Cotton Field Disking in Las Cruces, NM. *Atmospheric Environment*. *Atmospheric Environment* 45 (2011) 1668e1674. doi:10.1016/j.atmosenv.2011.01.004.
- Khot, Lav R., David R. Miller, April L. Hiscox, Masoud Salyani, Todd W. Walker, Muhammad Farooq. 2011. Lidar Extrapolation of Droplet Catch Measurements in Aerosol Application Treatments. *Atomization and Sprays* 21(2): 149-158.
- Larsen, L., N. Aumen, C. Bernhardt, V. Engel, T. Givnish, S. Hagerthey, J. Harvey, L. Leonard, P. McCormick, C. McVoy, G. Noe, M. Nungesser, K. Rutchey, F. Sklar, T. Troxler, J. Volin, D. Willard. 2011. Recent and historic drivers of landscape change in the Everglades ridge, slough, and tree island mosaic. *Critical Reviews in Environmental Science and Technology* 41:344-381.
- Li, X., Q. Gao, T. Lei, and X. Yang, 2011. Application of an integrative hydro-ecological model to study water resources management in the upper and middle parts of the Yellow River basin. *Front. Earth Sci. China* 5: 45-55
- Meyer, T. H. and Rollins, C (2011) The Direct and Indirect Problem for Loxodromes. In *NAVIGATION*, 58(1):1-6.
- Rittenhouse, T.A.G. 2011. Anuran larval habitat quality when reed canary grass is present in wetlands. *Journal of Herpetology*. 45: 491–496.
- Sammis T. W., J. Wang, and D. R. Miller. 2011. The Transition of the Blaney-Criddle formula to the Penman-Monteith equation in the Western United States. *Journal of Service Climatology*. 5 (1): 1-11.
- Yang, X. 2011. Bioenergy production from yellow grease: a status report. *Science and Technology Review* 29(30): 11-12.

## 2010 (19)

- Angel, S., J. Parent and D.L. Civco. 2010. Ten compactness properties of circles: measuring shape in geography. *Canadian Geographer* 54(4)(Winter):441-461.
- Burchsted, D., M.D. Daniels, R.M. Thorson, and J.C. Vokoun. 2010. The river discontinuum: applying beaver (*Castor canadensis*) modifications to baseline conditions for restoration of forested headwaters. *BioScience* 60:908-922.
- Dixon, C.J., and J.C. Vokoun. 2010. Population structure and diet of burbot (*Lota lota*) in small streams near the southern extent of the species' range. *Journal of Freshwater Ecology* 25:49-58.
- Hiller, B. J. and J. S. Barclay. 2010. Concentrations of heavy metals in American Woodcock Harvested in Connecticut. *Arch. Environ. Contam. Toxicol.* DOI 10.1007/s00244-010-9525-2.
- Hiscox, A. L., D. R. Miller, and C. J. Nappo (2010), Plume meander and dispersion in a stable boundary layer, *J. Geophys. Res.*, 115, D21105, doi:10.1029/2010JD014102.
- Kanno, Y., and J.C. Vokoun. 2010. Evaluating effects of water withdrawals and impoundments on fish assemblages in southern New England streams. *Fisheries Management and Ecology* 17:272-283.
- Kanno, Y., J.C. Vokoun, and M. Beauchene. 2010. Development of dual fish multi-metric indices of biological condition for streams with characteristic thermal gradients and low species richness. *Ecological Indicators* 10:565-571.

- Kilpatrick, H. J., A. M. LaBonte, and J. S. Barclay. 2010. Use of Bait to Increase Archery Deer Harvest in an Urban-Suburban Landscape. *Journal of Wildlife Management* 74(4):000-000. In Press.
- Li, Y., S. Dong, C. Wang, X. Deng, X. Li, Y. Luo and X. Yang, 2010. Impact of irrigation and other inputs on farm productivity in the upper and middle parts of the Yellow River basin, China. *Frontiers of Earth Science in China*: DOI 10.1007/s11707-010-0016-6
- Meyer Thomas H., Kazi Arifuzzaman, and Darek Massalski (2010) Assessing the accuracy of GEOID03 and GEOID09 in Connecticut. In *Surveying and Land Information Science*, vol. 70, no. 2, pp. 89-101.
- Nappo, C.J., A.L. Hiscox, D.R. Miller. 2010. A Note on Turbulence Stationarity and Wind Persistence Within the Stable Planetary Boundary Layer. *Boundary-Layer Meteorology*, 136(1), 165-174.
- Soti, P.G. and J.C. Volin. 2010. Does water hyacinth (*Eichhornia crassipes*) compensate for simulated defoliation? Implications for effective biocontrol. *Biological Control* 54:35-40.
- Sparling, D.W., B. A. Rattner, and J. S. Barclay. 2010. The Toll of Toxics: Investigating Environmental Contaminants. *The Wildlife Professional* 4(3):23-30. Invited.
- Starn, J.J., Bagtzoglou, A., and Robbins, G.A., 2010 Using Atmospheric Tracers to Reduce Uncertainty in Groundwater Recharge Areas, *Ground Water*, V. 48, No. 6, p.858–868
- Volin, J.C., E.L. Kruger, V.C. Volin, M.F. Tobin and K. Kitajima. 2010. Does release from natural enemies belowground explain the invasiveness of *Lygodium microphyllum*? A cross-continental comparison. *Plant Ecology* 208:223-234.
- Volin, J.C. 2010. *Gestalt of an invader*. *Current Conservation* 4:29-32.
- Wang, J. and X. Yang, 2010. Application of an atmospheric gene flow model for assessing environmental risks from transgenic corn crops. *International Journal of Agricultural and Biological Engineering* 3: 36-42.
- Wang, J. and X. Yang, 2010. An atmospheric gene flow model for assessing environmental risks from transgenic corn crops. *International Journal of Agricultural and Biological Engineering* 3: 18-30
- Zeweldi, D. A., M. Gebremichael, J. Wang, T. Sammis, J Kleissl, and D. R. Miller. 2010. Intercomparison of Sensible heat Flux from Large Aperture Scintillometer and Eddy Covariance methods: Field Experiment over a Homogeneous Semi-arid Region. *Boundary Layer Meteorology* 135:151-159.

## 2009 (22)

- Anyah, R.O., 2009: Simulated groundwater influence on extreme hydro-climatic conditions. Case study over Mid-Western United States. *International Association of Hydrological Sciences (IAHS) IAHS Publ.* 334, 94-100.
- Anyah, R.O., F.H.M Semazzi and J.H. Bowden, 2009: Horn of Africa Regional Climate Model Intercomparison Project (AFRMIP): *CLIVAR-Exchanges*, No. 48, 3-6
- Anyah, R.O., F. H. M. Semazzi and Lian Xie, 2009: Hydrodynamic characteristics of Lake Victoria based on idealized 3D Lake Model Simulations. *International Journal of Climatology*. Vol. 29, No. 7, 971-981.
- Bash, Jesse O. and David R. Miller. 2009. Growing Season Total Gaseous Mercury (TGM) flux Measurements Over an Acer Rubrum Forest. *Atmospheric Environment* 43(37): 5953-5961.
- Bedan, E. S. and J. C. Clausen. 2009. Stormwater runoff quality and quantity from traditional and low impact development watersheds. *J. Amer. Water Res. Assoc.* 45:998-1008.
- Chabaeva, A., D.L. Civco, and J.D. Hurd. 2009. An Assessment of Impervious Surface Estimation Techniques. *ASCE Journal of Hydrologic Engineering* 14(4):377-387.
- Dixon, C.J., and J.C. Vokoun. 2009. Burbot resource selection in small streams near the southern extent of the species range. *Ecology of Freshwater Fish* 18:234-246.
- Doren, R.F., J.C. Volin and J.H. Richards. 2009. Invasive exotic plant indicators for ecosystem restoration: an example from the Everglades restoration program. *Ecological Indicators* 9S:S29-S36.
- Doren, R.F., J.H. Richards and J.C. Volin. 2009. A conceptual ecological model to facilitate understanding the role of invasive species in large-scale ecosystem restoration. *Ecological Indicators* 9S:S150-S160.

- Dorn, N.J. and J.C. Volin. 2009. Resistance of crayfish (*Procambarus* spp.) populations to wetland drying depends on species and substrate. *Journal of the North American Benthological Society* 28:766-777.
- Ellis, D., and J.C. Vokoun. 2009. Earlier spring warming of coastal streams and implications for alewife migration timing. *North American Journal of Fisheries Management* 29:1584-1589.
- Gandiaga, S., J.C. Volin, E.L. Kruger and K. Kitajima. 2009. Effects of hydrology on the growth and physiology of an invasive exotic, *Lygodium microphyllum* (Old World climbing fern). *Weed Research* 49:283-290.
- Junming Wang, April L. Hiscox, David R. Miller, Thomas H. Meyer, and Ted W. Sammis (2009) A Comparison of Lagrangian Model Estimates to Light Detection and Ranging (LIDAR) Measurements of Dust Plumes from Field Tilling. In *J. Air & Waste Manage. Assoc.* 59:1370-1378.
- Kanno, Y., J.C. Vokoun, D.C. Dauwalter, R.M. Hughes, A.T. Herlihy, T.R. Maret, and T.M. Patton. 2009. Influence of rare species on electrofishing distance when estimating species richness of stream and river reaches. *Transactions of the American Fisheries Society* 138:1240-1251.
- Li, X., X. Yang, Q. Gao, Y. Li and S. Dong, 2009. Integrative assessment of hydrological, ecological and economic systems for water resources management at river basin scale. *Frontiers of Earth Science in China* 3: 198-207.
- Liu, Z., J.C. Volin, V.D. Owen, L.G. Pearlstine, J.R. Allen, F.J. Mazzotti, and A.L. Higer. 2009. Validation and ecosystem applications of the EDEN water-surface model for the Florida Everglades. *Ecohydrology* 2:182-194.
- Merwin, D., R. Cromley, and D. Civco. 2009. A neural network-based method for solving "nested hierarchy" areal interpolation problems. *Cartography and Geographic Information Science* 36(4):347-365.
- Potere, D., Schneider, A., Angel, S. and Civco, D.L. 2009. Mapping urban areas on a global scale: which of the eight maps now available is more accurate? *International Journal of Remote Sensing*, 30(24):6531-6558.
- Reason, C., R. Washington, R.O. Anyah, K. Stansfield, and VACS Panel, 2009: Variability of the African Climate System (VACS) Activity Report. *CLIVAR-Exchanges*, No. 49, Vol. 14(No.2/3) 15-16
- Robbins, G.A., Aragon-Jose, A., T., and Romero, A., 2009, Determining Hydraulic Conductivity Using Pumping Data from Low-Flow Sampling, *Ground Water*, V. 47, No. 2, p 271-276.
- Wang, J., T. W. Sammis, V. P. Gutschick, M. Gebremichael, D. R. Miller. 2009. Sensitivity Analysis of the Surface Energy Balance Algorithm for Land (SEBAL). *Transaction of ASABE*, 2009: 52(3):801-811.
- Webb V.A. and Rudnicki M. (2009) A Linear Analysis of the Interaction Between the Atmosphere and an Underlying Compliant Plant Canopy. *Boundary Layer Meteorology*. 133:93-111
- Wang, J. and X. Yang, 2009. Improved method for nondestructive measurement of dynamic pollen source strength from transgenic crops using sonic anemometer. *International Journal of Agricultural and Biological Engineering* 2: 33-39.

## 2008 (19)

- Anyah, R.O., C. Weaver, Y. Fan, Miguez-Macho Gonzalo, and A. Robock, 2008: Incorporating Water Table Dynamics in Climate Modeling, Part III: Simulated Groundwater Influence on Coupled Land-Atmosphere Variability. *J. Geophys. Res.*, 113, doi: 10.1029/2007JD009087.
- Bash, Jesse O., Patricia Bresnahan, and David R. Miller. 2008. Dynamic surface interface exchanges of mercury, a review and compartmentalized modeling framework. *Journal of Applied Meteorology and Climatology* 2007; 46: 1606-1618.
- Bash, Jesse O. and David R. Miller. 2008. A Relaxed Eddy Accumulation System for Measuring Surface Fluxes of Total Gaseous Mercury (TGM). *J Atmospheric and Oceanic Technology*. 25 (2): 244-257.
- Bash, Jesse O. and David R. Miller. 2008. A Note on High Gaseous Mercury Emissions from an Agriculture Field During Tilling. *Science of the Total Environment*. 38 (1): 379-388.

- Bourret, S.L., R.W. Tingley III, Y. Kanno, and J.C. Vokoun. 2008. Maximum daily consumption and specific daily metabolic demand of juvenile flathead catfish (*Pylodictis olivaris*). *Journal of Freshwater Ecology* 23:413-419.
- Bresnahan, P.A., and G.S. Warner. 2008. STELLA Model Documentation for *CTIWR Reservoir Model, Phase II*: Connecticut Institute of Water Resources, June 2008; Storrs, CT.
- Dietz, M., and J.C. Clausen. 2008. Stormwater runoff and export changes with development in a traditional and low impact subdivision. *Journal of Environmental Management*. 87:560-566.
- Gilmore, M.S., E.H. Wilson, D.L. Civco, S. Prisloe, J.D. Hurd, and C. Chadwick. 2008. Integrating multi-temporal spectral and structural information to map dominant tidal wetland vegetation in a lower Connecticut River marsh. Special Issue on Applications of Remote Sensing to Monitoring Freshwater and Estuarine Systems, *Remote Sensing of Environment* 112(11):4048-4060.
- Givnish, T.J., J.C. Volin, V.D. Owen, V.C. Volin, J.D. Muss and P.H. Glaser. 2008. Vegetation differentiation in the patterned landscape of the Central Everglades: importance of local and landscape drivers. *Global Ecology and Biogeography* 17:384-402.
- Hiscox, April L., David R. Miller, Britt A. Holmen, Wenli Yang, Junming Wang, 2008. Near field dust exposure from cotton field tilling and harvesting, *Journal of Environmental Quality* 37:551-556.
- Holmen, Britt A., David R. Miller, April L. Hiscox, Wenli Yang, Junming Wang, Theodore Sammis, Rick Bottoms, 2008. Near-source particulate emissions and plume dynamics from agricultural field operations, *Journal of Atmospheric Chemistry* 59(2): 117-134.
- Ireland, K.B., N.A. Haji Mohamad Noor, E.A.B. Aitken, S. Schmidt and J.C. Volin. 2008. First Report of *Glomerella cingulata* (*Colletotrichum gloeosporioides*) Causing Anthracnose and Tip Dieback of *Lygodium microphyllum* and *L. japonicum* in Australia. *Plant Disease* 92:1369.
- Jacobson, R.A., G. S. Warner, P. Parasiewicz, A.C. Bagtzoglou and F.L. Ogden. 2008. An Interdisciplinary Study of the Effects of Groundwater Extraction on Freshwater Fishes. *International Journal of Ecological Economics and Statistics. Vol. 12, (No.F08):7-25.*
- Kanno, Y., and J.C. Vokoun. 2008. Biogeography of stream fishes in Connecticut: defining faunal regions and assemblage types. *Northeastern Naturalist* 14:557-576.
- Nappo, C.J., A. L. Hiscox and D. R. Miller, 2008. Wave-Modified Flux and Plume Dispersion in the Stable Boundary Layer. *Boundary Layer Meteorology* 129:211-223.
- Rudnicki, Mark; Meyer, Thomas H; Lieffers, Victor J and Silins, Uldis (2008) The periodic motion of lodgepole pine trees as affected by collisions with neighbors. *Trees – Structure and Function*. Rudnicki, Mark and Meyer, Thomas H. (2007) Methods to convert local sampling coordinates into GIS/GPS-compatible coordinate systems. In *The Northern Journal of Applied Forestry*, vol. 24 no. 3, pp. 233-238.
- Rudnicki M., Meyer T.H., Silins U., Lieffers V.J., Webb V.A. (2008) The periodic motion of lodgepole pine trees as affected by collisions with neighbors. *Trees: Structure and Function*. 22: 475-482.
- Wang, J., A. L. Hiscox, D. R. Miller, T. H. Meyer, T. W. Sammis. 2008. A Dynamic Lagrangian, field-Scale Model of Dust Dispersion from Agriculture Tilling Operations. *Transactions American Society of Agricultural and Biological Engineers. Vol. 51(5): 1763-1774.*
- Williams, S. C., A. J. DeNicola, and I. M. Ortega. 2008. Behavioral responses of white-tailed deer subjected to lethal management. *Canadian Journal of Zoology* 86:1358-1366.

## 2007 (23)

- Anyah, R.O., and F. H. M. Semazzi, 2007: Variability of East African rainfall based on multi-year RegCM3 model simulations. *International Journal of Climatology*: 27, 357-371.
- Hiller, B., I. Sidor, S. De Guise and J. Barclay. 2007. Prevalence of *Sarcosystis* sp. in American Woodcock collected in Connecticut. *Journal of Wildlife Diseases* (In Press).
- Hood, M.J., Clausen, J.C, and Warner, G.S. 2007. Comparison of Stormwater Lag Times for Low Impact and Traditional Residential Development. *J. of the American Water Resources Assoc.* 43(4):1036-1046. DOI: 10.1111/j.1752-1688.2007.00085.x

- Kilpatrick, H. J., A. M. LaBonte and J. S. Barclay 2007. Acceptability of lethal and non-lethal deer management strategies: perspectives of bowhunters and homeowners in a suburban community. *Journal of Wildlife Management* 71(6): 2095-2101.
- Kilpatrick, H. J., A. M. LaBonte and J. S. Barclay 2007. Factors affecting hunter access in suburban areas: perspectives of landowners and bowhunters. *Journal of Wildlife Management* 71(6):2102-2105.
- Kilpatrick, H. J., A. M. LaBonte and J. S. Barclay 2007. Deer harvest opportunities and incentives for bowhunters in suburban areas. *Journal of Wildlife Management* (In Review).
- Li, X., Y. Luo, Q. Gao, S. Dong and X. Yang, 2007. Farm Production Growth in the Upper and Middle Parts of the Yellow River Basin, China, During 1980-1999. *Agricultural Sciences in China* 7: 344-355
- Luo, Y. Q. Gao and X. Yang, 2007. Dynamic modeling of chemical fate and transport in multimedia environment at watershed scale, Part II. Trichloroethylene test case. *Environmental Management* 83: 56-65.
- Luo, Y. Q. Gao and X. Yang, 2007. Dynamic modeling of chemical fate and transport in multimedia environment at watershed scale, Part I. Theoretical considerations and model implementation. *Environmental Management* 83: 44-55.
- Luo Y. and X. Yang, 2007. A multimedia environmental model of chemical distribution: fate, transport and uncertainty analysis. *Chemosphere* 66: 1396-1407
- Metcalf, M., and Robbins, G.A., 2007, Comparison of Water Quality Profiles from Shallow Monitoring Wells and Adjacent Multilevel Samplers, *Ground Water Monitoring Review and Remediation*, v. 27, no. 1, Winter 2007, p. 84-91.
- Meyer, T. H. (2007) Fast algorithms using minimal data structures for common topological relationships in large, irregularly-spaced topographic data sets. In *Computers & Geosciences*, vol. 33 no. 3, pp. 325-334. DOI: 10.1016/j.cageo.2006.07.002.
- Meyer, T. H. (2007) Fast algorithms using minimal data structures for common topological relationships in large, irregularly-spaced topographic data sets. In *Computers & Geosciences*, vol. 33 no. 3, pp. 325-334. DOI: 10.1016/j.cageo.2006.07.002.
- Nadim, F., A.C. Bagtzoglou, G.E. Hoag, F.L. Ogden, G.S. Warner and David M. Soballe. 2007. Application of a Steady-State Nutrient Model and Inferences for Load Reduction Strategy in Two Public Water Supply Reservoirs in Eastern Connecticut. *Lake and Reservoir Management* 23:264-278.
- Nadim, F., G.E. Hoag, F.L. Ogden, G.S. Warner, and A.C. Bagtzoglou, 2007, "Water Quality Characteristics of Two Reservoir Lakes in Eastern Connecticut, USA", *Lakes & Reservoirs: Research and Management* 12:187-202. DOI 10.1111/j.1440-1770.2007.00329.x
- Nadim, F., A.C. Bagtzoglou, S.A. Baun, G.S. Warner, F.L. Ogden, Piotr Parasiewicz and Richard Jacobson. 2007. Management of Adverse Impacts of a Public Water Supply Well-Field on the Aquatic Habitat of a Stratified Drift Stream in Eastern Connecticut. *Water Environment Research*, 79(1):43-56. DOI: 10.2175/106143006X136801.
- Rudnicki M. and Meyer T. (2007) Methods to convert local sampling coordinates into geographic information system/global positioning systems (GIS/GPS)-compatible coordinate systems. *Northern Journal of Applied Forestry*. 24(3): 233-238.
- Simmons, Luke J., Junming Wang, Ted W. Sammis, David R. Miller. 2007. An evaluation of two inexpensive energy-balance techniques for measuring water use in flood-irrigated pecans (*Carya illinoensis*). *Agriculture Water Management* 88:181-191.
- Tranes, M. D., Meyer, T. H. and Massalski, D. (2007) Comparisons of GPS-Derived Orthometric Heights Using Local Geometric Geoid Models. In *Journal of Surveying Engineering*, vol. 133 no. 1, pp. 6-13.
- Tranes, M. D., Meyer, T. H. and Massalski, D. (2007) Comparisons of GPS-Derived Orthometric Heights Using Local Geometric Geoid Models. In *Journal of Surveying Engineering*, vol. 133 no. 1, pp. 6-13.



- Wang, Junming , Ted W. Sammis , Allan A. Andales , Luke J. Simmons , Vincent P. Gutschick, David R. Miller. 2007. Crop coefficients of open-canopy pecan orchards. *Agriculture Water Management* 88: 253-262.
- Wang , Junming, David R. Miller , Ted W. Sammis , Vince P. Gutschick , Luke J. Simmons , and Allan A. Andales 2007. Energy Balance Measurements and a Simple Model for Estimating Pecan Water Use Efficiency. *Agriculture Water Management*. (In Press).
- Yang, Jiansheng, Yeqiao Wang , David R. Miller. 2007. Estimating Air Temperature Profiles in Forest Canopy Using Empirical Models and Landsat Data. *Forest Science* 53(1): 93-99.

## 2006 (25)

- Andales, A., J. Wang, T.W. Sammis, J.G. Mexal, L.J. Simmons, D.R. Miller, and V.P. Gutschick. 2006. A model of pecan tree growth for the management of pruning and irrigation. *Agricultural Water Management* Volume 84, Issues 1-2 , Pages 77-88.
- Anyah, R.O., and F. H. M. Semazzi, 2006: NCAR-AGCM ensemble simulations of the variability of the Greater Horn of Africa climate, *Theoretical and Applied Climatology*, 86, 39-62.
- Anyah, R.O., F. H. M. Semazzi and Lian Xie, 2006: Simulated physical mechanisms associated with multi-scale climate variability over Lake Victoria Basin in East Africa, *Monthly Weather Review*: 134, 3588-3609.
- Bash, J., P.A. Bresnahan and D.R. Miller. 2006. "A Conceptual Compartmentalized Dynamic Surface Interface Model for Atmosphere-Surface Exchanges of Mercury" *Journal of Applied Meteorology and Climatology*. JAMC-1425, RSZ-613.
- Clausen, J. C., I.M. Ortega, C.M. Glaude, R.A. Relyea, G. Garay, and O. Guineo. 2006. Classification of wetlands in a Patagonian national park, Chile. *Wetlands*. 26: 217-229.
- Dietz, M.E. and J. C. Clausen. 2006. Saturation to improve pollutant retention in a rain garden. *Environ. Sci. & Technol.* 40:1335-1340.
- Fall S., F. H. M. Semazzi, D. Niyogi, R. Anyah, and J. H. Bowden, 2006: Spatiotemporal climate variability over Senegal and its relationships with global climate, *International Journal of Climatology*: 26, 2057-2076.
- Gilbert, J.K. and J.C. Clausen. 2006. Stormwater runoff quality and quantity from asphalt, paver, and crushed stone driveways in Connecticut. *Water Research*. 40:826-832.
- Hiscox, April L., David R. Miller, Carmen J. Nappo, James Ross. 2006. Dispersion of Fine Spray From Aerial Applications in Stable Atmospheric Conditions. *Transactions of the ASABE* 49(5):1513-1520.
- Hiscox, April, Carmen J. Nappo, David R. Miller. 2006. Measuring nocturnal plume model dispersion parameters with Lidar. *Journal of Atmospheric and Oceanic Technology*. 23(8): 1150-1154.
- Hood, M.J., J.C. Clausen, G.S. Warner, and Bent C. Braskerud. 2006. Redusert Avrenning Fra Urbane Felt et Eksempel pa Lokal Overvannshandtering. *Vatten* 62:000-000. Lund 2006.
- Hood, M.J., J.C. Clausen, G.S. Warner, and Bent C. Braskerud. 2006. Forsinket afstromning fra urbane oplande. *Dansk Vann* (3): 154-157.
- Hood, M. J., J. C. Clausen, and G.S. Warner. 2006. Low impact development works! J. *Soil & Water Conservation Society*. 60(5):115A-117A.
- Hood, M. J., J. C. Clausen, B. C. Braskerud, and G. S. Warner. 2006. Forsinket avrenning fra urbane felt. Et. Eksempel pa local overvannshandtering. *Vann* (10:32-40).
- Jeffress, Gary and Meyer, Thomas (2006) Two Perspectives on GIS/LIS education in the United States. In *Surveying and Land Information Science*, vol. 66 no. 2, pp. 123-126.
- Jeffress, Gary and Meyer, Thomas (2006) Two Perspectives on GIS/LIS education in the United States. In *Surveying and Land Information Science*, vol. 66 no. 2, pp. 123-126.
- Kruger, E.L. and J.C. Volin. 2006. Reexamining the empirical relation between plant growth and leaf photosynthesis. *Functional Plant Biology* 33:421-429.
- Meng S.X , Loeffers V.J., Reid D.E.B., Rudnicki M., Silins U., Jin M. (2006) Reducing stem bending increases the height growth of tall pines. *Journal of Experimental Botany*. 57(12):3175-3182; doi:10.1093/jxb/erl079



- Meng S.X., Rudnicki M., Lieffers V.J., Reid D.E.B. and Silins U. (2006) Preventing crown collisions increases the crown cover and leaf area of maturing lodgepole pine. *Journal of Ecology*. 94(3): 681-686 doi: 10.1111/j.1365-2745.2006.01121.
- Meyer, T. H., Roman, Daniel, and Zilkoski, David B (2006) What does *height* really mean? Part IV: GPS Orthometric Heighting. In *Surveying and Land Information Science*, vol. 66 no. 3, pp. 165-183.
- Meyer, T. H., Roman, Daniel, and Zilkoski, David B (2006) What does *height* really mean? Part III: Height Systems. In *Surveying and Land Information Science* vol. 66, no. 2, pp. 149-160.
- Rudnicki M. and Burns D.P. (2006) Branch sway period of 4 tree species using 3-D motion tracking. Proceedings of the Fifth Plant Biomechanics Conference, STFI- Packforsk, Stockholm, Sweden 25-30.
- Vokoun, J.C., and C.F. Rabeni. 2006. Summer diel activity and movement paths of flathead catfish (*Pylodictis olivaris*) in two Missouri streams. *American Midland Naturalist* 155:113-122.
- Wang, J., Miller, David. R., Ted W. Sammis, Luke J. Simmons, and Vincent P. Gutschick. 2006. Sensitivity analysis of remote sensing evapotranspiration algorithm: energy balance for land. *Remote sensing of environment*. (In press).
- Wang, J., X. Yang, Y. Li and P. Elliot, 2006. Pollination competition effects on gene-flow estimation: using regular versus male-sterile plants. *Agronomy Journal* 98: 1060-1064.
- Warner.G.S. 2006. SedTrap: A Conceptual Model for Trap Efficiencies in a Sedimentation Basin. *Water, Air and Soil Pollution: Advances in Remediation Technology* DOI: 10.1007/s11267-005-9012-3.

## 2005 (9)

- Dietz, M.E. and J. C. Clausen. 2005. A field evaluation of rain garden flow and pollutant treatment. *Water, Air and Soil Pollution*. 167:123-138.
- Erickson, J.E., J.L. Cisar, G.H. Snyder and J.C. Volin. 2005. Phosphorus and potassium leaching under contrasting residential landscape models established on a sandy soil. *Crop Science* 45:546-552.
- Hood. M.J., J.C. Clausen and G.S. Warner. 2005. Low Impact Development Works ! *J. of Soil and Water Conservation*. Vol. 60(5): 115-117.
- Kilpatrick, H, A. LaBonte and J. Barclay. 2005. Factors affecting harvest-reporting rates for white-tailed deer. *Wildlife Society Bulletin* 33(3):974-980.
- Meyer, T. H., Roman, Daniel, and Zilkoski, David B (2005) What does *height* really mean? Part I: Introduction. In *Surveying and Land Information Science*, vol. 64, no. 4, pp. 223-234.
- Meyer, T. H., Roman, Daniel, and Zilkoski, David B (2005) What does *height* really mean? Part II: Physics and Gravity. In *Surveying and Land Information Science* vol. 65, no. 1, pp. 5-15.
- Meyer T.H. and Hiscox, A. (2005) Position Errors Caused by GPS Height of Instrument Blunders. In *Survey Review* vol. 38, no. 296, pp. 262-273.
- Ruiz, J., Fandino, M. C., Meyer, T. H. and I. M. Ortega. 2005. Cambio de la cobertura del bosque seco tropical en la Isla de Providencia, Departamento de San Andrés, Colombia. *Revista de Investigación, Universidad de La Salle* 5:141-152.
- Song, M., D.L. Civco, and J.D. Hurd. 2005. A Competitive Pixel-object Approach for Land Cover Classification. *International Journal of Remote Sensing* 26(22):4981-4997.

## Technical Reports (32)

- Austin, J., M. Anteau, J. Barclay, G. Boomer, F. Rowher, and S. Slattery. 2006. Declining scaup populations: Reassessment of the Issues, Hypotheses, and Research Directions. Consensus report from the Second Scaup Workshop, 17-19 January 2006, Bismarck, ND. (*Edited by Diving Duck Committees in each of four Flyways and in state, Federal, and Provincial Waterfowl Management Agencies, plus the Research Office of Ducks Unlimited.*)
- Barclay, J. 2006. Migration habitats. Greater Scaup and Lesser Scaup. In M. Anderson, J. Austin, A. Afton, J. Barclay, R. Clark, M. Koneff, and S. Slattery. Prospectus for a Scaup Action Group.
- Bresnahan, P.A.. 2008. Final Report for Project entitled: "Data Needs for Water Allocation Planning", submitted to Connecticut Department of Environmental Protection, June 30, 2008.

- Bresnahan, P.A., and G.S. Warner. 2008. Final Report: Modeling the Effects of Reservoir Release Practices on Downstream Flows, Phase 2: Impact of Release Rules on Yield and Streamflow Metrics. Connecticut Institute of Water Resources, July 18, 2008; Storrs, CT.
- Handler, S., M.J. Duveneck, L. Iverson, E. Peters, R. Scheller, K. Wythers, L. Brandt, P. Butler, M. Janowiak, C. Swanston, A. Clark-Eagle, J. G. Cohen, R. Corner, P. B. Reich, T. Baker, S. Chhin, E. Clark, D. Fehring, J. Fosgitt, J. Gries, K. Hall, C. Hall, R. Heyd, C. L. Hoving, I. Ibanez, D. Kuhr, S. Matthews, J. Muladore, K. Nadelhoffer, D. Neumann, M. Peters, A. Prasad, M. Sands, R. Swaty, L. Wonch, J. Daley, M. Davenport, M. R. Emery, G. Johnson, L. Johnson, D. Neitzel, A. Rissman, C. Rittenhouse, R. Ziel. XXXX. Michigan Forest Ecosystem Vulnerability Assessment and Synthesis: A report from the Northwoods Climate Change Response Framework. *General Technical Report NRS-XX*. Newtown Square, PA; U.S. Department of Agriculture, Forest Service, Northern Research Station. XXX p. *In press*.
- Handler, S., M. Duveneck, L. Iverson, E. Peters, R. Scheller, K. Wythers, L. Brandt, P. Butler, M. Janowiak, C. Swanston, R. Kolka, C. McQuiston, B. Palik, C. Turner, M. White, C. Adams, K. Barrett, A. D'Amato, S. Hagell, R. Johnson, P. Johnson, M. Larson, S. Matthews, R. Montgomery, S. Olsen, M. Peters, A. Prasad, J. Rajala, P. Reich, P.D. Shannon, J. Daley, M. Davenport, M. Emery, D. Fehring, C. Hoving, G. Johnson, L. Johnson, D. Neitzel, A. Rissman, C. Rittenhouse, and R. Ziel. 2013. Minnesota Forest Ecosystem Vulnerability Assessment and Synthesis: A report from the Northwoods Climate Change Response Framework. *General Technical Report NRS-XX*. Newtown Square, PA; U.S. Department of Agriculture, Forest Service, Northern Research Station. XXX p. *In press*.
- Hiller, B. and J. Barclay. 2006. Quaker Valley Farm Ruffed Grouse Restoration Project. Interim Progress Report. October. 15 pp.
- Hiller, B. and J. Barclay. 2007. Quaker Valley Farm Ruffed Grouse Restoration Project. Interim Progress Report. Phase II. May. 10pp.
- Hiller, B. and J. Barclay. 2007. Quaker Valley Farm Ruffed Grouse Restoration Project. Interim Progress Report. Phase III. May. 10pp.
- Huang, M. and J. Barclay. 2007. Assessing human attitudes and influences towards resident Canada goose nuisance issues in Connecticut. Final Report to the Northeast Wildlife Damage Management Cooperative, Cornell U., Ithaca, NY. 25p.
- Kram, M., Robbins, G.A., Chau, J., Bagtzoglou, A., Eng, D., and Jones, N., 2008, Detailed Hydraulic Assessment Using a High-Resolution Piezocone Coupled to the Geovis ESTCP Project: Cu-0421; Technical Report Tr-2291-Env, Naval Facilities Engineering Service Center.
- Labonte, A. and J. Barclay. 2010. Homeowner and Hunter Opinions about Moose (*Alces alces*) in Connecticut. Annual Progress Report to Northeast Wildlife Damage Cooperative, Ithaca, NY, USA.
- Labonte, A., H. Kilpatrick, J. Barclay. 2009. Moose in Connecticut: Movements, Landscape use, Survival, Impacts on the Ecosystem, and Public Perceptions. To: Northeast Wildlife Damage Management Cooperative Program, Ithaca, NY. Quarterly Progress Report. 7 pp.
- Meyer, T. 2008. Creating Useful Products From Connecticut's 2000 LIDAR Data Set. Joint Highway Research Advisory Council, Technical Report JHR 08-314 Project 07-2. Connecticut Advanced Pavement Laboratory, Technical Report
- Meyer, T.H., Metcalf, M. J., Robbins, G.A., and Thomas, M. A., 2008, *Bedrock Elevation Confidence Isoleths, Coventry Quadrangle*, Connecticut, GIS Map, Pub. by Conn. Department of Environmental Protection.
- Meyer, T.H., Metcalf, M. J., Robbins, G.A., and Thomas, M. A., 2008, *Depth to Bedrock, Coventry Quadrangle*, GIS Map, Pub. by Conn. Department of Environmental Protection.
- Meyer, T.H., Metcalf, M. J., Robbins, G.A., and Thomas, M. A., 2008, *Bedrock Surface Elevation, Coventry Quadrangle, Connecticut* GIS Map, Pub by Conn. Department of Environmental Protection.

- Payne, D.W., A.C. Bagtzoglou, G. S. Warner and L. Liu. 2013. Management Alternatives to Reduce Pumping Effects in the Fenton River During Low Stream Flow. Final Project Report submitted to Architectural and Engineering Services, The University of Connecticut. April, 2013.
- Rittenhouse, C.D., E.A. Padley, K.J. Martin, and A.R. Rissman. 2012. Past and potential future land cover change around Wisconsin's State Forests. *Research Report 193*. Wisconsin Department of Natural Resources, Madison, WI.
- Robbins, G.A., Aragon-Jose, A., and M. Metcalf, 2009, Agricultural Farm Ground Water Study, pub U. Connecticut, April, 65 p.
- Stella, J.M. and Warner, G.S. 2005. Low Flow Discharge Measurements using an Acoustic Doppler Current Profiler. Paper # 05-021. Northeast Agricultural and Biological Engineering Conference. Lewis, DE, August 7-10, 2005.
- Volin, J.C., Z. Liu, A. Higer, F. Mazzotti, D. Owen, J. Allen and L. Pearlstine. 2008. Validation of a spatially continuous EDEN water-surface model for the Everglades, Florida.  
[http://digitalcommons.uconn.edu/nrme\\_articles/8](http://digitalcommons.uconn.edu/nrme_articles/8)
- Volin, J.C. 2008. System-wide Indicators for Everglades Restoration 2008 Assessment. In Doren, R.F., J.C. Trexler, M. Harwell, G.R. Best, Editors, 2008. Unpublished Technical Report. 39 pp.
- Warner, G.S., F.L. Ogden, A.C. Bagtzoglou, and P. Parasiewicz. 2006. "Long-Term Impact Analysis of the University of Connecticut's Fenton River Water Supply Wells on the Habitat of the Fenton River". Final Report to The University of Connecticut, March 7, 2006. Published as Special Report # 39 by the Connecticut Institute of Water Resources, Storrs, CT.
- Warner, G.S. 2005. Groundwater-Surface Water Interactions in the Fenton River, Storrs, Connecticut. Paper # 05-022. Northeast Agricultural and Biological Engineering Conference. Lewis, DE, August 7-10, 2005.
- Warner, G.S. and A.C. Bagtzoglou. 2013. Development of a rating curve for the Fenton River at Gurleyville, Road, Mansfield, CT. Project Report submitted to Architectural and Engineering Services, The University of Connecticut. September, 2013.
- Warner, G.S., F.L. Ogden, A.C. Bagtzoglou, and P. Parasiewicz. 2006. "Long-Term Impact Analysis of the University of Connecticut's Fenton River Water Supply Wells on the Habitat of the Fenton River". Final Report to The University of Connecticut, March 7, 2006.
- Warner, G.S. 2005. "Runoff Processes in Connecticut Landscapes". *THE HABITAT*, Connecticut Assoc. of Conservation and Inland Wetland Commissions. Volume XVII, No. 1, Winter 2005.
- Warner, G.S. and P.A. Bresnahan. 2007. Final Report for Project entitled: "Modeling Flows Downstream of Reservoirs" submitted to Connecticut Department of Environmental Protection, April 6, 2006.
- Yang, X. 2007. GIM3 - A visual and interactive contaminant transport model for regulatory and educational applications. Technical report to CTWRI. 82pp
- Yang, X. 2006. Development and application of a multimedia transport model in studying chemical cycling in the air- and watersheds of the Connecticut River basin. Final report to the Connecticut River Airshed-Watershed Consortium. 31pp
- Zinke, Scott; Mahoney, James; Meyer, Thomas H. 2008. Evaluating the Long-Term Performance of Pavements Thermally Imaged During Construction. Phase 1: Developing Spatial Tools for Location Identification.

### **Extension Publications**

- Bartok, J.W., Jr. 2008. Metal buildings make good storage additions. *GMPro*. 28:5. pg 48-49. May.
- Bartok, J.W., Jr. 2008. Sizing the Greenhouse Water System. *GMPro*. 28:6. pgs 78-79. June.
- Bartok, J.W., Jr. 2008. Be Prepared with Standby Power Equipment. *GMPro*. 28:7. pgs 90-91. July.
- Bartok, J.W., Jr. 2008. Upgrade Your Heating System Now. *GMPro*. 28:8. pgs 66-67. August.
- Bartok, J.W., Jr. 2008. Plan Before Your Build a Greenhouse. *GMPro*. 28:9. pgs 54-56. September.
- Bartok, J.W., Jr. 2008. Geothermal Heat for Greenhouses. *Floral Notes Newsletter*. UMass Extension. 21:2. pg 1-3. September-October.

- Bartok, J.W.,Jr. 2008. Federal & Connecticut Incentives for Greenhouse Conservation and Renewable Energy. Plugged-In. Connecticut Greenhouse Growers Association. Issue 4. pg 5. December.
- Bartok, J.W.,Jr. 2008. Upgrade Your Environmental Control Sensors Before Winter. GMPro. 28:10. pg 76-77. Oct.
- Bartok, J.W.,Jr. 2008. Reduce Fuel Costs with Screens. GMPro 28:11. pgs 40-41. November.
- Bartok, J.W.,Jr. 2008. Greenhouse Energy Conservation Checklist. The Plantsman. New Hampshire Plant Growers Association. Pg 7-9. October-November.
- Bartok, J.W.,Jr. 2008. Save Heat with Infrared Film. GMPro. 28:12. pg 36-37. December.
- Bartok, J.W.,Jr. 2008. Heating with Bioheat and Waste Oil. The Mayflower & Floral Notes. Vol. 21:3. pg 7-8. December.
- Bartok, J.W.,Jr. 2008. Plan Before You Build a Greenhouse. The Cut Flower Quartler. 20:4. pg 28-29. Fall.
- Bartok, J.W.,Jr. 2009. Avoid Ethanol Problems with Small Gas Engines. Greenhouse Management & Production. 29:1. pg 47-49. January.
- Bartok, J.W.,Jr. 2009. Maintenance is a Necessary Part of Mechanization. Greenhouse Management & Production. 29:2. pg 46-47. February.
- Bartok, J.W.,Jr. 2009. Root Zone Heat: Installation techniques. UMass Floral Notes Newsletter. 21:4. pg 1-3. January-February.
- Bartok, J.W.,Jr. 2009. Improve Your Irrigation Practices, System. Greenhouse Management & Production. 29:3. pg 36-37. March.
- Bartok, J.W.,Jr. 2009. Water: A Limited Factor to Expansion. UMass Floral Notes Newsletter. 21:5. pg 4-5. March-April.
- Bartok, J.W.,Jr. 2009. Belt Conveyors are a Great Labor Saver. Greenhouse Management & Production. 29:5. pg 34-35. April.
- Bartok, J.W.,Jr. 2009. Belt Conveyors are a Great Labor Saver. Greenhouse Management & Production. 29:4. pgs. 34-35. April
- Bartok, J.W., Jr. 2009. Wind Could be an Economical Source of Renewable Energy. Greenhouse Management & Production. 29:5. pgs 36-37. May
- Bartok, J.W., Jr. 2009. Summer Cooling. Greenhouse Management & Production. 29:6. pgs 34-35. June
- Bartok, J.W.,Jr. 2009. A Refrigerated Cooler can Extend Plant Life, Quality. Greenhouse Management & Production. 29:7. pgs 40-44. July
- Bartok, J.W.,Jr. 2009. Greenhouse Heat Storage Can Save on Energy Costs. Greenhouse Management & Production. 29:8. pgs 40-41. August
- Bartok, J.W., Jr. 2009. Save Fuel & Electricity with Energy/Shade Screens. Greenhouse Management & Production. 29:9. pgs 38-39. September
- Bartok, J.W.,Jr. 2009. Selecting an Energy/Shade Screen System. Floral Notes Newsletter. UMass Extension. 22:2. pgs 6-8. October
- Bartok, J.W.,Jr. 2009. Checking Heating System Efficiency. Greenhouse Management & Production. 29:10. pg 30-31. October
- Bartok, J.W.,Jr. 2009. Mechanization & Materials Handling Basics. Greenhouse Management & Production. 29:11. pgs 26-27. November
- Bartok, J.W.,Jr. 2009. Upgrading the Greenhouse Water System. Greenhouse Management & Production. 29:12. pg 30-31. December
- Bartok, J.W.,Jr. 2009. Upgrade your Environment Control Equipment. The Mayflower & Floral Notes. Vol. 22:3. pg 7-8. November/December
- Bartok, J.W.,Jr. 2010. Leasing Greenhouse Space. Greenhouse Management & Production. 30:1. pg 30-31. January
- Bartok, J.W., Jr. 2010. Rain Harvesting. The Mayflower & Floral Notes. UMass Extension. Pgs 7-8. February
- Bartok, J.W.,Jr. 2010. Environment Control Sensors Provide Critical Data. Greenhouse Management & Production. 30:2. pg 37-38. February

- Bartok, J.W., Jr. 2010. Consider Surface Water as an Alternate Source for Irrigation. *Greenhouse Management & Production*. 30:3. pg 30-31. March
- Bartok, J.W., Jr. 2010. How to Reduce Ventilation Energy. *Greenhouse Management & Production*. 30:5. pg 30-31. April.
- Bartok, J.W., Jr. 2010. How to Reduce Ventilation Energy. *Greenhouse Management & Production*. 30:4. pg 30-31. April.
- Bartok, J.W., Jr. 2010. Choose the right plastic film for your needs. *Greenhouse Management & Production*. 30:5. pg 30-31. May
- Bartok, J.W., Jr. 2010. Should you upgrade or replace your greenhouse facility/ *Greenhouse Management & Production*. 30:6. pg 33-34. June.
- Bartok, J.W., Jr. 2010. A Few Pointers For Better Irrigation. *Floral Notes Newsletter – UMass Extension*. 22:6. pg 4-5. May-June.
- Bartok, J.W., Jr. 2010. Reduce storm damage to your greenhouse. *Greenhouse Management & Production*. 30:7. pg 73-74. July.
- Bartok, J.W., Jr. 2010. Lower heating costs with under bench heat. *Greenhouse Management & Production*. 30:8. pg 35-36. August.
- Bartok, J.W., Jr. 2010. Handling stormwater and wastewater management. *Greenhouse Management & Production*. 30:9. pg 36-38. September.
- Bartok, J.W., Jr. 2010. Pipe insulation is an inexpensive energy saving measure. *Greenhouse Management & Production*. 30:10. pg 58-59. October.
- Bartok, J.W., Jr. 2010. Is it time to replace your mechanical thermostat. *Greenhouse Production & Management*. 30:11. pg 46-47. November.
- Bartok, J.W., Jr. 2010. Does your pesticide storage need upgrading? *Greenhouse Management & Production*. 30:12. pg 39-40. December.
- Bartok, J.W., Jr. 2010. Storing Heat for Greenhouses. *Plugged-In – Connecticut Greenhouse Growers Association*. Issue 6. pg 3-7. December.
- Bartok, J.W., Jr. 2011. What kind of options are available to mechanize container filling. *Greenhouse Management & Production*. 31:1. pg 84-85. January.
- Bartok, J.W., Jr. 2011. What can I do to make sure my plugs get off to the best start possible? *Greenhouse Management & Production*. 31:2. pg 65-66. February.
- Bartok, J.W., Jr. 2011. What are my options for propagation fog? *Greenhouse Management & Production*. 31:3. pg 64-65. March.
- Bartok, J.W., Jr. 2011. What are my options for cooling a greenhouse. *Greenhouse Management & Production*. 31:4. pg 69-70. April.
- Bartok, J.W., Jr. 2011. Reducing Storm Damage to Your Greenhouse. *Plugged-In – Connecticut Greenhouse Growers Association*. Issue 1. pg 3-9. April.
- Bartok, J.W., Jr. 2011. Reducing Storm Damage to Your Greenhouse. *Connecticut Nursery & Landscape Magazine*. Issue 1. pg 14-16. May.
- Bartok, J.W., Jr., 2011. What are my options for recycling used greenhouse film. *Greenhouse Management & Production*. 31:5. May.
- Ortega, I.M. 2005. On the wild side: Getting ready for winter. *Willington, Ashford, Mansfield Horizons*. September: 18-19.
- Ortega, I.M. 2005. On the wild side: Wildfires, how costly are they? *Willington, Ashford, Mansfield Horizons*. May: 10-11.
- Ortega, I.M. and C. Renshaw. 2005. On the wild side: Prescribed burning. *Willington, Ashford, Mansfield Horizons*. April 16-17.
- Ortega, I.M. 2005. On the wild side: Bluebirds. *Willington, Ashford, Mansfield, Horizons*. February: 24-25.
- Ortega, I.M. 2005. On the wild side: Woodchucks. *Willington, Ashford, Mansfield Horizons*. January: 20-21.

## Proceedings

- Angel, S., J.P. Parent, and D.L. Civco 2007. Urban sprawl metrics: an analysis of global urban expansion using GIS. Proc. 2007 ASPRS Annual Convention, Tampa, FL. 12 p.
- Angel, S., A. Biel, J. Parent, and D.L. Civco. 2011. The decline in transit-sustaining densities in U.S. Cities, 1910-2000. Proc. 2010 Land Policy Conference on Climate Change and Land Policies G.K. Ingram and Y.H.Hong (eds.), Lincoln Institute of Land Policy, Cambridge, MA. pp. 191-210.
- Bandy, L.A., J.C. Volin and T.J. Givnish. 2010. Trophic focusing of nutrients on tree islands in the Florida Everglades, p. 357. Greater Everglades Ecosystem Restoration, The Everglades: A Living Laboratory of Change, Planning, Policy and Science Meeting. *In: Proc. GEER 2010 Science Conference, July 2010, Naples, FL.*
- Chabaeva, A., J.D. Hurd. and D.L. Civco. 2007. Quantitative assessment of the accuracy of spatial estimation of impervious cover. Proc. 2007 ASPRS Annual Convention, Tampa, FL. 11 p.
- Civco, D.L., A. Chabaeva, and J. Parent. 2006. A comparison of approaches to impervious surface characterization. Proc. IGARSS 2006, Denver, CO. 4 p.
- Civco, D.L., J.D. Hurd, S. Prisloe, E. Wilson, and M. Gilmore. 2006. Characterization of coastal wetland systems using multiple remote sensing data types and analytical techniques. Proc. IGARSS 2006, Denver, CO. 4 p.
- Civco, D.L., A. Chabaeva, and J. Parent. 2009. KH-series satellite imagery and Landsat MSS data fusion in support of assessing urban land cover growth. Proc. SPIE Remote Sensing Europe, Volume 7478, Berlin, Germany. 12 p.
- Civco, D.L., A. Chabaeva, J. Parent, M. Ehlers, and A. Angel. 2008. Fusion of KH-Series Declassified Satellite Imagery and Landsat MSS Data in Support of Urban Land Cover Classification. Proc. 17th William Pecora Memorial Remote Sensing Symposium, Denver, CO 12 p.
- Civco, D.L., M.S. Gilmore, E. H. Wilson, N. Barrett, S. Prisloe, J.D. Hurd, and C. Chadwick. 2008, Multitemporal spectroradiometry-guided object-oriented classification of salt marsh vegetation. Proc. SPIE Europe Remote Sensing, Cardiff, Wales, UK. 12 p.
- Civco, D.L. and C. Witharana. 2012. Assessing the spatial fidelity of resolution-enhanced imagery using Fourier analysis: a proof-of-concept study. SPIE Remote Sensing 2012, Proc. SPIE 8538, Earth Resources and Environmental Remote Sensing/GIS Applications III, 853805 (October 25, 2012); doi:10.1117/12.974703.
- Furedi, M.A., J. C. Volin, C. Coronado-Molina and F. H. Sklar. 2006. Using Hydrological Data to Determine Tree Island Elevation. Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference, June 2006, Lake Buena Vista, FL.*
- Gilmore, M., D.L. Civco, J.D. Hurd, E. Wilson, S. Prisloe, C. Chadwick, and N. Barrett. 2007. Object-oriented classification and mapping of salt marsh vegetation using in situ radiometry and multi-seasonal, high resolution satellite remote sensing data. Proceedings MultiTemp 2007, The Fourth International Workshop on the Analysis of Multi-temporal Remote Sensing Images, Leuven, Belgium, 7 p.
- Glaser, P., J.C. Volin, T.J. Givnish and J. Donovan. 2006. Soil Profiles from the Florida Everglades and Their Relation to the Stratigraphy of Boreal Patterned Peatlands. Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference, June 2006, Lake Buena Vista, FL.*
- Glaser, P.H., J.C. Volin and T.J. Givnish. 2008. Radiocarbon Dating Sediments in the Everglades of South Florida: Sources of Error and Mass Accumulation Rates, p. 139. Greater Everglades Ecosystem Restoration Planning, Policy and Science Meeting Everglades Restoration 2050 – Advancing the Science to Achieve Success. *In: Proc. GEER 2008 Science Conference, August 2008, Naples, FL.*
- Hurd, J.D., J. Parent, D.L. Civco, M. Tyrell, and B. Butler. 2006. Forest Fragmentation in Connecticut: What Do We Know and Where Are We Headed? 2006 Connecticut Forest Conservation Forum on Working towards Solutions: How to Sustain Connecticut's Woodlands. Granby, CT. 17 p.

- Hurd, J.D., D.L. Civco, M. Gilmore, S. Prisloe, and E. Wilson. 2006. Tidal wetland classification from Landsat imagery using an integrated pixel-based and object-based classification approach. Proc. 2006 ASPRS Annual Convention, Reno, NV. 11 p.
- Hurd, J.D. and D.L. Civco. 2008. Assessing the Impact of Land Cover Spatial Resolution on Forest Fragmentation Modeling. Proc. 2008 ASPRS Annual Convention, Portland, OR. 10 p.
- Hurd, J.D. and D.L. Civco. 2009. Creating an Image Dataset to Meet Your Classification Needs: A Proof-of-Concept Study. Proc. 2009 ASPRS Annual Convention, Baltimore, MD. 12 p.
- Larsen, L., N. Aumen, C. Bernhardt, V. Engel, T. Givnish, S. Hagerthey, J. Harvey, L. Leonard, C. McVoy, G. Noe, M. Nungesser, K. Rutchey, F. Sklar, T. Troxler, J. Volin and D. Willard. 2008. The Role of Flow and Transport Processes in Ridge/Slough/Tree Island Pattern Dynamics, pp. 243-244. Greater Everglades Ecosystem Restoration Planning, Policy and Science Meeting Everglades Restoration 2050 – Advancing the Science to Achieve Success. *In: Proc. GEER 2008 Science Conference, August 2008, Naples, FL.*
- Liu, Z., A. Higer, D. Owen, J. Allen, L. Pearlstine, J. Volin and F. Mazzotti. 2008. Validation of EDEN Water-Surface Model and Ground Digital Elevation Model (DEM) for the Everglades, Florida, p. 255. Greater Everglades Ecosystem Restoration Planning, Policy and Science Meeting Everglades Restoration 2050 – Advancing the Science to Achieve Success. *In: Proc. GEER 2008 Science Conference, August 2008, Naples, FL.*
- Noonburg, E.G. and J.C. Volin. 2008. Development of a Sampling Prioritization Model to Optimize the Selection of Tree Islands in the Everglades Wildlife Management Area for Surveying of *Lygodium microphyllum*, p. 319. Greater Everglades Ecosystem Restoration Planning, Policy and Science Meeting Everglades Restoration 2050 – Advancing the Science to Achieve Success. *In: Proc. GEER 2008 Science Conference, August 2008, Naples, FL.*
- Owen, D., J.C. Volin, J. Allen, M.A. Furedi, C. Coronado-Molina, F.H. Sklar and A. Higer. 2008. Characterization of Tree Island Hydrology in the Central Everglades: An Application of the EDEN Water Surface Model, p. 336. Greater Everglades Ecosystem Restoration Planning, Policy and Science Meeting Everglades Restoration 2050 – Advancing the Science to Achieve Success. *In: Proc. GEER 2008 Science Conference, August 2008, Naples, FL.*
- Parent, J., D.L. Civco, and S. Angel. An Analysis of Global Urban Sprawl. Proc. 2007 ESRI User Group Conference, San Diego, CA.
- Parent, J., J.D. Hurd, and D.L. Civco. 2007. Simulating Future Forest Fragmentation in Northeastern United States. Proc. 2007 ESRI User Group Conference, San Diego, CA.
- Parent, J., D.L. Civco, and J.D. Hurd. 2007. Simulating future forest fragmentation in a Connecticut region undergoing suburbanization. Proc. 2007 ASPRS Annual Convention, Tampa, FL. 12 p.
- Prisloe, S., W. Wilson, D.L. Civco, J.D. Hurd, and M. Gilmore. 2006. Use of LIDAR data to aid in discriminating and mapping plant communities of the lower Connecticut River: preliminary results. Proc. 2006 ASPRS Annual Convention, Reno, NV. 8 p.
- Soti, P.G. and J.C. Volin. 2010. Does water hyacinth (*Eichhornia crassipes*) compensate for simulated defoliation? Implications for effective biocontrol, p. 356. Greater Everglades Ecosystem Restoration, The Everglades: A Living Laboratory of Change, Planning, Policy and Science Meeting. *In: Proc. GEER 2010 Science Conference, July 2010, Naples, FL.*
- Tobin, M.F. and J.C. Volin. 2006. A Comparison of *Lygodium microphyllum* Growth and Biomass in Its Native Australian and Invaded Floridian Ranges. Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference, June 2006, Lake Buena Vista, FL.*
- Volin, J.C., E.L. Kruger, V.C. Volin, M.F. Tobin and K. Kitajima. 2008. Release from Natural Enemies Belowground Helps Explains the Invasiveness of *Lygodium microphyllum* in Florida: A Cross-continental Comparison, p. 453. Greater Everglades Ecosystem Restoration Planning, Policy and Science Meeting Everglades Restoration 2050 – Advancing the Science to Achieve Success. *In: Proc. GEER 2008 Science Conference, August 2008, Naples, FL.*

- Volin, J.C., D. Owen, V.C. Volin, P.H. Glaser, T.J. Givnish and J. Muss. 2006. Development of a Predictive Model Relating Hydrology and Edaphic Factors to Landscape Vegetation Patterns in Freshwater Marshes. Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference, June 2006, Lake Buena Vista, FL.*
- Volin, J.C. 2006. Does Release from Natural Enemies Belowground Explain Why *Lygodium microphyllum* Is Such a Successful Invader in Florida? Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference, June 2006, Lake Buena Vista, FL.*
- Witharana, C. and D.L. Civco. 2012. Evaluating remote sensing image fusion algorithms for use in humanitarian crisis management. SPIE Remote Sensing 2012. Proc. SPIE 8538, Earth Resources and Environmental Remote Sensing/GIS Applications III, 853807 (October 25, 2012); doi:10.1117/12.973745.



**Appendix B2: Table of Number and Type of Publications per faculty 2005-2013.**

|              | Journal<br>articles | technical<br>reports | Chapters  | Other<br>publications | Books     | Software | Total<br>Publications |            |
|--------------|---------------------|----------------------|-----------|-----------------------|-----------|----------|-----------------------|------------|
| Anyah        | 18                  |                      |           |                       |           |          | 18                    |            |
| Barclay      | 8                   | 8                    |           |                       | 3         |          | 19                    |            |
| Bartok       |                     |                      |           |                       | 53        | 1        | 54                    |            |
| Bosker       | 4                   |                      |           |                       |           |          | 4                     |            |
| Bresnahan    | 1                   | 5                    |           |                       |           | 2        | 8                     |            |
| Civco        | 14                  |                      | 10        |                       |           |          | 24                    |            |
| Clausen      | 10                  | 2                    | 2         |                       | 9         |          | 23                    |            |
| Helton *     |                     |                      |           |                       |           |          | 0                     |            |
| Meyer        | 29                  | 2                    |           |                       |           | 1        | 33                    |            |
| Miller, D.H. | 25                  | 1                    | 1         |                       |           |          | 27                    |            |
| Ortega       | 5                   |                      |           |                       | 5         |          | 10                    |            |
| Rittenhous   | 6                   | 3                    | 1         |                       |           |          | 10                    |            |
| Rittenhous   | 4                   |                      | 2         |                       |           |          | 6                     |            |
| Robbins      | 9                   | 5                    |           |                       |           |          | 14                    |            |
| Rudnicki     | 9                   |                      |           |                       |           |          | 9                     |            |
| vokoun       | 18                  |                      |           |                       |           |          | 18                    |            |
| Volin        | 16                  | 2                    | 2         |                       |           |          | 20                    |            |
| Warner       | 10                  | 7                    | 1         |                       |           |          | 18                    |            |
| Yang         | 15                  | 2                    |           |                       | 20        |          | 37                    |            |
| <b>Total</b> | <b>201</b>          | <b>37</b>            | <b>19</b> |                       | <b>90</b> | <b>2</b> | <b>3</b>              | <b>352</b> |

\*Hired August 2013

**Appendix B3: Table of Citations of NRE faculty 2005-2013.**

|                      | No. of citations | h-index | i10-index | No of publications with Citations |      |     |
|----------------------|------------------|---------|-----------|-----------------------------------|------|-----|
|                      |                  |         |           | >500                              | >100 | >50 |
| Anyah                | 224              | 7       | 6         |                                   |      | 1   |
| Barclay              | 26               |         | 10        |                                   |      |     |
| Bartok               | 52               |         |           |                                   |      | 0   |
| Bosker               | 63               |         | 12        |                                   |      | 0   |
| Civco                | 2834             | 25      | 39        | 1                                 | 6    | 8   |
| Clausen              | 1343             | 20      | 28        |                                   | 4    | 5   |
| Helton               | 723              | 10      | 10        |                                   | 1    | 4   |
| Meyer                | 209              | 9       | 8         |                                   |      | 0   |
| Miller, D.H.         |                  |         |           |                                   |      |     |
| Ortega               | 343              | 11      | 12        |                                   |      |     |
| Rittenhouse, C.      | 307              | 9       | 9         |                                   | 1    |     |
| Rittenhouse, T.      | 552              | 13      | 14        |                                   |      | 4   |
| Robbins              | 1055             | 17      | 23        |                                   | 2    | 5   |
| Rudnicki             | 390              | 10      | 10        |                                   |      | 3   |
| Vokoun               | 303              | 11      | 15        |                                   |      | 0   |
| Volin                | 2168             | 20      | 25        | 1                                 | 3    | 7   |
| Warner               | 273              | 8       | 8         |                                   | 1    |     |
| Yang                 | 1173             | 23      | 38        |                                   |      | 2   |
| <b>Total or Mean</b> | 12038            | 13.8    | 16.7      | 2                                 | 18   | 39  |

## Appendix B4: List of Presentations and Posters by NRE Faculty 2005-2013

### Anyah

#### Invited Presentations

- Anyah, R.O. 2013: Modeling the dynamically coupled climate-hydrologic processes over Lake Victoria Basin. 18-19 July 2013. University of Reading, London, UK.
- Anyah, R.O. 2013: Climate Extremes and Anomalies: Decision-Making under uncertainty. 1 March, 2013. Dept. of Animal Science, University of Connecticut
- Anyah, R.O. 2013: Development of the Horn of Africa integrated Climate-Diagnostic and Decision Monitor (GHACOF33) 18-20 February, 2013. Hotel Duc Lac Tanganyika, Bujumbura, Burundi
- Anyah, R.O. 2012: Large-scale and regional dynamics and drivers of the Horn of Africa climate system. Conference on the Dynamics of African Climate. Johns Hopkins University, Baltimore, Maryland 14-15 October 2012
- Anyah, R.O. 2012: Dynamical Seasonal Forecasting system for the Greater Horn of Africa. Challenges in evaluating regional climate simulations. UK Met/ICPAC Seasonal Forecasting Workshop. 20-24 August, 2012. ICPAC, Nairobi-Kenya
- Anyah, R.O. 2012: Needs and Priorities for enhancing availability and use of climate services in Africa. *The 30th Greater Horn of Africa climate Outlook Forum (GHACOF30)* 27-29 February, 2012. Serena Hotel, Kigali, Rwanda
- Anyah, R.O. 2011: Review of Climate Research and Application Priority Areas in Africa. CLIVAR-Africa Panel Workshop on the Variability of African Climate Systems. Cape Town, South Africa, 20-23 November 2011
- Anyah, R.O. 2011: NSF-AFRMIP Project: Challenges in evaluating regional climate simulations over the Greater Horn of Africa. ICTP-TWAS-ICPAC joint workshop on regional climate modeling in support of impacts and adaptation assessments in the water and agriculture sector. ICPAC-Nairobi, Kenya. June 20-24 2011
- Anyah, R.O. 2011: Customization and challenges of regional climate models over Equatorial East Africa. ICPAC-UK-Met Office training workshop on dynamical seasonal forecasting systems. ICPAC, Nairobi Kenya. June 13 2011.
- Anyah, R.O. 2011: Climate-hydrology Connections. Potential effects of groundwater processes in climate models. Sino-USA collaboration on climate, ecosystem and water resources. China Northwestern University of Forestry and Agriculture, Yangling, China, May 16 2011
- Anyah, R.O. 2011: Climate-hydrology Connections. Potential effects of groundwater processes in climate models. Sino-USA collaboration on climate, eco-hydrology and water resources. China Agriculture University, Beijing China, May 11 2011
- Anyah, R.O. 2011: Global and Regional Climate Model information for risk mitigation over the Greater Horn of Africa. *The Twenty Seventh Greater Horn of Africa climate Outlook Forum (GHACOF27) and Climate Change Adaptation Workshop for Policy Makers*. 28 February to 4 March, 2011. Snowcrest Hotel, Arusha, Tanzania.
- Anyah, R.O. 2010: Regional climate change modeling over the Greater Horn of Africa to support adaptation to impacts of climate change. An Overview. IGAD Climate Prediction and Application (ICPAC) center. 23August-1Sept., 2010, ICPAC, Nairobi, Kenya
- Anyah, R.O. 2010: Characterization of Model Uncertainties: Implications for climate change adaptation assessments and strategies in Africa. First Learning Forum on Climate Change Adaptation in Africa, sponsored by International Development Research Center (IDRC). *Windsor Hotel Nairobi, Kenya*, 8-12 March, 2010
- Anyah, R.O. 2009: Uncertainties in regional climate change scenarios over the Horn of Africa. First Regional Climate change and impacts modeling Workshop for eastern Africa. *Addis Ababa University*, Ethiopia, 26-31 October, 2009

- Anyah, R.O. 2009: Representation of local processes in climate models: Greater Horn of Africa 24<sup>th</sup> Climate Outlook Forum (GHACOF-24). *Intercontinental Hotel, Nairobi, Kenya*, 24-25 August, 2009
- Anyah, R.O. 2009: Progress and update on research activities of the Variability of the African Climate Systems to the 16 CLIVAR Scientific Steering Group. Real Botanical Garden, Madrid, Spain: 19-22 May, 2009
- Anyah, R.O. 2009: Addressing Challenges of regional climate modeling over the Greater Horn of Africa: Africa Regional Climate Model Inter-comparison Project (AFRMIP). 2009 *European Geosciences Union (EGU)*, Vienna, Austria, 19-24 April, 2009
- Anyah, R.O. 2008: Impact of groundwater reservoir on simulated extreme hydroclimatic conditions. International Conference on Groundwater and Climate in Africa. *Speke Commonwealth Resort Center Munyonyo*. Kampala, Uganda June 24-28, 2008
- Anyah, R.O. 2008: Factors associated with recent droughts in eastern Africa. Conference on Monitoring and Modeling of the African Droughts. *International Center for Theoretical Physics (ICTP)*, Trieste, Italy: 2-6 June, 2008
- Anyah, R.O. 2008: Developing regional climate change scenarios for impacts assessments and adaptation strategies in the water sector in Egypt: WMO Project on Climate change Adaptations in the water sector in Egypt, First National Kick-off Workshop. *Water Resources Institute, Ministry of Water Resources and Irrigation*, Cairo, Egypt 13-15 April, 2008
- Anyah, R.O. 2008: Impact of groundwater reservoir on the simulated land surface-atmosphere coupled variability. *Department of Natural Resources Management and Engineering*, University of Connecticut, Storrs, CT, 20 March, 2008
- Anyah, R.O. 2008: Impact of groundwater reservoir on the simulated land surface-atmosphere coupled variability. *Department of Earth and Environmental Science*, Lehigh University, Bethlehem, PA, 31 January, 2008
- Anyah, R.O. 2008: Regional climate modeling technique: is there any added value? *Department of Earth and Environmental Science*, Lehigh University, Bethlehem, PA, 1 February, 2008
- Anyah, R.O., F.H.M. Semazzi, and R. Pandya, 2007: UCAR-Africa Collaboration in Weather, Climate and Earth Systems Science research, applications and training. *IGAD Climate Prediction and Application Center (ICPAC)*, Nairobi, Kenya 23 October, 2007
- Anyah, R.O. 2007: NSF-funded Greater Horn of Africa (GHA) Regional Model Intercomparison Project and modeling of Climate Variability and Change over the GHA sub-region. How can local institutions participate? *IGAD Climate Prediction and Application Center (ICPAC)*, Nairobi, Kenya 22 October, 2007
- Anyah, R.O. 2007: Simulated groundwater influence on land-surface/atmosphere coupled variability. *International Research Institute for Climate and Society (IRI)*, Lamont Doherty Earth Observatory, Columbia University, 23 May, 2007.

#### Other Presentations

- Berhane, G.F, and Anyah, R.O. 2010: Use of surrogate climate change scenarios to investigate climate-hydrology connections over the Nile Basin. American Geophysical Union (AGU) Annual General Meeting. San Francisco, CA (13-17 Dec, 2010)
- Otieno, V.O, and Anyah, R.O. 2010: Observed and simulated influence of land use changes on Greater Horn of Africa Climate. American Geophysical Union (AGU) Annual General Meeting. San Francisco, CA (13-17 Dec, 2010)
- Anyah, R.O., Qiu, W., and V.O. Otieno, V.O. 2010: Characteristic patterns of CMIP3 temperature and precipitation projections over the Horn of Africa. *American Meteorological Society (AMS) Annual Meeting*. Atlanta, Georgia; 17-21 January 2010
- Otieno, V. O., and R. Anyah, 2010: Hydroclimatic variability of the Greater Horn of Africa: The transition between the bimodal rainfall regimes. *American Meteorological Society (AMS) Annual Meeting*. Atlanta, Georgia; 17-21 January 2010

- Anyah, R.O. and F. H. M. Semazzi, 2009: Variability of East African rainfall based on multi-year RegCM3 simulations *European Geosciences Union (EGU)*, Vienna, Austria, 19-24 April, 2009
- Anyah, R.O., 2007: An Overview of global and regional climate modeling of the Greater Horn of Africa climate. *Joint WCRP-Young African climate scientists workshop*, Zanzibar, Tanzania, 26-30 March, 2007
- Anyah, R.O., C. Weaver, F. Ying, Miguez-Macho Gonzalo and A. Robock, 2006: Groundwater effects on soil moisture distribution, boundary layer structure and precipitation recycling based on a coupled regional atmospheric-hydrologic model simulations. *AGU Fall Meeting*, San Francisco, 11-15 December, 2006
- Anyah, R.O., F. H. M. Semazzi, and L. Xie, 2006: Simulated physical mechanisms associated with multi-scale climate variability over Lake Victoria Basin in East Africa. *86th AMS Annual Meeting*, Atlanta, Georgia, 29 January – 2 February 2006

## Barclay

### Invited Presentations

- LaBonte, A., H. Kilpatrick, and J. Barclay. 2010. Homeowners and Hunter Opinions about Moose (Alces alces) in Connecticut. Transactions of the 3<sup>rd</sup> Connecticut Conference on Natural Resources. Storrs, CT. March. Publ. Abstract.
- LaBonte, A., H. Kilpatrick and J. Barclay. 2010. Homeowner and Hunter Opinions about Moose (Alces alces) in Connecticut. Transactions of the 66<sup>th</sup> Northeast Fish & Wildlife Conference. Boston, MA. April. Publ. Abstract.
- Barclay, J. S. 2010. A Strategy for Responding to Regional Oil/Chemical Emergencies. North Atlantic Chapter, Society for Environmental Toxicology and Chemistry, Rhode Island. June. Invited. Publ. Abstract.
- Barclay, J. 2009. A proposal for distinguishing between Greater Scaup and Lesser Scaup. Presentation to the Scaup Action Team, Atlantic Flyway Technical Section Meetings, Easton, MD. 25 Feb. Invited.
- Barclay, J. 2009. Need for distinguishing between greater scaup and lesser scaup. Invited Presentation to the Scaup Action Team, Atlantic Flyway Council Winter Technical Section Meetings, Easton, MD, Mar. '09.
- Hiller, B. J. and J. S. Barclay. 2009. Effects of in-vitro exposure of American Woodcock splenocytes to cadmium chloride. North Atlantic Chapter, Society of Environmental Toxicology and Chemistry, 15<sup>th</sup> Annual Conference, Durham, NH. Invited, Platform., June.
- Barclay, J. S. 2008. A proposal for helping to distinguish between greater scaup and lesser scaup. Combined Atlantic and Mississippi Flyway Technical Sections Meeting, Baton Rouge, LA. Feb. Invited, platform.
- Hiller, B. J. and J. S. Barclay. 2008. Cadmium exposure in American Woodcock from the Eastern Management Unit. Northeast Upland Game Bird Biologists Technical Meeting, Norfolk, CT. Invited Presentation.
- Hiller, B., M. Oakley, J. Barclay and R. Paulson. 2007. Survival and Habitat Use by Captive Bred Ruffed Grouse. Northeast Fish & Wildlife Conf., Mystic, CT. April '07. Poster.
- Barclay, J. and J. Austin. 2007. Why a Scaup Action Team? Presentation to Diving Duck Committee, Atlantic Flyway Council Winter Meetings, Saratoga, NY. 6 Mar '07.
- Barclay, J. 2006. Wildlife and People: whose home is it anyway? Annual meeting, Chester Land Trust, Camp Hazen, Chester, CT. 8 Nov. '06.
- Barclay, J. 2006. The role of the Wildlife Conservation Research Center at UCONN. Annual dinner meeting, Wyndham Land Trust, Pomfret, CT. 9 Nov. '06.
- Barclay, J. S. 2006. Metals in greater scaup nesting (AK) and wintering (CT) habitats. Wildlife Toxicology Symposium, 13<sup>th</sup> Annual Conference, The Wildlife Society, Anchorage, AK. Platform Presentation, invited, Sept. 24. Publ. Abstr.

- Austin, J., M. Anderson, M. Lindberg, S. Slattery, J. Barclay, and S. Petrie. 2006. Scaup population recovery: research priorities to address uncertainties. 4<sup>th</sup> International Duck symposium, Bismarck, ND. Aug. '06. Poster.
- Barclay, J. 2006. Plight of the greater scaup in North America. Second Scaup Workshop, 17-19 Jan., Bismarck, North Dakota. Abstract and Poster.
- Hiller, B. and J. Barclay. 2006. Contaminants in American woodcock harvested in Connecticut. College of Agriculture & Natural Resources, Graduate Students' Research Forum. Poster.
- Huang, Min and J. Barclay. 2006. Temporal movements of resident Canada geese in Connecticut. College of Agr. & Nat. Res. Graduate Students Research Forum. Poster.
- Hiller, B. and J. Barclay. 2006. Concentrations of organochlorines in American woodcock harvested in Connecticut. Northeast Fish & Wildlife Conference, Burlington, VT. Apr.'06. Poster, Publ. Abstr.
- Barclay, J. S. 2006. Metals in greater scaup nesting (AK) and wintering (CT) habitats. Wildlife Toxicology Symposium, 13th Annual Conference, The Wildlife Society, Anchorage, AK. Platform Presentation, invited, Sept. 24. Publ. Abstr.
- Austin, J., M. Anderson, M. Lindberg, S. Slattery, J. Barclay, and S. Petrie. 2006. Scaup population recovery: research priorities to address uncertainties. 4th International Duck symposium, Bismarck, ND. Aug. '06. Poster.
- Hiller, B. and J. Barclay. 2005. Concentrations of heavy metals in American woodcock harvested in Connecticut. Transactions of The Wildlife Society 12<sup>th</sup> Annual Conference, Madison, Wisconsin. 27 Sept. Publ. abstract and Poster.
- Kilpatrick, H. J., A. M. LaBonte, and J. S. Barclay. 2005. A preliminary assessment of deer harvest opportunities and incentives for bowhunters in urban areas. Trans. Northeast Fish and Wildlife. Conf. 61: Annapolis, MD. platform presentation, April. Publ. Abstract.
- Barclay, John S. 2005. Populations and movements of scaup in the Northeast. Proc. Technical Section, Atlantic Flyway Council, Winter Meeting, Mystic, CT. 28 Feb. Platform Presentation. Plenary Session, Invited.
- Kilpatrick, H. J., A. M. LaBonte, and J. S. Barclay. 2005. A preliminary assessment of deer harvest opportunities and incentives for bowhunters in urban areas. Trans. Northeast Fish and Wildlife. Conf. 61: Annapolis, MD. platform presentation, April. (Published Abstract).
- Hiller, Brian and John Barclay. 2005. Metals and Organic Contaminants in Northeastern Woodcock. North Atlantic Chapter, Soc. Envir. Toxicology and Chemistry, Burlington, VT, 8-10 Jun. Publ. Abstr.

## **Bartok**

### Invited Presentations

- Bartok, J. 2008. Practical Ideas that Save Energy. Energy & the Greenhouse Conference. Cooperative Extension. New Haven. June 17, 2008.
- Bartok, J. 2008. The Greenhouse/Nursery Industry in New England. American Society of Agricultural & Biological Engineers International Conference. Providence RI. July 2, 2008.
- Bartok, J. 2008. Mechanization for Small Growers. BFG Horticultural Expo. Minneapolis MN August 27, 2008.
- Bartok, J. 2008. Energy Conservation in Your Greenhouses. BFG Horticultural Expo. Minneapolis MN. August 27, 2008.
- Bartok, J. 2008. Energy Walk-thru Audit. Evening in the Greenhouse Program. Connecticut Greenhouse Growers Association. Essex. October 9, 2008.
- Bartok, J. 2008. Water: A limited Factor to Expansion. New England Greenhouse Conference. Worcester MA. November 7, 2008.

- Bartok, J. 2008. Ten Things You Can Do to Save Energy. New England Greenhouse Conference. Worcester MA. November 7, 2008.
- Bartok, J. 2008. Greenhouse Energy Audits and Conservation. Transition to Renewable Energy Conference. Sturbridge MA. December 5, 2008.
- Bartok, J. 2008. Options for Greenhouse Furnaces and Fuels. Transition to Renewable Energy Conference. Sturbridge MA. December 5, 2008.
- Bartok, J. 2008. Practical Ideas that Save Energy. Energy & the Greenhouse Conference. Cooperative Extension. New Haven. June 17, 2008.
- Bartok, J. 2009. Wood Heat for Homes and Farms. RI Woody Biomass Workshop. Chepechet RI. February 21, 2009.
- Bartok, J. 2009. Energy Conservation/Alternatives. USDA/NRCS Greenhouse Operations Training. Sudbury MA. March 26, 2009.
- Bartok, J. 2009. Conducting Greenhouse Energy Audits. AgMatters Energy Workshop, Manchester ME. May 4, 2009.
- Bartok, J. 2009. Irrigation System Technology. USDA/NRCS Greenhouse Operations Training, Needham MA. September 2, 2009.
- Bartok, J. 2009. Energy & Water Systems. Massachusetts Flower Growers Association – Twilight Meeting. Needham MA. September 2, 2009.
- Bartok, J. 2009. Increasing Efficiency. American Speciality Cut Flower Growers Conference, Hauppauge NY. October 10, 2009
- Bartok, J. 2009. ABC's of In-Ground Heating & Alternate Fuels. New England Vegetable and Berry Conference, Manchester NH. December 15, 2009.
- Bartok, J. 2009. Plastics on Tunnels for Different Seasons. New England Vegetable and Berry Conference, Manchester NH. December 15, 2009
- Bartok, J. 2009. Increase the Efficiency of Your Greenhouses. New England Vegetable and Berry Conference. Manchester NH. December 16, 2009.
- Bartok, J. 2010. Conserving Greenhouse Energy. Connecticut Nursery & Landscapers Association Winter Symposium Wallingford. January 14, 2010.
- Bartok, J. 2010. Energy Conservation & Alternatives for Greenhouses. Connecticut Natural Organic Farmers Association, Manchester. February 6, 2010.
- Bartok, J. 2010. Making the Most of Wood Heat in Greenhouses. New England Farm Energy Conference, Manchester NH. March 15, 2010.
- Bartok, J. 2010. Geothermal Heat for Greenhouses, Can it Pay? New England Farm Energy Conference. Manchester NH. March 16, 2010.
- Bartok, J. 2010. Greenhouse Energy Cost Reduction Strategies. Intertribal Nursery Council Meeting, Arlington WA. September 22, 2010.
- Bartok, J. 2010. Alternate Energy Sources for Native Plant Greenhouse Production. Intertribal Nursery Council Meeting, Arlington WA. September 22, 2010.
- Bartok, J. 2010. Greenhouse Energy Efficiency Measures. CISA – Massachusetts Farm Energy Program, Deerfield MA. September 29, 2010
- Bartok, J. 2010. Greenhouse Energy Efficiency. New England Association of RC&D Agents – Regional Conference. University of Massachusetts, Amherst MA. October 29, 2010.
- Bartok, J. 2010. Practical Ideas to Cut Your Greenhouse energy Bill in Half. Northeast Greenhouse Conference. Worcester MA. November 4, 2010.
- Bartok, J. 2010. Greenhouse Energy Audits. University of New Hampshire Farm Energy Audits & Plans Workshop. Keene NH. November 16, 2010.
- Bartok, J. 2011. Building High Tunnels. Connecticut – Natural Organic Farmers Association Winter Conference. Manchester CT. March 5, 2011.
- Bartok, J. 2011. The Practical Home Greenhouse. Berkshire Botanical Garden Seminar, Stockbridge MA. March 12, 2011.

Bartok, J. 2011. Greenhouse Construction Tips. CT- NOFA Greenhouse Workshop, Oneco CT. March 21, 2011.

Bartok, J. 2011. Greenhouse Construction Tips. CT-NOFA Greenhouse Workshop, West Granby CT. April 25, 2011.

## **Bosker**

### Invited Presentations

Blatchley, C., Lama, T., Bosker, T., 2013. The impact of model androgen 5- $\alpha$  dihydrotestosterone on mummichog reproduction at different salinities, Southern New England Chapter American Fisheries Society Winter Meeting. (January 21, 2013). Presentation.

Blatchley, C., Lama, T., Bosker, T., "Does salinity influence the effect of a potent androgen (5 $\alpha$ -dihydrotestosterone) on mummichog reproduction?", Connecticut Conference on Natural Resources. (March 18, 2013). presentation

Lama, T., Blatchley, C., Bosker, T., 2013. Development and validation of reproductive behavioral endpoints for mummichog, an important estuarine model., Connecticut Conference on Natural Resources. (March 18, 2013). Presentation.

Bosker, T., 2012. Changes in a common biomarker (vitellogenin) do not correlate to higher-level reproductive responses in mummichog exposed to 17 $\alpha$ -ethinylestradiol, North Atlantic Chapter of SETAC Annual Meeting. (June 8, 2012).

Bosker, T., 2012. Mummichog as a model to study impacts of endocrine disruptors under estuarine conditions, Department of Animal Science. (April 1, 2012).

Bosker, T., 2012. Statistics in Biological Sciences, Pathobiology Seminar Series. (March 30, 2012).

Bosker, T., 2011. Using biology to understand impacts of environmental endocrine disruptors, University of Connecticut Chapter of the American Fisheries Society. (October 1, 2011).

Gillio Meina, E., Lister, A., Bosker, T., MacLatchy, D., 2011. Effects of 17 $\alpha$ -ethinylestradiol (EE2) on gonadal steroidogenesis in mummichog (*Fundulus heteroclitus*) under differing saline conditions, Canadian Society of Zoologists. (May 1, 2011). Presentation.

Chandra, K., Bosker, T., Lister, A., MacLatchy, D., Currie, S., 2011. Physiological and cellular stress responses to EE2 during fluctuations in environmental temperature in the mummichog (*Fundulus heteroclitus*), Canadian Society of Zoologists. (May 1, 2011). Presentation.

### Posters

Blatchley, C., Lama, T., Bosker, T., 2012. Evaluating The Impacts Of An Androgenic Endocrine Disruptor On Mummichog Under Different Salinities, North Atlantic Chapter of SETAC Annual meeting. (June 7, 2012). Poster.

Bosker, T., Munkittrick, K. R., Lister, A., MacLatchy, D., 2011. Changes in a common biomarker (vitellogenin) do not correlate to higher-level reproductive responses in mummichog exposed to 17 $\alpha$ -ethinylestradiol., Society of Environmental Toxicology and Chemistry North America. (November 13, 2011). Poster.

Blatchley, C., Lama, T., Bosker, T., 2013. The impact of model androgen 5- $\alpha$  dihydrotestosterone on mummichog reproduction at different salinities., Annual Northeast Fish & Wildlife Conference. (April 7, 2013 - April 9, 2013). Poster.

Bosker, T., Griffitt, J. J., Sepulveda, M. S., Perkins, C. R., 2013. The combined effect of environmental and anthropogenic stressors on fish health, Gulf of Mexico Oil Spill & Ecosystem Science Conference. (January 21, 2013 - January 24, 2013). Poster.



- Doyle, M., Martyniuk, C., Bosker, T., Munkittrick, K., 2011. The effects of ethinylestradiol (EE2) on the reproductive axis in female mummichog (*Fundulus heteroclitus*), Society of Environmental Toxicology and Chemistry North America. (November 13, 2011). Poster.
- MacLatchy, D., Blewitt, T., Bosker, T., Gilio Meina, E., Nadon, T., Lister, A., Bragg, L., Currie, S., Munkittrick, K., Servos, M., Wood, C., 2011. Understanding effects of salinity on 17 $\alpha$ -ethinylestradiol (EE2) uptake and effects in mummichog (*Fundulus heteroclitus*), Society of Environmental Toxicology and Chemistry North America. (November 13, 2011). Poster.
- Doyle, M., Martyniuk, C., Bosker, T., Munkittrick, K., 2011. Constructing estrogen-sensitive gene networks in the liver of *Fundulus heteroclitus* for characterizing responses to estrogenic pollutants, Society of Environmental Toxicology and Chemistry World Congress. (November 2011). Poster.
- Bosker, T., 2011. Society of Environmental Toxicology and Chemistry North America. (November 13, 2011). Session chair.

## **Bresnahan**

### Invited Presentations

- Warner, G.S., and P. Bresnahan. 2008. Modeling Impacts of Reservoir Release Policies on Water Availability. Annual International Conference, ASABE. Providence, RI; June 29-July 2, 2008.
- Bresnahan, P.A., G.S. Warner and K. Reale-Munroe. 2008. Impact of changing hydrologic regimes on the effectiveness of reservoir release policies. AWRA 2008 Spring Specialty Conference on Riparian Ecosystems and Buffers, June 29-July 3, 2008, Virginia Beach, Virginia.
- Bresnahan, P.A., 2008. Data Needs for Basin Planning Purposes. Presented to CT DEP Water Planning Staff, November 20, 2008.
- Bresnahan, P.A. and G.S. Warner. 2008. Managing reservoir water supplies under changing hydrologic conditions. New England Water Works Association Annual Meeting, October 29, 2008.
- Bresnahan, P.A. and G.S. Warner. 2008. Managing reservoir water supplies under changing hydrologic conditions. Presented to the CT DEP Instream Flow Scientific and Technical Workgroup Meeting, November 26, 2008.
- Bresnahan, P.A., 2008. Data Needs for Basin Planning Purposes. Presented to CT Water Planning Council, December 1, 2008.
- Bresnahan, P., G.S. Warner, R.A. Jacobson and J.M. Stella. 2007. Modeling the effects of reservoir release practices on downstream flows. Connecticut Conference on Natural Resources. March 9, 2007. Storrs, CT.
- Warner, G.S., P. Bresnahan, R.A. Jacobson, J.M. Stella. 2007. Modeling the Effect of Reservoir Release Practices on Available Water Supply Using STELLA. Massachusetts Water Resources Conference. April 9, 2007. Amherst, MA.
- Warner, G.S., P. Bresnahan, and R.A. Jacobson, 2007. Modeling Flows Downstream of Water Supply Reservoirs. Paper # 072092. Annual International Conference, ASABE. Minneapolis, MN; June 17-20, 2007.
- Warner, G.S. and P.A. Bresnahan. 2007. CTIWR Reservoir Flow Model. Invited presentation to Dept. of Civil and Environmental Engineering, Tufts University, The Nature Conservancy and Stockholm Environment Institute-U.S. March 13, 2007, Tufts University, Boston, MA
- Bresnahan, P.A., G.S. Warner and J.M. Stella. 2007. STELLA Reservoir Flow Model Update. Focus: Draft Class 2, Class 3 Rules. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Feb. 26, 2007; Hartford, CT.
- Warner, G.S. and P.A. Bresnahan. 2007. Modeling the Effect of Reservoir Release Practices on Downstream Flows using STELLA. Presentation Poster at CANR Faculty Staff Workshop Feb. 2, 2007; Storrs, CT

- Bresnahan, P.A., and G.S. Warner. 2007. Supporting Science-Based Policy, Planning and Management of Connecticut's Water Resources. Presentation Poster at CANR Faculty Staff Workshop Feb. 2, 2007; Storrs, CT
- Bresnahan, P.A., G.S. Warner and J.M. Stella. 2007. STELLA Reservoir Flow Model: Update. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Jan. 23, 2007; Hartford, CT.
- Bresnahan, P.A., and G.S. Warner. 2006. Connecticut Institute of Water Resources Reservoir Model: Part I. Verification of Geometry and Inflow Scaling Assumptions; Part II. New Release Rules. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Dec. 11, 2006; Hartford, CT.
- Warner, G.S. and P.A. Bresnahan. 2006. STELLA Reservoir Flow Model: Preliminary Results. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Nov. 13, 2006; Hartford, CT.
- Warner, G.S. and P.A. Bresnahan. 2007. Water Basin Planning. Poster presented at University of Connecticut CANR Partners Reception, May 24, 2007, Hartford, CT.

## **Civco**

- Civco, D.L. and C. Witharana. 2012. Assessing the spatial fidelity of resolution-enhanced imagery using Fourier analysis: a proof-of-concept study. SPIE Remote Sensing 2012, Proc. SPIE 8538, Earth Resources and Environmental Remote Sensing/GIS Applications III, 853805 (October 25, 2012); doi:10.1117/12.974703.
- Witharana, C. and D.L. Civco. 2012. Evaluating remote sensing image fusion algorithms for use in humanitarian crisis management. SPIE Remote Sensing 2012. Proc. SPIE 8538, Earth Resources and Environmental Remote Sensing/GIS Applications III, 853807 (October 25, 2012); doi:10.1117/12.973745.
- Geomatics Education and Research Opportunities in the Department of Natural Resources and the Environment, Connecticut GIS User to User Network Meeting, University of Connecticut, October 29, 2010.
- Civco, D.L., A. Chabaeva, and J. Parent. 2009. KH-series satellite imagery and Landsat MSS data fusion in support of assessing urban land cover growth. Proc. SPIE Remote Sensing Europe, Volume 7478, Berlin, Germany. 12 p
- Civco, D.L., A. Chabaeva, J. Parent, M. Ehlers, and A. Angel. 2008. Fusion of KH-Series Declassified Satellite Imagery and Landsat MSS Data in Support of Urban Land Cover Classification. Proc. 17th William Pecora Memorial Remote Sensing Symposium, Denver, CO 12 p.
- Civco, D.L., M.S. Gilmore, E. H. Wilson, N. Barrett, S. Prisloe, J.D. Hurd, and C. Chadwick. 2008. Multitemporal spectroradiometry-guided object-oriented classification of salt marsh vegetation. Proc. SPIE Europe Remote Sensing, Cardiff, Wales, UK. 12 p.
- Fostering Collaboration: The Experiences of the Center for Land use Education and Research. Northeast Regional Space Grant College Consortium Meeting, Windsor Locks, CT. September 5, 2008.
- Object-oriented Classification and Mapping of Salt Marsh Vegetation using in situ Radiometry and Multi-seasonal, High Resolution Satellite Remote Sensing Data, Center for Integrated Geosciences, University of Connecticut, February 2008.
- Remote Sensing Workshop: What's in a Pixel ? – Two presentations: (1) An Introduction to Remote Sensing Technology, Data and Applications in Connecticut and (2) Connecticut LiDAR-based Digital Elevation Data. Connecticut GeoSpatial Information Program, Newington, CT, September 17, 2007.
- Civco, D.L., A. Chabaeva, and J. Parent. 2006. A comparison of approaches to impervious surface characterization. Proc. IGARSS 2006, Denver, CO. 4 p.

- Civco, D.L., J.D. Hurd, S. Prisløe, E. Wilson, and M. Gilmore. 2006. Characterization of coastal wetland systems using multiple remote sensing data types and analytical techniques. Proc. IGARSS 2006, Denver, CO. 4 p
- Civco, D.L., A. Chabaeva, S. Angel, S. Sheppard. 2005. The Urban Growth Management Initiative - Confronting the Expected Doubling of the Size in the Developing Countries in the Next Thirty Years - Methods and preliminary results. Proc. 2005 ASPRS Annual Convention, Baltimore, MD. 12 p.

### **Clausen**

- Clausen, J., 2012. "Introduction to Low Impact Development", CT Envirothon Current Issue Workshop. (January 7, 2012).
- Payne, D., Bushey, J., Gregiore, B., Clausen, J., 2011. Impact of a green roof on mercury cycling, Philadelphia Low-Impact Development Symposium: Greening the Urban Environment. (September 25, 2011 - September 28, 2011). Poster.
- Dietz, M., Clausen, J. 2011. Establishing flow goals for urban stream TMDLs, and implications for LID design standards, Philadelphia Low Impact Development Symposium. (September 27, 2011). Presentation.
- Clausen, J.C. 2011. Nonpoint source pollution control in urban and rural areas. Sino-USA collaboration on climate, ecosystem and water resources. China Northwestern University of Forestry and Agriculture, Yangling, China, May 16, 2011
- Clausen, J. C. 2011. Nonpoint source pollution control in urban and rural areas. Sino-USA collaboration on climate, eco-hydrology and water resources. China Agriculture University, Beijing China, May 11, 2011.
- Clausen, J. C. 2008. Getting to the Root of Things. 20<sup>th</sup> Annual Conference on Urban and Community Forestry in Connecticut. Water quality Statistics Workshop. Connecticut Department of Environmental Protection. Hartford, CT. Sept 18-19, 2008

### **Meyer**

- Meyer, T., G. Robbins, and M. Metcalf. 2009. Mapping the Invisible: Creating Bedrock Elevation Contour Maps With Spatial Statistics NGA Technical Exchange Seminar, May 12, 2009, Reston VA.
- Meyer, T., and G. Robbins. 2008. Modern computational platforms for geodesy. GEOINT Sciences Symposium, Sept. 3-5, 2008, St. Louis.
- Meyer, T. 2008. Geodesy and Mathematica Funded speaker, Wolfram Technology Conference, October 22-26, 2008, Champaign, IL.
- Meyer, T. 2009. GNSS Heighting Funded speaker, ACMS National Conference, (ACSM-MARLS-CLS-WFPS Conference) February 20-23, 2009, Salt Lake City, UT.
- Meyer, T. 2008. Rhode Island Society of Professional Land Surveyor's Annual Meeting Nov 13, 2008.
- Meyer, T. 2009. Geometrical Geodesy short course, NGA May 4-5, 2009.
- Meyer, T. 2009. GNSS Positioning short course, NGA May 18, 2009.
- Meyer, T. 2009. Intro. to Physical Geodesy short course, NGA May 19, 2009.

### **Ortega**

- Cherian, Acima and Isaac M. Ortega. 2012. Individual identification of African civets (*Civettictis civetta*) and analysis visitation patterns at civet latrines. IV International Wildlife Management Congress. Durban, South Africa. July 2012.

- Garay, G., I.M. Ortega, and O.Guineo. 2011. Estructura y Comportamiento Social del Huemul en el Parque Nacional Torres del Paine, Chile. VI Reunion Nacional del Huemul, Valdivia, Chile. September 2011.
- Garay, G., I.M. Ortega, and O.Guineo. 2011. Patrones de Actividad de los Huemules del Parque Nacional Torres del Paine, Chile. VI Reunion Nacional del Huemul, Valdivia, Chile. September 2011.
- Ortega, I.M., G. Garay, and O.Guineo. 2011. Social ecology of the endangered huemul at Torres del Paine National Park, Chile. 91<sup>st</sup> Annual Meeting of the American Society of Mammalogist. Portland, Oregon. June 2011.
- Ortega, I.M. 2011. Defending the territory until death do us part? A guanaco soap opera. 91<sup>st</sup> Annual Meeting of the American Society of Mammalogist. Portland, Oregon. June 2011.
- Garay, G., I.M. Ortega, and O.Guineo. 2010. Social Structure, Interactions and Movements of the Endangered Huemul of Torres del Paine National Park, Chile. 7<sup>th</sup> International Deer Biology Conference. Huilo-Huilo, Chile, August 2010
- Oliver, M.E. and I.M. Ortega. 2009. Continuing Critical Thinking Skills Development by Involving Students in Individual and Institutional Assessment. Association of American Colleges and Universities - General Education, Assessment, and the Learning Students Need Conference. February 2009. Baltimore, Maryland.
- Senko, J., I.M. Ortega, W.J. Nichols, F. Ollervides, S. Garcia Martinez. 2007. To eat, or not to eat? Perceptions regarding the safety of sea turtle consumption in northwestern Mexico. February 2007. 27th Annual Sea Turtle Symposium, Myrtle Beach, South Carolina.
- Ortega, I.M. 2007. Patagonia Expeditions: a multicultural approach to teach about environmental research. February 2007. Association of Academic Programs in Latin America & the Caribbean. New Haven, Connecticut.
- Rubiano, A., I.M. Ortega., and J. Brown. 2007. Characterization of reproductive physiology of *Tapirus* spp. using non-invasive endocrine analyses. January 2007. Zoos and Aquariums Conservation Conference. Houston, Texas.
- Rubiano, A., J. Brown, and I.M. Ortega. 2006. Characterization of the reproductive physiology of tapir using non-invasive endocrine analyses. January 2006. Third International Tapir Symposium. Buenos Aires, Argentina.

## **Rittenhouse, C**

- Rittenhouse, C.D., M. Baumann, and V.C. Radeloff. 2013. Mapping forest disturbance and afforestation to identify potential habitat for New England Cottontail. The Wildlife Society 20th Annual Conference, Milwaukee, WI, October 9, 2013.
- Rittenhouse, C.D., and A.R. Rissman. 2013. Impacts of changing winter weather on timber harvest operations. Connecticut Conference on Natural Resources, University of Connecticut, March 18, 2013.
- Rittenhouse, C.D, and A.R. Rissman. 2013. Climate change impacts on provisioning services of forests. Fisheries and Wildlife Seminar Series, Paul Smith's College, NY, February 2013. Invited seminar.
- Rittenhouse, C.D, and A.R. Rissman. 2012. Climate impacts on the relationship between forest harvest and wildlife habitat. The Wildlife Society 19<sup>th</sup> Annual Conference, Portland, OR, October 2012.
- Rittenhouse, C.D. 2011. Climate impacts and adaptations in forestry. Alfred University, NY, November 2011. Invited Seminar.
- Rittenhouse, C.D, E.A. Padley, K.J. Martin, and A.R. Rissman. 2011. Forests, wildlife, and carbon: a policy review and modeling of tradeoffs among land use change scenarios. The Wildlife Society 18<sup>th</sup> Annual Conference, Kona, HI, November 2011.

## **Rittenhouse, T**

- Rittenhouse, T.A.G., C.D. Rittenhouse. 2013. Occupancy of breeding sites by wood frogs determined by winter conditions. The Wildlife Society 20<sup>th</sup> Annual Conference. 8 October 2013.
- Evans, M., Hawley, J., Rittenhouse, T.A.G. 2013. Predicting the Spatial Distribution of Black Bear-Human Conflicts in Connecticut. 69th NE Fish and Wildlife Conference . 8 April 2013. Poster.
- O'Connor, K. , Rittenhouse, T.A.G. 2013. Ranavirus Prevalence in Connecticut Wood Frogs. 69th NE Fish and Wildlife Conference. 8 April 2013. Poster.
- Evans, M., Hawley, J., Rittenhouse, T.A.G. 2013. Predicting the Spatial Distribution of Black Bear-Human Conflicts in Connecticut. Connecticut Conference on Natural Resources. 18 March 2013.
- Rittenhouse, T.A.G., Rittenhouse, C. D. 2013. Occupancy of breeding sites by wood frogs determined by winter conditions. 69th Annual NE Fish and Wildlife Conference. 9 April 2013.
- Rittenhouse, T.A.G. 2012. Maintaining wildlife populations in intensively managed forests. Division of Environmental Studies & Geology Seminar Series, Alfred University (Invited). 16 November 2012.
- Rittenhouse, T.A.G. 2012. Maintaining wildlife populations in intensively managed forests. Conference on Woody Biomass in Indiana, Indiana Chapter of The Wildlife Society (Invited). 26 September 2012.
- Rittenhouse, T.A.G. 2012. Friend or Foe: Can amphibians co-exist with fish? UConn Student Chapter of American Fisheries Society (Invited). 5 April 2012.
- Rittenhouse, T.A.G. 2012. Up-scaling wildlife response to global change: Mechanistic research that informs management. UConn Department of Animal Science (Invited). 2 March 2012.
- Rittenhouse, T.A.G. 2011. Up-scaling wildlife response to global change: Mechanistic research that informs management. UConn Department of Ecology, Evolution, Behavior (Invited). 10 November 2011.

## **Robbins**

- Kram, M., Robbins, G., Zhang, R., 2006, Detailed Hydraulic Assessment Using a High-Resolution Piezocone Coupled to the GeoVis., North American Environmental Field Conference and Exposition: Advances in Environmental Site Characterization and Monitoring Technology, January 10 - 12, 2006, Tampa, FL.
- Robbins, G.A., and Metcalf, M., 2006, Evaluating the Effectiveness of Connecticut's MTBE Ban, presented at the USEPA, National UST Conference, Memphis, TN, March 20-22.
- Robbins, G.A., 2006, 17 Years of Groundwater Sampling at a UST Site: So what have we learned? EPA Region 3, Technical Conference, May 5, Roanoke, VA.
- Robbins, G.A., 2006, Potential Impacts of Excavation Blasting On Water Well Productivity and Ground Water Quality, Water System Council, Connecticut Wellcare Workshop, September 21, Meriden, CT
- Robbins, G.A., and Rondeau, J.C., 2006, Monitoring Small Releases from USTs and Assessing Vadose Zone Infiltration, Presented at 22nd Annual International Conference on Soil, Sediments and Water, October 18, University of Massachusetts, Amherst, MA
- Robbins, G.A., 2006, Overview and Significance of Biases Inherent in Traditional Groundwater Monitoring Technologies and Sampling Method, Groundwater Resources Association of California Symposium High Resolution Site Characterization And Monitoring, November 14-16, Long Beach, California.
- Robbins, G.A., and Rondeau, J., 2006, Monitoring Small Releases from USTs and Assessing Vadose Zone Infiltration, Presented at 22nd Annual International Conference on Soil, Sediments and Water, October 18, 2006 University of Massachusetts, Amherst, MA.
- Kram, M., Robbins G., Bagtzoglou, A., Chau, J., and Jones, N., 2006, Detailed Hydraulic Assessment Using a High-Resolution Piezocone and 3-D Conceptual Models, Groundwater Resources

- Association of California Symposium High Resolution Site Characterization And Monitoring, November 14-16, Long Beach, California.
- Metcalf, M., Robbins, G.A., Harel, O., Li, P., Martin-Hayden, J., 2007, Shadow Zone Capture During Purging and its Impact on Contaminant Concentration Averaging in Monitoring Wells, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March , Durham, NH, p. 85.
- Robbins, G.A., Rondeau, J., Metcalf, M., 2007, Ground Water Recharge Beneath the Asphalt at UST Sites, Poster presented at 19th Annual National Tanks Conference and Expo, March, San Antonio, TX.
- Robbins, G.A., 2007, Monitoring Well Bias: A Complicating Factor in Forensic Investigation, presented at 19th Annual National Tanks Conference and Expo, Preconf. Workshop: High Resolution Site Characterization and Integration with Environmental Forensics, March 4, 2007, San Antonio, TX.
- Robbins, G.A., Meyer, T., Thomas, M., Arafuzziman, K., Metcalf, M., Witharana, C., U. Clark, E., 2007, Need for Digital Domestic Well Database for Connecticut, Presented at the 1st Connecticut Conference on Natural Resources (CCNR), University of Connecticut, Storrs, CT, March 9.
- Robbins, G.A., 2007, Dissolved Manganese Anomalies in Groundwater Associated with New Developments in Connecticut, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March , Durham, NH, p. 53.
- Robbins, G.A., 2007, Water Resource Education at the University of Connecticut, Dept. of Public Health, Conference, Drinking Water: Then and Now: Career Planning for the Future, May 8.
- Chau, J., and Robbins, G.A., 2007, Analysis of Long-term Trends in Groundwater Levels in Connecticut, USA, poster presentation, IUGG July 2007 conf., Perugia, Italy.
- Robbins, G.A., and Goldman, J., 2007, Dissolved Manganese in Drinking Water Wells: An NPS Pollution Problem for Rural Development in Connecticut, poster presentation, CSREES New England Regional Water Program, 2007 New England Private Well Symposium, Newport, RI, December 3.
- Robbins, G.A., Potential Sources of Elevated Manganese in Private Water Wells in Connecticut, CSREES New England Regional Water Program, 2007 New England Private Well Symposium, Newport, RI, December 4.
- Robbins, G.A., 2007, Dealing with Scientific Uncertainty in Evaluating Bedrock Groundwater Resources at the Planning and Zoning Commission Level, CSREES New England Regional Water Program, 2007 New England Private Well Symposium, Newport, RI, December 4.
- Metcalf, M., Robbins, G., Meyer, T., and Thomas, M., Application of Spatial Statistics within GIS to Assess Natural Trends in Ground Water Quality in Fractured Bedrock and the Impact of Rural Development, CSREES New England Regional Water Program, 2007 New England Private Well Symposium, Newport, RI, December 4.
- Robbins, G.A., and Gadaleta, C., 2008, Comparison of Conventional and Enhanced Site Investigations at a Service Station Site, North American Environmental Field Conference & Exposition, Tampa, FL, January 14.
- Robbins, G.A., and Olmstead, B., 2008 Determining Soil Air Permeability from a One-Well Steady State Pumping Test, North American Environmental Field Conference & Exposition, Tampa, FL, January 14.
- Kram, M., Jones, H, Chau, J., Robbins, G., Bagtzoglou, A, Farrar, J., and Dalzell, T, 2008 Mass Flux Distribution Using the High-Resolution Piezocone and GMS and Innovative Cost-Effective Ground-Water Monitoring Well Design, North American Environmental Field Conference & Exposition, Tampa, FL, January 15.
- Meyer, T.H., Robbins, G.A., Thomas, M. A., Metcalf, M. J., 2008, Mapping the Invisible: Creating Bedrock Elevation Contour Maps. Oral presentation at the Connecticut Conference on Natural Resources, Storrs, CT, March 10th.

- Bagtzoglou, A.C., Chau, J.F., Kram, M., Robbins, G.A., 2008, Evaluation of High-Resolution Piezocone Methods for Site Characterization and Groundwater Modeling, CMWR XVII International Conference, San Francisco, California, Abstract
- Reale-Munroe, K., Robbins, G.A., Warzecha, W., and Delgado, T., 2008, A Preliminary Assessment of Elevated Manganese Concentration Occurrence in Connecticut Groundwater, 2nd Connecticut Conference on Natural Resources (CCNR), UConn, Storrs, CT, March 10., Poster
- Robbins, G.A., Reale-Munroe, K., and Goldman, J., 2008, Geochemical Linkages Between Increasing Rural Development and Elevated Manganese Levels in Domestic Wells in Fractured Crystalline Bedrock, 5th Annual Water Resources Conference at UMass, Amherst, MA, April 8, Poster.
- Kram, M., Jones, N., Chau, J., Robbins, G. and Bagtzoglou, A., 2008, Mass Flux Distribution Using the High Resolution Piezocone and GMS, Sixth International Battelle Conference, Remediation of Chlorinated Compounds, May 19-22, 2008.
- Meyer, T.H., Robbins, G.A., Thomas, M. A., Metcalf, M. J., 2008, Mapping the Invisible: Creating Bedrock Elevation Contour Maps. Oral presentation at the Connecticut Conference on Natural Resources, Storrs, CT, March 10th.
- Robbins, G.A., and Cassanelli, J., 2009, Temporal and Spatial Trends in the Salt Content of Connecticut's Groundwater over the Last 100 years, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 22 , Portland, Me. p 21.
- Cassanelli, J., and Robbins, G.A., 2009, Assessing the Impact of Road Salting on Ground And Surface Water in Connecticut Using GIS, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 22 , poster, Portland, Me., p 44 .
- Meyer, T.H., Metcalf, M J., Robbins, G. A., and Thomas, M A., 2009, Development of Bedrock Surface Elevation and Depth to Bedrock Maps for the Coventry Quadrangle, Connecticut, Using Water Wells and Lidar Data, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 22 , poster, Portland, Me., p 42.
- Robbins, G., Aragon-Jose, a., Spera, H., & Cassanelli, J. 2010, Adequacy of the Bedrock Groundwater Supply to Support New Developments, presented at the Connecticut Conference on Natural Resources, March 8, Storrs, CT.
- Cassanelli, J. and Robbins, G., 2010, Implementation of Water Quality Monitoring and Tracer Studies to evaluate Impacts of Chemical Deicing on Groundwater , Poster, Connecticut Conference on Natural Resources, March 8, Storrs, CT.
- Spera, H., Robbins, G., Aragon-Jose, & Cassanelli, J. 2010, , Assessing Water Resource Sustainability in Fractured Crystalline Bedrock: A Study of the Expanded Use of Irrigation at the University of Connecticut Agricultural Farm, Storrs, CT, March 8, Poster, Connecticut Conference on Natural Resources, March 8, Storrs, CT.
- Stevens, G., Robbins, G., and Metcalf, M., 2010, The Connecticut Ban on MTBE: Effects on Ground Water Quality, Poster, Connecticut Conference on Natural Resources, March 8, Storrs, CT.
- Spera, H., Robbins, G.A., Aragon-Jose, A., 2010, Assessing Water Resource Sustainability in Fractured Crystalline Bedrock: A Study of the Expanded Use of Irrigation at the University of Connecticut Agricultural Farm, Storrs, CT, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 25 , poster, Baltimore, MD, p. 116.
- Metcalf, M., and Robbins, G.A., 2010, Deciphering Trends in Ground Water Quality and Quantity in the Fractured Bedrock in the Coventry Quadrangle, Connecticut Using GIS, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 25 , Baltimore, MD, p. 123.
- Cassanelli, J., and Robbins, G.A., 2010, Evaluating Impacts of Anthropogenic Salt Influxes to Connecticut's Groundwater Through Water Quality Monitoring and Tracer Studies, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 25 , Baltimore, MD, p. 145.
- Robbins, G.A., and Aragon-Jose, A., 2011, Circumventing Sand Pack Drainage Complication in Determining Hydraulic Conductivity from Monitoring Wells with Partially Submerged Screens, North American Environmental Field Conference & Exposition, San Diego, CA, January 14.

- Kahn-Bureau, D., Lewis, L., and G.A. Robbins, 2011, Testing DNA Barcoding Methods of Diatoms in an Environmental Sample, Northeast Algal Society, 50th Anniversary Symposium, Poster Session, Woods Hole, MA, April, 15-17,.
- Libby, J. and Robbins, G.A., 2012, Verifying an Unsteady State Tracer Dilution Method in Fractured Bedrock Wells Using Physical and Computer Models, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 18, Hartford, CT.
- Chlebica, D.W. and Robbins, G.A., 2012, Deciphering Fractured Crystalline Bedrock Ground Water Recharge: Data Input, Constraints and Modeling Needs, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, Poster Session, March 18, Hartford, CT.
- Chlebica, D.W., Robbins, G.A., Spera, H., Bagtzoglou, A.C., 2012, Resolving Fractured Bedrock Aquifer Flow and Sustainability Issues Using an Equivalent Porous Media Model, International Conference on Groundwater in Fractured Rocks, Poster Session, Prague, Czech Republic, May 23 and 24..
- Metcalf, M.J., Robbins, G.: Deciphering Groundwater Trends in the Fractured Bedrock Using GIS for Resource Management and Planning, International Conference on Groundwater in Fractured Rocks, Poster Session, Prague, Czech Republic, May 21 and 22.
- Libby, J., Robbins, G., 2012, Characterization of Water Contributing Fractures Intersecting a Well in Crystalline Bedrock Through Monitoring Changes In a Tracer Profile during Slug Test Recovery, International Conference on Groundwater in Fractured Rocks, Prague, Czech Republic, May 23.
- Liu, L., Robbins, G.A., Zhu, L., Cagle, B., Joesten, P., and Sernoffsky, R., 2012 Detailed Fracture Mapping Using Surface GPR and Borehole Logging Tools, 14th International Conference on Ground Penetrating Radar, June 5-8, 2012, Shanghai, China.
- Starn, J.J. and Robbins, G.A., 2012, Complex flow paths in simulations of bedrock recharge in Connecticut, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 18, Hartford, CT.
- Metcalf, M. and Robbins, G., 2012, An Approach to Deciphering Ground Water Trends in the Fractured Bedrock Using ArcGIS. ESRI International User Conference, July 23-27, Map Gallery, San Diego, California.
- Robbins, G.A., Libby, J., and Chlebica, D., 2012, Deciphering Fractured Rock Hydrogeology and Contaminant Conditions Using Dye and Oxygen Dilution Methods, U.S. EPA December 18, Boston, MA.
- Metcalf, M., Robbins, G.A. Meyer, T., and Thomas, M., 2013, Defining ground water drainage basin boundaries and recharge for fractured crystalline bedrock using domestic well databases, Geol. Soc. of Amer., Northeastern Section Meet., submitted abstract, March 18-20, Bretton Woods, NH.
- Chlebica, D. W., and Robbins, G.A., 2013, Modifying Ambient Dissolved Oxygen Levels to Locate Intersecting Fractures and Determine Borehole Flow Conditions in Bedrock Wells, Geol. Soc. of Amer., Northeastern Section Meet., submitted abstract, March 18-20, Bretton Woods, NH.
- Robbins, G.A., 2013, Mass Wasting and Other Hazards Caused by Springs, Presented at SNEC-SWCS Conference, February 15, Berlin, CT.
- Robbins, G.A., and Cassanelli, J., 2013, Road Salt Impact to Connecticut's Groundwater: A Statewide Centennial Perspective, Conn. Conf. on Natural Resources, March 18m, Storrs, CT.

## **Rudnicki**

- Rudnicki M., and K. Murphy. 2013. A Physics-Based Model for Tree and Branch Vibrations. International Society of Arboriculture Annual Conference. August 3-7, 2013, Toronto, Canada.
- Klinck, J., Rudnicki, M. and Worthley, T. 2013. Deciduous Tree Sway Frequency Along a Forested Edge. March 18<sup>th</sup> 2013. Connecticut Conference on Natural Resources, Storrs, CT.



- Rudnicki, M., Worthley, T. and Volin, J. 2013. Mitigating Tree Hazards by Managing the Forest Edge for Stability. March 18<sup>th</sup> 2013. Connecticut Conference on Natural Resources, Storrs, CT.
- Rudnicki, M., K. Murphy and A. Campiformio. 2012. Branch Motion of Mature Decurrent Crowns: Experimental and Theoretical Analysis. 7th Plant Biomechanics International Conference. 20-24 August 2012, Clermont-Ferrand, France
- Rudnicki M., A. Hiscox, S. Muppa, H.-B. Su, and D. Miller. 2012. Sway Measurement of a Large Array of Trees Coupled With Canopy Turbulence - An Overview. First Conference on Atmospheric Biogeosciences, 29 May–1 June 2012, Boston, MA
- Hong-Bing Su, M. Rudnicki, A. L. Hiscox, and D. R. Miller. 2012. SwayLES: a coupled large-eddy simulation tree-sway model 30th AMS Conference on Agricultural and Forest Meteorology. Boston, MA
- Rudnicki M. and D.V. Granucci. 2011. Quantifying the response of conifers under freezing conditions. IUFRO Research Conference: Wind & Trees. July 31-Aug 4th 2011. Atlanta, GA
- Web V.A. and Rudnicki M. 2011. Sway and collision dynamics of red pine. IUFRO Research Conference: Wind & Trees. July 31-Aug 4th 2011. Atlanta, GA.
- Su, H.-B. A. Hiscox, M. Rudnicki and D. Miller. 2011. A Coupled 3-D Large-Eddy-Simulation-Tree-Sway Model. IUFRO Research Conference: Wind & Trees. July 31-Aug 4th 2011. Atlanta, GA.
- Rudnicki M. and V.A. Web. 2011. Modeling and measuring crown collisions for managed *Pinus resinosa* in southern Maine. 8th North American Forest Ecology Workshop, Roanoke VA. June 19-23, 2011.
- Web V.A. and Rudnicki M. 2010. Theoretical and Empirical analysis of Crown Collisions in a Forest Canopy. Ecological Society of America, Annual Meeting. Pittsburgh, PA, August 2-6<sup>th</sup>.
- Campiformio A.T. and Rudnicki M. 2010. Assessing Branch Sway Dynamics Using 3D Motion Capture. Tree Biomechanics Research Week and Symposium. The International Society of Arboriculture. Shalersville, OH, August 21- 27.
- Rudnicki M. and Web V.A. 2010. Crown Collisions in a Forest Canopy. Tree Biomechanics Research Week and Symposium. The International Society of Arboriculture. Shalersville, OH, August 21- 27.
- Web V.A. and Rudnicki M. 2009. Estimating Wind Forces and Bending Moments In a Forest Stand Before and After Thinning. 2nd International Conference on Wind Effects on Trees, University of Freiburg, Germany, October 10-13.
- Su H, Rudnicki M., Miller D., Hiscox A. and Webb V.A. 2009. Large-Eddy Simulation of the Aerodynamic Interactions between Canopy Roughness Sublayer Turbulence and Tree-Sway Motions 2nd International Conference on Wind Effects on Trees, University of Freiburg, Germany, October 10-13.
- Hall S., Jones M. and Rudnicki, M. 2009. Visualization and automation of forest sway. 2nd International Conference on Wind Effects on Trees, University of Freiburg, Germany, October 10-13.
- Webb, V.A. and Rudnicki, M. Eastern. 2008. Tree motion and bending stresses in response to wind. Eastern CANUSA Forest Science Conference. October 17-18. University of Maine, Orono, Maine.
- Rudnicki, M. and Webb V.A. 2007. Damped periodic sways in pine and maple canopies. Oral presentation. IUFRO Section 8.01.11 International Conference on Wind and Trees. August 5–9. Vancouver, British Columbia, Canada
- Webb V.A. and Rudnicki M. 2007. A simple linear model for estimating energy losses from crown collisions. Poster presentation. IUFRO Section 8.01.11 International Conference on Wind and Trees. August 5–9. Vancouver, British Columbia, Canada

#### Invited Presentations

- Rudnicki, M. 2012. How Neighboring Trees Influence the Risk of Failure. The Morton Arboretum. Tree Risk Assessment – The Biomechanics of Stability, Strength, and Structure. Lisle, Illinois, September 24-25<sup>th</sup>, 2012.
- Rudnicki, M. 2012. Tree Hazard Mitigation Research at the University of Connecticut. Connecticut Tree Protective Association Meeting. July 19, 2012, Farmington, CT.

- Rudnicki, M. 2012. Understanding Tree Sway and Crown Collisions. Department of Geography Colloquium Series, University of South Carolina, Columbia, SC. March 16<sup>th</sup> 2012.
- Rudnicki, M. 2011. Wind Acclimation of forest trees: looking forward ! Bruno Moulia and Mark Rudnicki. IUFRO Research Conference: Wind & Trees. July 31-Aug 4th 2011. Atlanta, GA.
- Rudnicki, M. 2008. Forest Response to Chronic Wind. Invited talk to the Yale School of Forestry and Environmental Studies, Global Institute of Sustainable Forestry. October 30<sup>th</sup> 2008.
- Rudnicki, M. 2007. Tree Failure and the International Tree Failure Database. Workshop Co-Hosted with Brian Kane (University of Massachusetts) at the 1st Connecticut Conference on Natural Resources. March 2007.
- Rudnicki, M. 2006. Current Forest Research at the College of Agriculture and Natural Resources. Invited talk for state-level forum at the Connecticut Forest Research Forum: From Laboratory to Field. September 28, 2006. Hartford, CT

## **Vokoun**

### Invited Presentations

- Vokoun, J.C. 2009. Population structure, resource selection, and swimming performance of burbot in streams: prerequisite information for conservation of a state-endangered species. Invited seminar at University of Connecticut, Department of Animal Sciences Seminar Series, Storrs, Connecticut.
- Vokoun, J.C. 2008. Population structure, resource selection, and swimming performance of burbot in streams: prerequisite information for conservation of a state-endangered species. Invited seminar at University of Missouri, The Charles W. Schwartz Fisheries and Wildlife Seminar Series, Columbia, Missouri.
- Vokoun, J.C. 2008. Declining trends in participation of fishing and hunting: are we heading into an environmental conservation funding crisis? Invited seminar at Three Rivers Community College, Environmental Issues Seminar Series, Norwich, Connecticut.
- Vokoun, J.C. 2008. Declining trends in participation of fishing and hunting: are we heading into an environmental conservation funding crisis? Invited seminar at University of Connecticut, Natural Resources Departmental Seminar Series, Storrs, Connecticut.

### Conference Presentations

- Hessenauer, J.M., J.C. Vokoun, J.P. Davis, R.P. Jacobs, E.B. O'Donnell. 2013. Estimating the magnitude of catch-and-release mortality in a highly-pressured largemouth bass population. Poster Presentation for Connecticut Conference on Natural Resources. Storrs, CT.
- Hessenauer, J.M., J.C. Vokoun, J.P. Davis, R.P. Jacobs, E.B. O'Donnell. 2013. Understanding angler impacts in the catch and release era: quantifying the proportion and frequency of bass captured by tournament anglers during a fishing season. Oral Presentation for Southern New England Chapter of the American Fisheries Society Winter Meeting. Groton, CT.
- Davis, J., Schultz, E., and J. Vokoun. 2011. Can alternative management of the Connecticut River striped bass fishery help conserve blueback herring? Oral presentation for Connecticut River Atlantic Salmon Commission Research Forum, Hadley, Massachusetts.
- Davis, J., Schultz, E., and J. Vokoun. 2011. Can alternative management of the Connecticut River striped bass fishery help conserve blueback herring? Oral presentation for 5<sup>th</sup> Connecticut Conference on Natural Resources, Storrs, Connecticut.
- Jensen, T., and J. Vokoun. 2011. Detection probability and movement of bridle shiner in a southeastern Connecticut low-gradient stream. Poster for 66th Annual Northeast Fish and Wildlife Conference, Manchester, NH.

- Jensen, T., and J. Vokoun. 2011. Detection probability of bridle shiner, banded sunfish, and swamp darter in a southeastern Connecticut low-gradient stream. Oral presentation for Connecticut Conference on Natural Resources, Storrs, Connecticut.
- Jensen, T., and J. Vokoun. 2011. Detection probability and movement of bridle shiner in a Southeastern Connecticut low-gradient stream. Poster for Southern New England Chapter of the American Fisheries Society Winter Meeting, Woods Hole, MA.
- Kanno, Y., J.C. Vokoun, and K.E. Holsinger. 2011. Assessing climate change impact on size-specific abundance of brook trout in headwater stream networks using hierarchical regression modeling. Oral presentation for Southern New England Chapter of American Fisheries Society 2011 Winter Meeting, Woods Hole, Massachusetts. January 20, 2011.
- Landi, A., Vokoun, J., Auster, P., and P. Howell. 2011. Selection of spawning habitats by horseshoe crabs (*Limulus polyphemus*) along the complex Connecticut coast. Oral presentation for the New England Estuarine Research Society Spring Meeting, Port Jefferson, New York.
- Landi, A., Vokoun, J., Auster, P., and P. Howell. 2011. Selection of spawning habitats by horseshoe crabs (*Limulus polyphemus*) along the complex Connecticut coast. Oral presentation for the 67<sup>th</sup> Annual Northeast Fish and Wildlife Conference, Manchester, New Hampshire.
- Landi, A., Vokoun, J., Auster, P., and P. Howell. 2011. Using GIS to characterize horseshoe crab spawning habitats along the Connecticut coast. Oral presentation for the 5<sup>th</sup> Connecticut Conference on Natural Resources, Storrs, Connecticut.
- Landi, A., Vokoun, J., Auster, P., and P. Howell. 2011. Estimation of wave exposure using fetch and wind data at horseshoe crab spawning beaches along the Connecticut coast. Poster presentation for the College of Agriculture and Natural Resources Graduate Research Forum, Storrs, Connecticut.
- Landi, A., Vokoun, J., Auster, P., and P. Howell. 2011. Estimation of wave exposure using fetch and wind data at horseshoe crab spawning beaches along the Connecticut coast. Poster and oral speed presentation for the Southern New England Chapter of American Fisheries Society Winter Meeting, Woods Hole, Massachusetts.
- Davis, J., Schultz, E., and J. Vokoun. 2010. A moveable feast: striped bass predation on alosines during vernal spawning migrations. Oral presentation for 90<sup>th</sup> Annual Meeting of the American Society of Ichthyologists and Herpetologists, Providence, Rhode Island.
- Davis, J., Schultz, E., and J. Vokoun. 2010. A moveable feast: striped bass predation on alosines during vernal spawning migrations. Oral presentation for 140<sup>th</sup> Annual Meeting of the American Fisheries Society, Pittsburgh, Pennsylvania.
- Kanno, Y., J.C. Vokoun, and B.H. Letcher. 2010. Fine-scale landscape genetic structure of brook trout in a headwater stream network in Connecticut. Oral presentation for American Fisheries Society 140<sup>th</sup> Annual Meeting, Pittsburgh, Pennsylvania. September 14, 2010.
- Kanno, Y., J.C. Vokoun, and B.H. Letcher. 2010. Fine-scale population genetics of brook trout across headwater stream networks in Connecticut. Oral presentation for 2010 Joint Meeting of Ichthyologists and Herpetologists, Providence, Rhode Island. July 9, 2010.
- Kanno, Y., J.C. Vokoun, and B.H. Letcher. 2010. Fine-scale population genetics and mating systems of brook trout across headwater stream networks in Connecticut. Oral presentation for Southern New England Chapter of American Fisheries Society 2010 Summer Meeting, Kingston, Rhode Island. June 23, 2010.
- Landi, A., Vokoun, J., Auster, P., and P. Howell. 2010. Estimation of wave exposure using fetch and wind data at horseshoe crab spawning beaches along the Connecticut coast. Poster for the 140<sup>th</sup> Annual Meeting of the American Fisheries Society, Pittsburgh, Pennsylvania.
- Watrous, D., J.C. Vokoun, T. Castro-Santos, and A. Haro. 2009. Evaluating the swimming performance of Burbot *Lota lota* for fish passage. Oral presentation for American Fisheries Society 139<sup>th</sup> Annual Meeting Nashville, Tennessee.

- Kanno, Y. and J.C. Vokoun. 2008. Can less stream distance be sampled in depauperate regions when estimating fish species richness? Oral presentation for American Fisheries Society 138<sup>th</sup> Annual Meeting Ottawa, Canada.
- Ellis, D. and J.C. Vokoun. 2008. Has Climate Change Already Affected the Migration Timing of Alewife? Poster presentation for Southern New England Chapter American Fisheries Society Winter Meeting, Storrs, Connecticut.
- Kanno, Y. and J.C. Vokoun. 2008. Influence of rare species on electrofishing distance when estimating fish species richness in streams. Oral presentation for Southern New England Chapter American Fisheries Society Winter Meeting, Storrs, Connecticut.
- Kanno, Y., and J. Vokoun. 2008. Biogeography of stream fishes in Connecticut: defining faunal regions and assemblage types. Oral presentation for 64<sup>th</sup> Northeastern Fish and Wildlife Conference, Galloway, New Jersey.
- Kanno, Y., and J. Vokoun. 2008. Biogeography of stream fishes in Connecticut: defining faunal regions and assemblage types. Oral presentation for 2<sup>nd</sup> Connecticut Conference on Natural Resources, Storrs, Connecticut.
- Schmit, R., G. Warner, P. Parasiewicz, and J. Vokoun. 2007. Evaluation of three hydrodynamic habitat models applied to the Fenton River, Storrs, CT. Oral presentation for 63<sup>rd</sup> Annual Northeast Fish and Wildlife Conference, Groton/Mystic, Connecticut.
- Edwards, D.J. and J.C. Vokoun. 2007. EMG telemetry and individual-based bioenergetic models: lab evaluation of a method to explore energetic-based habitat quality. Oral presentation for 63<sup>rd</sup> Annual Northeast Fish and Wildlife Conference, Groton/Mystic, Connecticut.
- Trumbo, B.A., D.J. Edwards and J.C. Vokoun. 2007. Are special bass-management regulations at odds with human-health advisories in mercury-contaminated lakes? Oral presentation for 63<sup>rd</sup> Annual Northeast Fish and Wildlife Conference, Groton/Mystic, Connecticut.
- Dixon, C. J. and J. C. Vokoun. 2007. Population demographics of State-endangered Burbot (*Lota lota*) in Northwestern Connecticut. Oral presentation for 63<sup>rd</sup> Annual Northeast Fish and Wildlife Conference, Groton/Mystic, Connecticut.
- Dixon, C. J. and J. C. Vokoun. 2006. State-endangered Burbot Habitat Use in Northwestern Connecticut. Oral presentation for American Fisheries Society 136<sup>th</sup> Annual Meeting, Lake Placid, New York.
- Vokoun, J.C., S.L. Bourret, J. Hoxmeier, and K. Stauffer. 2006. Flathead catfish coldwater feeding patterns, metabolism, and homing ability address potential effects of wintertime angling. Poster presentation for American Fisheries Society 136<sup>th</sup> Annual Meeting Lake Placid, New York.
- Trumbo, B.A., D.J. Edwards and J.C. Vokoun. 2006. Are special bass-management regulations at odds with human-health advisories in mercury-contaminated lakes? Poster presentation for American Fisheries Society 136<sup>th</sup> Annual Meeting, Lake Placid, New York.
- Edwards, D.J. and J.C. Vokoun. 2006. EMG telemetry and individual-based bioenergetic models: lab evaluation of a method to explore energetic-based habitat quality. Oral presentation for American Fisheries Society 136<sup>th</sup> Annual Meeting, Lake Placid, New York.
- Dixon, C. J. and J.C. Vokoun. 2006. Habitat use of state-endangered burbot in Northwestern Connecticut. Oral presentation at 62<sup>nd</sup> annual Northeast Fish and Wildlife Conference, Burlington, Vermont.
- Edwards, D. J. and J. C. Vokoun. 2006. Does averaged time interval effect oxygen consumption of CEMG-derived oxygen consumption estimates? Poster presentation at 62<sup>nd</sup> annual Northeast Fish and Wildlife Conference, Burlington, Vermont.
- Dixon, C. J. and J.C. Vokoun. 2006. Habitat use of state-endangered burbot in Northwestern Connecticut. Oral presentation at Southern New England Chapter American Fisheries Society Summer Meeting, Dartmouth, Massachusetts.

## **Volin**

### Presentations

- Rand, C., J.C. Volin and R. Ricard. 2012. "Buy Local:" Consumer behavior and wood products. New England Society of American Foresters 92<sup>nd</sup> Winter Meeting. April 3-6, 2012 UMass Amherst, Amherst, Massachusetts.
- Boukili, V.K.S., R.L. Chazdon and J.C. Volin. 2012. Using plant functional traits to refine ecological restoration techniques: A seedling transplant experiment. *In: Proc. Ecological Society of America 97<sup>th</sup> Annual Meeting*, Aug. 2012, Portland, OR.

#### Posters

- Furedi, M.A., J.C. Volin, M.S. Korvela, S. Miao and L. Rodgers III. 2006. Detection and Implications for Management of *Lygodium microphyllum* on Tree Islands in Water Conservation Areas Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference*, June 2006, Lake Buena Vista, FL.
- Gardner, M.D., J.C. Volin and M.S. Lott. 2006. The Effect of Hydroperiod on the Growth of the Crayfish Species *Procambarus alleni* and *P. fallax*: Two Keystone Species in the Florida Everglades. Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference*, June 2006, Lake Buena Vista, FL.
- Jacobs, A., J.C. Volin and D. Owen. 2006. Nutrient Limitation in a Forested Wetland on the Big Cypress Seminole Indian Reservation. Greater Everglades Ecosystem Restoration Conference Planning, Policy and Science. *In: Proc. GEER 2006 Science Conference*, June 2006, Lake Buena Vista, FL.

#### Invited Presentations

- Volin, J.C. 2005. Invasive species and Everglades Restoration. University of Queensland, Brisbane, Australia. January 2005.
- Volin, J.C. 2005. Vision of Natural Resource Ecology and Management in the U.S. and Abroad. Iowa State University. May 2005.
- Volin, J.C. 2005. Developing optimal management strategies for invasive species: linking physiological ecology with operations research. IUFRO World Congress 2005, Brisbane, Australia, August 2005.
- Volin, J.C. 2005. Functional basis for geographical variation in the climbing fern *Lygodium microphyllum*. ECOFIZZ Conference 2005, Stradbroke Island, Australia, November 2005.
- Volin, J.C. 2006. Can Soil Environment Help Explain *Lygodium microphyllum* invasion? A Cross Continental Comparison. South Florida Water Management District, May 2006.
- Volin, J.C. 2006. Functional basis for geographical variation in growth among invasive species: the importance of comparing native versus non-native habitats. Special Symposium on Biological Invasion in the Tropics, The Annual Meeting of the Association for Tropical Biology and Conservation, July 2006, Kunming, Yunnan, China.
- Volin, J.C. 2007. A Vision for Natural Resources Management and Engineering. University of Connecticut, February 2007.
- Volin, J.C. 2007. The Florida Everglades: will an alien fern strangle its restoration? Frontiers in Science Lecture Series, Florida Atlantic University, February 2007.
- Volin, J.C. 2007. Changes in Landscape Patterning in the Central Everglades: Importance of Surface Water Flow and Soil Thickness. Everglades National Park, March 2007.
- Volin, J.C. 2007. The Florida Everglades: Will an Alien Fern Strangle its Restoration?" University of Connecticut, Department of Ecology and Evolutionary Biology, October, 2007.
- Givnish, T.J. and J.C. Volin. 2008. Self-assembly of Patterned Landscapes and Vegetation in the Central Everglades: Importance of Local and Landscape Drivers, pp. 137-138. Greater Everglades Ecosystem Restoration Planning, Policy and Science Meeting Everglades Restoration 2050 – Advancing the Science to Achieve Success. *In: Proc. GEER 2008 Science Conference*, August 2008, Naples, FL.
- Volin, J.C. 2009. Functional Basis for Geographical Variation in Growth Among Invasive Species: a Perspective from Temperate to Tropical Ecosystems. International Conference on Invasive Plants in the Tropics: Ecology, Management and Livelihoods. January 2009, Bangalore, India.

- Volin, J.C. 2009. The Florida Everglades: Will an Alien Fern Strangle its Restoration? Pennsylvania State University, School of Forest Resources, September, 2009.
- Volin, J.C. 2009. The Florida Everglades: Will an Alien Fern Strangle its Restoration? University of Vermont, Department of Plant Biology, October, 2009.
- Volin, J.C. 2010. The Florida Everglades: Will an Alien Fern Strangle its Restoration? University of Wisconsin-Madison, Biology Colloquium, March, 2010.
- Volin, J. C. 2010. Opportunities for Research and Education in UConn's Department of Natural Resources and the Environment. China Agricultural University. May 2010.
- Volin, J. C. 2010. Opportunities for Research and Education in UConn's Department of Natural Resources and the Environment. Northwest Agricultural and Forestry University. May 2010.
- Volin, J. C. 2010. Opportunities for Research and Education in UConn's Department of Natural Resources and the Environment. Sichuan University. May 2010.
- Volin, J.C. 2010. Managing the invasive aquatic plant, *Hydrilla verticillata*, in an urban New England watershed, Northeast Aquatic Nuisance Species Panel Meeting, November 2010.
- Volin, J.C. 2011. Opportunities for Research and Education in UConn's Department of Natural Resources and the Environment. Sino-USA collaboration on climate, ecosystem and water resources. China Northwestern University of Forestry and Agriculture, Yangling, China, May 16, 2011
- Volin, J. C. 2011. Opportunities for Research and Education in UConn's Department of Natural Resources and the Environment. Sino-USA collaboration on climate, eco-hydrology and water resources. China Agriculture University, Beijing China, May 11, 2011.
- Volin, J.C. 2011. Aliens vs. Native Species: Who's Winning in the Florida Everglades? New York Farmers, Union Club, New York City, February 2011.
- Volin, J.C. 2012. Functional Basis for Geographic Variation in Growth among Invasive Species: The Case of *Lygodium microphyllum*. 9<sup>th</sup> INTECOL International Wetlands Conference, Orlando, Florida, June, 2012.
- Volin, J.C. 2013. Predicting Ecosystem Change in Response to Climate Change: Plant Species and Community Responses. with Arnold van der Valk and Paul Wetzel, Predicting Ecological Changes in the Florida Everglades in a Future Climate Scenario FAU-CES, USGS, Florida Sea Grant Sponsored Workshop, February 2013.

## **Warner**

- Warner, G.S. 2013. Temporal Variation of Infiltration Capacity: A Review. Paper # 13-034. Northeast Agricultural and Biological Engineering Conference. Altoona, PA. June 16-19, 2013.
- Warner, G.S. 2013. Statewide Water Planning. Connecticut Watershed Conservation Network Conference; May 16, 2013, Berlin, CT.
- Warner, G.S. 2013. Hydrologic Design with Climate Change: the Need for a New Approach. Connecticut Conference on Natural Resources. March 11, 2013. Storrs, CT.
- Warner, G.S. 2012. Do we need new approaches for hydrologic design? Paper # 12-129. Northeast Agricultural and Biological Engineering Conference. Orillia, Ontario. July 15-July 18, 2012.
- Grunwald, D. and Warner, G.S. 2012. New method and apparatus for measuring the bulk density of irregularly shaped soil clods. Paper # 11-075. Northeast Agricultural and Biological Engineering Conference. Burlington, Vermont. July 24-July 27, 2011.
- Warner, G.S. 2011. Snowloads and roof ice dams: Winter 2011 in Connecticut. Paper # 11-098. Northeast Agricultural and Biological Engineering Conference. Burlington, Vermont. July 24-July 27, 2011.
- Warner, G.S. 2011. Modeling the Cost Benefits of Energy Conservation Measures. Paper # 10-016. Northeast Agricultural and Biological Engineering Conference. Geneva, NY. July 18-July 21, 2010.
- Grunwald, D. and G.S. Warner. 2010. Improving Hydraulic Conductivity and Root Penetration with Subsoil Amendments. Comparisons of organic and synthetic amendments to ameliorate subsoil

- compaction. Paper # 10-021. Northeast Agricultural and Biological Engineering Conference. Geneva, NY. July 18-July 21, 2010.
- Warner, G.S. and D. Grunwald. 2009. Comparisons of organic and synthetic amendments to ameliorate subsoil compaction. Paper # 09-060. Northeast Agricultural and Biological Engineering Conference. Halifax, Nova Scotia. July 26-July 29, 2009.
- Grunwald, D. and G.S. Warner. 2009. Performance of subsoil amendment materials to prevent urban subsoil compaction and enhance water transport. Connecticut Conference on Natural Resources. March 9, 2009.
- Warner, G.S. 2008. "SedTrap: A tool for designing sediment basins and determining sediment trap efficiencies under dynamic loading conditions". Paper # 08-023. Northeast Agricultural and Biological Engineering Conference. Aberdeen, Maryland, July 27-July 30, 2008.
- Warner, G.S. and J. Bartok. 2007. "Agricultural Engineering and Related Programs at the University of Connecticut: A Historic Perspective". Paper # 07-P023. Northeast Agricultural and Biological Engineering Conference. Wooster, Ohio, July 29-August 1, 2007.
- Warner, G.S., P. Bresnahan, and R.A. Jacobson, 2007. Modeling Flows Downstream of Water Supply Reservoirs. Paper # 072092. Annual International Conference, ASABE. Minneapolis, MN; June 17-20, 2007.
- Jacobson, R.A., G.S. Warner, P. Parasiewicz, A.C. Bagtzoglou and F.L. Ogden. 2007. An Interdisciplinary Study of the Effects of Groundwater Extraction on Freshwater Fishes. 63<sup>rd</sup> Annual Northeast Fish and Wildlife Conference. Mystic, CT April 22-25, 2007.
- Schmit, R., G.S. Warner, P. Parasiewicz, J. Vokoun. 2007. Evaluation of Three Hydrodynamic Habitat Models Applied to the Fenton River, Storrs, Connecticut. 63<sup>rd</sup> Annual Northeast Fish and Wildlife Conference. Mystic, CT April 22-25, 2007.
- Warner, G.S., P. Bresnahan, R.A. Jacobson, J.M. Stella. 2007. Modeling the Effect of Reservoir Release Practices on Available Water Supply Using STELLA. Massachusetts Water Resources Conference. April 9, 2007. Amherst, MA.
- Warner, G.S., A.C. Bagtzoglou, L. Liu, and F.L. Ogden, P. Parasiewicz, R.A. Jacobson, J.M. Stella and F. Nadim. 2007. Hydrologic Impact of Water Supply Wells on the Fenton River. Connecticut Conference on Natural Resources. March 9, 2007. Storrs, CT.
- Bresnahan, P., G.S. Warner, R.A. Jacobson and J.M. Stella. 2007. Modeling the effects of reservoir release practices on downstream flows. Connecticut Conference on Natural Resources. March 9, 2007. Storrs, CT.
- Jacobson, R.A., G.S. Warner, P. Parasiewicz, A.C. Bagtzoglou and F.L. Odgen. 2007. An Interdisciplinary Study of the Effects of Groundwater Extraction on Freshwater Fishes. Connecticut Conference on Natural Resources. March 9, 2007. Storrs, CT.
- Schmit, R., J. Vokoun, G.S. Warner, P. Parasiewicz and R.A. Jacobson. 2007. Transferability of Habitat Suitability Curves from Three Rivers to the Fenton River, Storrs, Connecticut. Connecticut Conference on Natural Resources. March 9, 2007. Storrs, CT.
- Stella, J.M and G.S. Warner. 2007. Development of Recession Curves for the Fenton River, Storrs, Connecticut. Connecticut Conference on Natural Resources. March 9, 2007. Storrs, CT.
- Hood, M.J., J.C. Clausen, G.S. Warner, and Bent C. Braskerud. 2006. Restoration of the hydrological regime after urban development. Poster Presentation at the 24<sup>th</sup> Nordic Hydrological Conference, 2006. *Experiences and Challenges in Implementation of th EU Water Framework Directive*. Vingsted, Denmark.
- Schmit, R.M., G.S. Warner, P. Parasiewicz, J. Vokoun and R. Jacobson. 2006. Evaluation of Habitat Selection Models Proposed for Blacknose Dace Applied to Instream Flow Analyses in Southern New England. 136<sup>th</sup> Annual American Fisheries Society Meeting. Lake Placid, NY Sep. 10-14, 2006.
- Warner, G.S. 2006. Impact of Water Supply Wells on Flow in the Fenton River, Storrs, Connecticut. Paper # 06-046. Northeast Agricultural and Biological Engineering Conference. Montreal, Quebec, July 31-August 3, 2006.

- Hood, M.J., J.C. Clausen, and G.S. Warner. 2005. Stormwater Lag Times for a Low-Impact Development. UENSCO IHP VI Workshop Trondheim, Norway. Nov. 3-4, 2005.
- Smith, B. and G.S. Warner. 2005. Modeling Flow on a Hillslope under Varying Distributions of Hydraulic Conductivity. Paper # 05-037. Northeast Agricultural and Biological Engineering Conference. Lewis, DE, August 7-10, 2005.
- Warner, G.S. and P.A. Bresnahan. 2007. Connecticut Institute of Water Resources and Responsible Water Basin Planning. Poster presentation at *Legislative Reception*, May 24, 2007, Hartford, CT.
- Warner, G.S. and P.A. Bresnahan. 2007. CTIWR Reservoir Flow Model. Invited presentation to Dept. of Civil and Environmental Engineering, Tufts University, The Nature Conservancy and Stockholm Environment Institute-U.S. March 13, 2007, Tufts University, Boston, MA.
- Bresnahan, P.A., G.S. Warner and J.M. Stella. 2007. STELLA Reservoir Flow Model Update. Focus: Draft Class 2, Class 3 Rules. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Feb. 26, 2007; Hartford, CT.
- Warner, G.S. and P.A. Bresnahan. 2007. Modeling the Effect of Reservoir Release Practices on Downstream Flows using STELLA. Poster at CANR Faculty Staff Workshop Feb. 2, 2007; Storrs, CT.
- Bresnahan, P.A., and G.S. Warner. 2007. Supporting Science-Based Policy, Planning and Management of Connecticut's Water Resources. Poster at CANR Faculty Staff Workshop Feb. 2, 2007; Storrs, CT.
- Bresnahan, P.A., G.S. Warner and J.M. Stella. 2007. STELLA Reservoir Flow Model: Update. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Jan. 23, 2007; Hartford, CT.
- Bresnahan, P.A., and G.S. Warner. 2006. Connecticut Institute of Water Resources Reservoir Model: Part I. Verification of Geometry and Inflow Scaling Assumptions; Part II. New Release Rules. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Dec. 11, 2006; Hartford, CT.
- Warner, G.S. and P.A. Bresnahan. 2006. STELLA Reservoir Flow Model: Preliminary Results. Presentation to CT DEP Instream Flow Science and Technical Workgroup, Nov. 13, 2006; Hartford, CT.
- Warner, G.S. 2006. Modeling Hydrologic Processes using STELLA. Environmental Engineering Seminar, Univ. of Connecticut. Dec. 1, 2006. Storrs, CT.
- Warner, G.S. 2006. Fenton River Study: Surface Hydrology, Flow Measurements and Flow Statistics. CT Institute of Water Resources Seminar, Mar. 1, 2006.
- Warner, G.S. and A.C. Bagtzoglou. 2006. Long-Term Impact Analysis of the University of Connecticut's Fenton River Water Supply Wells on the Habitat of the Fenton River. University of Connecticut, Board of Trustees. Jan. 31, 2006.
- Warner, G.S. and A.C. Bagtzoglou. 2006. Long-Term Impact Analysis of the University of Connecticut's Fenton River Water Supply Wells on the Habitat of the Fenton River. University of Connecticut, Environmental Policy Advisory Committee. Dec. 15, 2006.
- Warner, G.S. 2006. Mansfield Hollow Lake - Willimantic Reservoir Watershed Study. Joint meeting of Eastford and Chaplin Conservation Commissions. Dec. 14, 2005.
- Ogden, F.L. and G.S. Warner. 2005. Monitoring Small Upland Watersheds to Determine Ground Water - Surface Water Interactions and Runoff Processes. CT Institute of Water Resources Seminar, Apr. 27, 2005.
- Warner, G.S. 2005. Runoff Processes in Connecticut Landscapes. Annual Meeting of CACIWC (Connecticut Association of Conservation, Inland Wetlands Commissions), *November 13, 2004, Wallingford, CT*
- Clausen, J.C. and G.S. Warner. 2006. Mansfield Hollow Lake - Willimantic Reservoir Watershed Study. Windham Water Works. Dec. 6, 2005.



## Yang

- Yang, X. 2012. Restoring ecological buffers for improving surface water quality. Invited speech at the Ministry of Water Resources. Beijing, China. August 2012.
- Yang, X. 2012. Recent developments in Food, environmental and ecosystem safety. Invited speech at Zhangzi Forum on Rural Development. Zhangzi, China. August 2012.
- Yang, X. 2012. Food security and food safety: A global status report and recent development. Invited plenary speech at the Hunan AST Conference on Food Safety. Ningxiang, China. July 2012
- Yang, X. 2011. Systematic approach for solving the key problems in environmental and food safety in China. Invited speech at the 2011 SAOCA Annual Conference, Hanzhou, China. November 2011.
- Yang, X. 2011. Collaborative studies on agricultural and biological systems engineering by AOC and ACAAS: An outlook. Invited speech at the Yunnan Academy of Agricultural Sciences. November, 2011.
- Yang, X. 2011. YIAMA: A new bridge for China exchange. Invited speech at the International Forum on China Exchange and AOC 10th anniversary celebration. AOC/ASABE. Louisville, KY. August 2011.
- Yang, X. 2011. Integrative modeling studies on ecosystem and water resources. Plenary speech at the Sino-US Forum on Ecosystem and Water Resources. Yangling, China. May 2011.
- Yang, X. 2010. Using simulation models in evaluating effectiveness and efficiency of soil and water conservation measures in arid/semi arid climates. Invited lecture at the Forum on Soil and Water Conservation, the Yellow River Administrative Commission. Zhengzhou, China. August 2010.
- Yang, X. 2010. Methods of integrative studies in natural resources, the environment, and bioenergy. Invited plenary speech at the establishment ceremony of YIAMA and the 1<sup>st</sup> International Forum on Modern Agriculture and Scientific Innovation. Yangling, China. July 2010.
- Yang, X. 2010. Integrative studies on environmental/ecological systems at river basin scale. Invited plenary speech at the 2010 Annual Conference of CAST-CT. Storrs, CT. May 2010.
- Yang, X. 2009. Scientific research and technical writing. Invited lecture at Northwest A&F University. Yangling, China. December 2009.
- Yang, X. 2009. Integrity and creativity in education and learning. Invited lecture at the Third Forum on Overseas Chinese Intellectuals in Supporting Technology Development in China. Kunming, China. August 2009.
- Yang, X. 2009. Integrative study on water resources management in Yellow River basin. Invited speech at the Workshop on Sustainable Rural Development in China. China Agricultural University, Beijing China. May 2009.
- Yang, X. 2009. Multimedia modeling of agricultural contaminants at river basin scale. Invited lecture, Chinese Academy of Sciences Institute of Soil and Water Conservation, May 2009.
- Yang, X. 2009. HEE modeling for water resources management: An integrative approach. Invited plenary speech at the International Conference on Earth Science and Technology 2009. Beijing, China. May 2009.
- Yang, X. 2009. Rural development and reformation of agricultural research, education and extension system in China. Wuxi Scientific Lecture Hall, Wuxi Association of Science and Technology. Wuxi, China. May 2009.
- Yang, X. 2008. Environmental issues in production and use of bio-energy: focusing on biomass feedstock. Invited speech at the Connecticut Conference of Sustainable Energy. Storrs, CT. March 2008.
- Yang, X. 2007. Bioenergy research initiatives at University of Connecticut. Presentation at the Northeast Biomass Summit. Ithaca, NY. November 2007.
- Yang, X. 2008. Peer review publications: everything you need to know about. Invited seminar at Beijing Normal University. Beijing, China. January 2008.
- Yang, X. 2008. Scientific research methodologies: issues, procedures, and ethics. Invited seminar at Beijing Normal University. Beijing, China. January 2008.

- Yang, X. 2007. The roles, responsibilities, and contributions of agricultural extension specialists in the rural development in China. Invited keynote speech at the Guangxi Provincial Conference on Scientific Support to Agricultural and Rural Development. Nanning, China. January 2007.
- Yang, X. 2007. Fundamentals and the skills of scientific communication. Invited seminar at the Beijing Normal University. Beijing, China. January 2007.
- Yang, X. 2006. Agricultural research, education, and extension: What can China learn from America? Invited speech at the 7<sup>th</sup> National Congress of the Association of Science and Technology of China. Beijing, China. May 2006.
- Yang, X. 2006. Integrative studies in natural resources management: research methods and case studies. Invited lecture at Beijing Normal University. May 2006.
- Yang, X. 2006. In between UConn and Shandong: A whole spectrum of common interests and challenges. Invited speech by UConn Chancellor at the reception for delegation from Shandong. April, 2006.

### **Appendix B5: List of Honors received by NRE Faculty 2005-2013**

- Anyah, R. Rutgers University President Merit Award for Research Contributions, 2008
- Anyah, R. Al Geib Professorship in Environmental Engineering Research and Education. University of Connecticut. 2013.
- Civco, D. ASPRS SAIC Estes Memorial Teaching Award. 2010
- Civco, D. Phi Kappa Phi. 2008
- Civco, D. National Award for Excellence in College and University Teaching in the Food and Agricultural Sciences. National Award. National Association of State Universities and Land Grant Colleges. USDA and CSREES (1<sup>st</sup> Place). 2007
- Civco, D. ESRI Best Practices in Science Modeling Challenge (with J. Parent and S. Angel) (1<sup>st</sup> place). 2007.
- Clausen, J. Phi Kappa Phi. 2011.
- Clausen, J. National Soil and Water Conservation Society Commendation Award. 2012.
- Clausen, J. Regional United States Department of Agriculture Food and Agriculture Sciences Excellence in Teaching Award. 2013.
- Meyer, T. Fellow of the American Association for Geodetic Surveying. 2013
- Meyer, T. Wolfram Innovator Award 2013. Wolfram Research Inc., the maker of Mathematica and Wolfram Alpha.
- Ortega, I. Donald M. Kinsman Award for Excellence in Undergraduate Teaching by a Junior Faculty. 2005
- Ortega, I. University of Connecticut Outstanding Undergraduate Student Advising Advocacy Award. 2008.
- Ortega, I. University of Connecticut Alumni Association Faculty Excellence in Teaching Award. 2013.
- Robbins, G. 2012 Recipient of the Contribution to Practice Award, Licensed Site Professionals Association (of Massachusetts).
- Vokoun, J. Donald M. Kinsman Award for Excellence in Undergraduate Teaching by a Junior Faculty 2009. University of Connecticut, College of Agriculture and Natural Resources.
- Vokoun, J. Irwin Alperin Outstanding Member Award from the American Fisheries Society Southern New England Chapter 2006 for establishment of the UCONN AFS student sub-unit.

## Appendix B6: List of Grants received by NRE Faculty 2005-2013

### Extramural Grants

#### Anyah

- 2013 – 2014 Role of coupled climate-hydrology-land use connections on present and future hydro-climates of the Greater Horn of Africa. NSF. \$94,051.
- 2011 – 2016 Investigation of linkages between climate extremes, climate change and agriculture in Northeastern United States: \$76,000. USDA-Hatch.
- 2007 – 2012 Modeling climate variability and change of the Greater Horn of Africa. \$382,601 NSF.
- 2010 – 2012 Research Experience for Undergraduates (REU) Grant Award of \$18,742. NSF.
- 2012 Modeling climate variability and changes over the Greater Horn of Africa: \$40,389 NSF.
- 2007 – 2008 University Corporation for Atmospheric Research (UCAR): UCAR Africa Initiative on advanced weather and climate modeling for application in the Health Sector. \$53,393.

#### Barclay

- 2007-2009 Moose in Connecticut: Movements, Landscape Use, Survival, Impacts on the Ecosystem, and Public Perceptions. John Barclay and Andrew LaBonte, Wildlife Conservation Research Center, CT DEP Wildlife Division, Cooperating. \$107,108.
- 2008-2010 Surveillance of Chronic Wasting Disease in White-tailed Deer and Distribution of New England Cottontail. John Barclay and Andrew LaBonte. CT Dept. of Environmental Protection \$109,507.94.
- 2006 Grouse and Woodcock Conservation. Anonymous Donor. Final payment \$15,000 of \$180,000 total Foundation.
- 2006-2007 Restoration of Ruffed Grouse and Woodcock. Quaker Valley Farm, Pawling, NY \$40,000.
- 2006 Graduate research assistantship for woodcock conservation. National Shooting Sports Foundation, Newtown, CT. \$2,000.
- 2004-2005 Grouse and Woodcock Conservation Project 3rd yr of 3, Anonymous Donor. \$45,000
- 2004-2005 Nuisance Resident Can. geese. NE Wildlife Damage Coop. \$25,000
- 2005-2006 Nuisance geese. Renewal, 2<sup>nd</sup> of 2yrs. NE Wildlife Damage Unit, Ithaca, NY. \$22,000
- 2006 Equipment/Laptop computer. French Foundation. \$3,500
- 2006 Role of cadmium in male woodcock. National Shooting Sportsman Fund, CT. \$2,000
- 2006 1<sup>st</sup> CT Wildlife Conservation Conf. Apr. UC Research Foundation. \$500
- 2006-2007 Moose Ecology and Behavior in CT. NE Wildlife Damage, Ithaca, NY. \$29,343

#### Bosker

- 2012-2014 The impacts of wastewater from a retirement community on fish health. Connecticut Institute of Water Research/USGS. \$40,000.
- 2012-2013 The impacts of wastewater from municipal waste water treatment plants on fish health in the Quinnipiac River. Greater New Haven Research Foundation. \$18,000.
- 2012-2015 The Combined Effect of Environmental and Anthropogenic Stressors on Fish Health. Ocean Leadership, Inc. Gulf of Mexico Research Initiative (GoMRI). \$489,309 (Year 1) (Total \$1,385,339). PI changed to Sylvain De Guise and Co-PI Chris Perkins.

#### Bresnahan

- 2007 Data Needs Assessment for Basin Planning Purposes. Connecticut Department of Environmental Protection. \$40,000.

#### Civco

- 2012 – 2017 Agroforestry riparian project for biofuel and environmental benefits. Co-PI. (J. Clausen,

- PI). Storrs Agricultural Experiment Station.
- 2011-2014 Object-oriented land cover classification of multitemporal, multisource remote sensing data. Storrs Agricultural Experiment Station. \$47,167.
- 2012 – 2016 Forest susceptibility to non-native woody plant invasion under different forest management practices. Co-Investigator (J. Volin, PI). Storrs Agricultural Experiment Station. \$56,288
- 2011 Global warming impacts on CT salt marsh ecosystems and consequent effects on salt marsh vulnerability to sea level rise. Yale University. \$8,333.
- 2010 Long Island Sound Marsh Migration Animation. The Nature Conservancy Global Climate Change Initiative. \$4,054.
- 2010 American Chestnut in Connecticut Developing Geospatial Models for the Prediction of Probable Sites for Finding Flowering Sprouts and Habitat Suitability for Reintroduction. Connecticut Chapter of the American Chestnut Foundation. \$6,000.
- 2009-2011 Multi-temporal Assessment of Connecticut Lake Water Clarity Using Landsat Satellite Imagery. Connecticut Institute for Water Resources. \$24,080.
- 2009-2011 Object-oriented land cover classification of spatially-enhanced satellite remote sensing data. Storrs Agricultural Experiment Station. \$63,312.
- 2009-2010 Long Island Sound’s Changing Salt Marshes: A remote sensing analysis of sea level rise and possible salt marsh migration. The Nature Conservancy Connecticut Chapter, New Haven, CT. \$36,046.
- 2008-2009 Fifth International Workshop on the Analysis of Multi-Temporal Remote Sensing Imagery (MultiTemp 2009) Co-sponsorship Agreement. US EPA, NASA, and USGS. \$45,696.
- 2008-2011 A Multi-scale Approach to the Forecast of Potential Distributions of Invasive Plant Species. Ecological Impacts from the Interactions of Climate Change, Land Use Change and Invasive Species: A Joint Research Solicitation–EPA&USDA. EPA-G2007-STAR-H2 Terrestrial Ecosystems. Co-PI. (John Silander, UConn EEB, PI). \$545,000.
- 2008-2009 Mapping of Key Habitats for Species of Greatest Conservation Need. Principal Investigator. Connecticut Department of Environmental Protection. \$85,992.
- 2007-2008 Connecticut's Changing Salt Marshes: A Remote Sensing Analysis of Sea Level Rise and Possible Salt Marsh Migration. Nature Conservancy. \$10,000.
- 2006-2008 Coupling of Spatially-distributed Non-point Source Pollution, Urban Growth, and Forest Fragmentation Models. Storrs Agricultural Experiment Station. \$104,737.
- 2005-2008 Incorporating NASA’s Applied Sciences Data and Technologies into Local Government Decision Support in the National Application areas of Coastal Management, Water Management, Ecologic Forecasting and Invasive Species. (augmentation award). PI. (Chester Arnold and Sandy Prisloe, Co-PIs). National Aeronautics and Space Administration. \$744,000.
- 2005-2008 Incorporating NASA’s Applied Sciences Data and Technologies into Local Government Decision Support in the National Application areas of Coastal Management, Water Management, Ecologic Forecasting and Invasive Species. National Aeronautics and Space Administration. \$1,868,797
- 2004-2007 Causes and Consequences of Urban Expansion. National Science Foundation. Co-PI (Stephen Sheppard, Williams College, PI). \$497,461. (UConn share \$111,422).
- 2004-2006 Application of Remote Sensing Technologies for the Delineation and Assessment of Coastal Marshes and their Constituent Species. US EPA Long Island Sound Study

Research Fund. \$179,159.

2002-2005 Remote sensing and GIS analysis of landscape parcelization and forest fragmentation. Storrs Agricultural Experiment Station. \$127,794.

### **Clausen**

1995-2006 Jordan Cove Urban Watershed Project. US EPA & Ct. Dept. Environ. Protection. \$933,000. J. Clausen (PI), J. Alexopoulos, K. Guillard, T. Morris.

2004-2006 Constructed Wetland Modification. USDA-NRCS. \$6,140.

2004-2006 Constructed Wetlands to Reduce Nonpoint Source Pollution. USDA-CSREES Hatch. G. Warner (Co-PI). \$33,000.

2004-2005 Analytical Support for the Connecticut Department of Environmental Protection. \$86,400.

2006-2009 Effects of vegetation on bacteria and pollutant reduction in a stormwater wetland. USDA-CSREES. \$40,563.

2012-2017 Agroforestry riparian project for biofuel and environmental benefits. Clausen, J., D. Civco, J. Kuzovkina, C. Rittenhouse, G. Robbins, J. Volin, G. Warner, and X. Yang. USDA NIFA Hatch. \$70,360.

2012-2015 Organic Stabilizer to Reduce Sediment and Associated Pollutant Losses from Dairy Heavy Use Areas, USDA-NRCS-CT. \$75,000.

2011-2013 Post-audit verification of the model SWMM for low impact development, DOI/US Geological Survey. Co-PI with M. Dietz (PI). \$27,733.

2012-2013 Bioretention-based stormwater practices for nitrogen removal: implementation and monitoring. Co-PI with M. Dietz (PI). U.S. EPA/LISS. \$66,603

2010-2013 Physiological Responses of *Phragmites australis* to the Timing of Plastic Covering Treatments, USDA Hatch. \$38,841.

2012-2014 Multi-Faceted Support of IC-TMDL Implementation, Dietz, M. and Clausen, J.C. CT Department of Environmental Protection. \$90,000.

2009-2012 Bacteria Source Tracking of Pigeon and Cattle Strains of *Escherichia coli* in a Constructed Stormwater Treatment Wetland. \$41,185.

2008-2011 Gant Plaza Green Roof Project. U.S. Environmental Protection Agency, \$75,688.

### **Meyer**

2012-2015 Meyer, T. Final Testing and Analysis of Connecticut's Real-Time Positioning System (ACORN). U.S. Department of Transportation. \$284,656.

2012-2013 Transforming NAD 27 and NAD 83 Positions: Making Legacy Mapping and Surveys GPS Compatible. Meyer, T. and Baron, R. JHRAC. \$39,290.

2011-2014 Grasses for Bioenergy: Pollen Aerobiology, Biocontainment, and Plant Genetics. Auer, C. and Meyer, T. USDA BRAG. \$306,023.

2010-2012 Implementing and Testing a Real-Time Network Positioning System for the Connecticut Department of Transportation's Digital Design Environment. U.S. Department of Transportation. \$510,190.

2010-2011 Assessing invasion potential under differential canopy leaf phenologies in southern New England temperate forest ecosystems. Meyer, T. and Volin, J. McIntire-Stennis project.

2008-2010 Predicting ecological risk from perennial grasses engineered for biofuels and turf. Auer, C. and Meyer, T. CREES-NRI. \$300,000.

2006-2008 Connecticut Cooperative Highway Research Program: Improving Surveying Accuracy and Efficiency in Connecticut: An Accuracy Assessment of GEOID03. \$77,949.

- 2007 – 2008 Connecticut Cooperative Highway Research Program: Creating Useful Products From Connecticut's 2000 LIDAR Data Set. \$49,768.
- 2006 - 2007 CT DEP (USGS subcontract): *State map project*. \$54,397.
- 2004 – 2006 Connecticut River Airshed/Watershed Consortium (CRAWC): An Upscaling / Downscaling Prototype for the Connecticut River Airshed/Watershed Consortium Project. \$52,000.
- 2007-2008 Assessing deciduous forest structure in Connecticut using imagery and LIDAR. McIntire-Stennis. \$14,072

**Miller, D. R.** emeritus 2007-2013

- 2007-2010 Field Emissions from Agriculture Operations. USDA NRI. \$499,490.
- 2007-2008 Jornada Data Analysis. US Army Research Office. \$95,538.
- 2005-2006 Miller, D.R. Lidar Measurement of aerial Sprays. USDA-ARS. \$20,000.
- 2004-2006 Connecticut River Airshed/Watershed Consortium (CRAWC). CRAWC continuation. US EPA. \$400,000.

**Ortega**

- 2010 Patagonian Research. Julia Wasserman Fund. \$2,000.
- 2008 African Research. Julia Wasserman Fund. \$4,000.
- 2008 African Research. Julia Wasserman Fund. \$12,000.
- 2007 – 2008 Patagonia – UConn Project. Research Expedition to Torres del Paine National Park, Chile. Estancia Paine implement management plan. \$22,100.
- 2005 – 2006 Patagonia – UConn Project. Research Expedition to Torres del Paine National Park, Chile. Post-fire vegetation, herbivore behavior, and aquatic environments. \$21,200.

**Rittenhouse, C.**

- 2012-2013 Estimation of early successional habitat in Connecticut. CT Department of Energy and Environmental Protection. \$43,602.
- 2012-2017 Agroforestry riparian project for biofuel and environmental benefits. Clausen, J., D. Civco, J. Kuzovkina, C. Rittenhouse, G. Robbins, J. Volin, G. Warner, and X. Yang. USDA NIFA Hatch.

**Rittenhouse, T.**

- 2012-2016 Rittenhouse, T. Genetic mark-recapture population estimate for Black Bears in CT. DEEP – PR Funds. \$281,382
- 2012-2013 Prevalence of ranavirus in CT: Survey to determine threat level to amphibian populations. DEEP – Tax Check Off. \$15,752.
- 2013-2014 Monitoring Box Turtle abundance in Connecticut. DEEP – Tax Check Off. \$13,976.
- 2013-2018 Assessment of Wildlife Responses to Management of Early Successional Habitats in Connecticut. Hatch. \$60,000.

**Robbins**

- 2012-2017 Agroforestry riparian project for biofuel and environmental benefits. Clausen, J., D. Civco, J. Kuzovkina, C. Rittenhouse, G. Robbins, J. Volin, G. Warner, and X. Yang. USDA NIFA Hatch.
- 2012-2013 Investigation of Water Source Beneath Gym at Killingly High School, Town of Killingly. \$13,695.
- 2012-2014 A Dye Displacement Method to Characterize Water Contributing Fractures in Wells in Crystalline Bedrock, Connecticut Institute of Water Resources. \$69,051.
- 2010-2011 Connecticut Garnet Trail. CT Department of Environmental Protection. \$17,165.

2009-2010 Inventory and Metadata development. CT Department of Environmental Protection. \$11,105.

2009-2011 Evaluation of Turbidity Acidification During Sampling and Analytical Preparation as the Cause of Observed Manganese Anomalies in Drinking Water. DOI/US Geological Survey. \$9,478.

2008-2009 Agricultural Farm Ground Water Study, U. Connecticut. \$50,000

2008 – 2009 Salting in Connecticut. USDA-Hatch, \$13,710.

2010 Well Drilling and Testing. University of Connecticut Facilities. \$2500.

2009 – 2010 Evaluating the Use of ORC for mitigating Mn Contamination, Environ Corp., \$50,000.

2009-2010 Development of an Approach to Evaluate Fractured Crystalline Bedrock Water Resource Supply, Sustainability and Pumping Impacts, CESE, MEA Faculty Award. \$8,000.

2006-2007 Digital Compilation of Surficial Geologic Maps and Bedrock Contours for The Coventry Quadrangle, Eastern Connecticut with T. Meyer. Dept. of Environmental Protection/USGS. \$54,397.

2005 – 2008 Sources and Significance of On-Site Groundwater Infiltration at Service Stations. American Petroleum Institute. \$60,635.

2004-2007 Detailed Hydraulic Assessment Using a High-Resolution Piezocone Coupled to the GeoVIS (*a portion with A. Bagtzoglou*). Naval Facilities Engineering Service Center. \$138,140

2006 – Water Resources Field Station Grant. Environmental Professionals Organization of Connecticut. \$5,000.

2006 -2007 Assessment of MTBE dissipation. Weston Solutions., \$24,316.

2007 – 2017 Geotechnical Graphics Software. M-Tech Software. \$54,000.

2007 - Pressure/EC/T Transducers. Instrumentation NW. \$4,865

### **Rudnicki**

2013 – 2016 “Stormwise:” An innovative approach to forest stewardship, public outreach and stakeholder collaboration at the landscape scale,” co-PI with Thomas Worthley (PI), Mark Rudnicki and Jeff Ward. US Forest Service State and Private Forestry FY 2013 Northeastern Area Competitive Grant Program. \$274,000.

2012 – 2017 Biomechanical assessment of silvicultural treatments to enhance wind firmness of forest edge trees in southern New England. PI: Mark Rudnicki Co-PI: Thomas Worthley. USDA McIntire-Stennis. \$88,400.

2013 - 2015 Northeast Utilities Bridge Funding – Infrastructure Damage Modeling. PI: Emmanouil Anagnostou Co-PI’s: Mark Rudnicki, Brian Hartman. Northeast Utilities. \$1,130,000.

2013- 2015 Northeast Utilities Bridge Funding – Vegetation Management. PI: Mark Rudnicki Co-PI: Thomas Worthley, John Volin. Northeast Utilities . \$730,000.

2009 – 2012 Collaborative Research: Measurement and Modeling of Aerodynamic Interactions between Tree-Sway Motion and Turbulence in and above a Forest Canopy. PI: Mark Rudnicki. Co-PI: David R. Miller PI: Hong-Bing Su (East Carolina University, micrometeorology and modeling) PI: April Hiscox (East Carolina University, micrometeorology) National Science Foundation – Program in Physical and Dynamic Meteorology. \$832,708

2009- 2012 Interactions of Wind and Northeastern Forest Canopies. PI: Mark Rudnicki. USDA McIntire-Stennis project CONS00788. \$40,800

2007-2010 Assessing Deciduous Forest Structure In Connecticut Using Imagery And Lidar. PI: Mark Rudnicki Co-PI’s: Daniel Civco, and Thomas Meyer. USDA McIntire-Stennis project CONS00823. \$40,800

2005-2008 Interactions of Wind and Northeastern Forest Canopies. PI: Mark Rudnicki. USDA McIntire-Stennis project CONS00788. \$50,800.



2005- 2007 The Effects of Wind on Tree Sway and Stability. PI: Mark Rudnicki. TREE FUND – Hyland Johns Grant Program. \$14,350

**Vokoun**

2013-2014 Wood Duck Box Mapping and Assessment. CT Department of Energy and Environmental Protection (CT Duck Stamp Fund). PI. \$15,100

2013-2014 Bridle Shiner Conservation Genetics: Local (Meta) Population Structure and Statewide Genetic Diversity. CT Department of Energy and Environmental Protection (Income Tax Check-off for Wildlife). PI with E. Schultz (CO-PI, UCONN-EEB). \$6,588.

2011-2015 Comparisons of fished and unfished largemouth bass populations: metabolism, angling vulnerability, and potential for mitigative supplemental stocking. CT Department of Energy and Environmental Protection (Sport Fish Restoration Act/USFWS). PI. \$120,000.

2011-2013 Movement, Habitat Use and Detection Probability of Bridle Shiner Estimated by Patch Occupancy Modeling. \$28,000. USDA CSREES/Hatch. PI.

2012 Monitoring Avian Species.. CT Department of Energy and Environmental Protection (Wildlife Restoration/USFWS). Co-PI with M. Huang (PI). \$50,000.

2010-2012 Movement, Habitat Use and Detection Probability of Bridle Shiner Estimated by Patch Occupancy Modeling in a Connecticut Watershed. CT Department of Environmental Protection (State Wildlife Grants/USFWS). PI. \$55,490.

2008-2010 Identification and mapping of important habitat characteristics of horseshoe crab spawning beaches in Connecticut.. CT Department of Environmental Protection (State Wildlife Grants/USFWS). PI with P. Auster (Co-PI, UCONN-MARN). \$101,240.

2008-2011 Estimating anadromous river herring natal stream homing rates and timing of juvenile emigration using otolith microchemistry. \$36,000. USDA CSREES/ Hatch Act. PI.

2009-2011 Stream temperature and brook trout population fragmentation: riverscape genetics in headwater stream channel networks in Connecticut \$28,000. USDA CSREES/Hatch Act., PI.

2008-2011 Wildlife Assessment: Surveillance of Chronic Wasting Disease in White-tailed Deer and Distribution of New England Cottontails in Connecticut. \$174, 007 Connecticut Department of Environmental Protection. PI (assumed role with directorship of Wildlife and Fisheries Conservation Center in 2010.)

2008-2010 Evaluating various control methods for Hydrilla verticillata in the Silvermine River System. CT Department of Environmental Protection (Invasive Plant Special Appropriation),. Co-PI with J. Volin (PI, UCONN-NRE).

2008-2010 Investigating stream temperature and brook trout population fragmentation: riverscape genetics in thermally-contrasting headwater stream channel networks in Connecticut. \$72,946. CT Department of Environmental Protection (State Wildlife Grants/USFWS). PI.

2008-2009 Determining swim speed performance characteristics for fish passage of burbot using an experimental flume and nature-like fishway. \$24,528. CT Department of Environmental Protection (State Wildlife Grants/USFWS),. PI.

2008-2010 Estimating anadromous river herring natal stream homing rates and timing of juvenile emigration using otolith microchemistry. \$97,222. CT Sea Grant College Program,. PI with E. Schultz (Co-PI, UCONN-EEB).

2008-2009 Integrating fluvial geomorphology and stream ecology: processes shaping the distribution of freshwater mussels in Connecticut. \$19,422. CT Department of Environmental Protection (Income Tax Checkoff/Endangered Species Program). Co-PI with E. Schultz (PI) and M. Daniels (Co-PI, KState-GEOG).

- 2007-2009 Winter drawdown effects on the hatch date, growth rate, and survival of young of the year fishes in Connecticut Impoundments. \$58,433. CT Department of Environmental Protection (Sport Fish Restoration Act/USFWS), PI.
- 2006-2008 Development and evaluation of a multi-dimensional spatially and temporally dynamic mesohabitat classification model for stream management and water flow allocation planning in southern New England streams. \$23,796. CT Institute of Water Resources/USGS 104B. with Melinda Daniels (Co-PI, KState-GEOG).
- 2007-2009 Evaluating effects of water withdrawals on fish assemblages in CT streams. \$46,918. CT Department of Environmental Protection (State Wildlife Grants/USFWS). PI.
- 2007-2009 Estimating predation on declining river herring: tag-recapture study of striped bass in the Connecticut River. \$25,705. Long Island Sound License Plate Program (CT DEP). Co-PI with Eric Schultz (PI).
- 2006-2009 Evaluations of fish-based Index of Biotic Integrity metrics along disturbance gradients for Southern New England streams. \$34,200. USDA CSREES/Hatch Act, funded. PI.
- 2006-2007 Habitat use and population demographics of state-endangered burbot in northwestern Connecticut. \$14,531. CT Department of Environmental Protection (Income Tax Checkoff/Endangered Species Program). PI.
- 2005-2008 Trend assessment of mercury contamination in fishes from Connecticut lakes. \$106,188. Connecticut Department of Environmental Protection (SEP fund).
- 2005-2007 State-endangered burbot in northwestern Connecticut: investigation of habitat use and population demographics. \$89,764. Connecticut Department of Environmental Protection (State Wildlife Grants/USFWS).
- 2005-2008 Predator-Prey Interactions of Striped Bass and River Herring in the Connecticut River. \$230,233. Connecticut Department of Environmental Protection. Co-PI with E. Schultz (PI).
- 2005-2008 Validation of In-Stream Habitat Models for the Fenton River, Storrs, Connecticut. \$83,262. Connecticut Department of Environmental Protection. Co-PI with G. Warner (PI) and P. Parasiewicz (Co-PI, UMASS-NRC).

### **Volin**

- 2013 – 2016 “Stormwise:” An innovative approach to forest stewardship, public outreach and stakeholder collaboration at the landscape scale,” co-PI with Thomas Worthley (PI), Mark Rudnicki and Jeff Ward, US Forest Service State and Private Forestry FY 2013 Northeastern Area Competitive Grant Program.
- 2013 – 2015 NU Center of Excellence on Storm Hazards Mitigation & Power System Resilience: A 2-yr Demonstration Activity, co-PI with Emmanouil Anagnostou (PI), Mark Rudnicki, Brian Hartman and Thomas Worthley. Northeast Utilities.
- 2012 – 2017 Agroforestry riparian project for biofuel and environmental benefits. co-PI with John Clausen (PI), Daniel Civco, Julia Kuzovkina, Chadwick Rittenhouse, Gary Robbins, Glenn Warner and Xiusheng Yang, USDA Hatch Program.
- 2011 – 2013 Feasibility of a local wood products network for rural lands in urbanizing regions: A pilot study in southern New England. co-PI with Thomas Worthley (PI), Stephen Swallow and Joshua Berning, \$150,000, USDA/NIFA/AFRI Foundational Grants Program.
- 2010 – 2013 Assessing invasion potential under differential canopy leaf phenologies in southern New England temperate forest ecosystems, co-PI with Thomas Meyer and Thomas Worthley, \$42,216. USDA McIntire-Stennis Program.
- 2009 – 2011 Control of invasive black locust (*Robinia pseudoacacia* L.) with small-scale harvesting and processing for locally marketed forest products: A feasibility study. PI with Mark Rudnicki and Thomas Worthley, \$28,144, USDA McIntire-Stennis.

- 2008-2010 Evaluating multiple control methods for *Hydrilla verticillata* in the Silvermine River System,” PI with Jason Vokoun, Connecticut Department of Environmental Protection. \$149,852.
- 2007-2009 Development of a sampling prioritization model to optimize the selection of tree islands in the Everglades Wildlife Management Area for surveying of *Lygodium microphyllum*, Senior PI with Erik Noonburg, Florida Fish and Wildlife Conservation Commission. \$158,897.
- 2007-2008 Determining the hydrology of tree islands in the Florida Everglades: implications for restoration, Senior PI with Mary Ann Furedi, \$249,000, South Florida Water Management District, Everglades Restoration Coordination and Verification Program.
- 2006-2008 Potential novel biological control agents of the invasive weed *Lygodium microphyllum*: exploratory surveys and testing of possible pathogenic microbes in Australia and SE Asia, Senior PI with Elizabeth Aitken, Min Rayamajhi and Michael Tobin, \$140,000, Florida Department of Environmental Protection Division of Invasive Species Management Annual Research Proposal Competition for Invasive Plant Management.
- 2006-2007 The Invasion of *Lygodium microphyllum* on Tree Islands in the Everglades Protection Area: Exploring its Spatial Distribution, Senior PI with Mary Ann Furedi, \$108,000, Florida Fish and Wildlife Conservation Commission.
- 2006-2007 *Lygodium microphyllum* growth in its native versus invaded habitat, Supplemental Grant to the following grant, \$20,067, Seminole Tribe of Florida, Water Resources Management Division.
- 2005-2007 *Lygodium microphyllum* growth: functional basis for geographical variations, Senior PI with Elizabeth Aitken, Qinfeng Guo, Kaoru Kitajima, Eric Kruger, Susanne Schmidt and Gimme Walter, \$238,184, South Florida Water Management District, Everglades Research Division.
- 2005-2006 Hydrological impacts on the ecology of Everglades tree islands, \$149,000, South Florida Water Management District, Everglades Restoration Coordination and Verification Program.
- 2004-2009 Crayfish Population Dynamics; Hydrological Influences, with Michael S. Lott, \$483,000, South Florida Water Management District, Everglades Restoration Coordination and Verification Program.
- 2003-2007 Vegetative Assemblages as Bioindicators of Hydrological Restoration on the Big Cypress Seminole Indian Reservation: Developing a Predictive Quantitative Model, \$150,000,, Seminole Tribe of Florida, Water Resources Management Division.
- 2003-2007 Developing Vegetative Bioindicators of Hydropattern and Nutrient Levels on the Big Cypress Seminole Indian Reservation, \$75,000, U.S. Department of Interior, Critical Ecosystem Studies Initiative and Seminole Tribe of Florida.

### **Warner**

- 2013 – 2014 Water Resources Research Institute Annual Base Grant, DOI/USGS. \$92,335.
- 2012 - 2013 Water Resources Research Institute Annual Base Grant, DOI/USGS. \$92,335.
- 2011 – 2012 Water Resources Institute Annual 104(b) Base Program, Department of Interior, U.S. Geological Survey; USGS. \$ 92,335.
- 2011-2012 Fenton River Gurleyville Rd. Bridge Rating Curve, UConn Architecture and Engineering Services/Facilities. \$9,455.
- 2011-2012 Investigations for the Optimal Relocation and Operation of Well A in the Fenton Well Field, UConn Facilities. Direct Expenditures: \$102,755.
- 2011-2012 Halinity Class for Coastal Soils, DOC/NOAA/National Ocean Service. \$39,880.
- 2010-2011 Fiscal Year 2010. Water Resources Institute Annual 104(b) Base Program, Department of Interior, U.S. Geological Survey; \$92,335.

2009 Water Resources Technology Transfer Initiative, DOI/US Geological Survey. \$22,407.  
 2009 Fiscal Year 2009. Water Resources Institute Annual 104(b) Base Program, Department of Interior, U.S. Geological Survey, USGS. \$ 92,335  
 2008-2009 Fiscal Year 2008. Water Resources Institute Annual 104(b) Base Program, Department of Interior, U.S. Geological Survey. \$ 92,335.  
 2008 Building and Implementing a Watershed Conservation Plan at the Local Level. CT DEP; Division of Forestry. \$15,000.  
 2007 State Appropriation, Water Basin Planning. State of Connecticut. \$200,000.  
 2007 Modeling the Effects of Reservoir Release Practices on Downstream Flows, Phase 2: Impact of Release Rules on Yield and Streamflow Metrics. CT DEP. \$30,000.  
 2007-2008 Fiscal Year 2007. Water Resources Institute Annual 104(b) Base Program, Department of Interior, U.S. Geological Survey, \$92,335.  
 2006-2007 Fiscal Year 2006 Water Resources Institute Annual 104(b) Base Program, Department of Interior, U.S. Geological Survey, \$ 92,524.  
 2006-2007 Modeling Flows Downstream of Reservoirs. Connecticut Department of Environmental Protection. \$ 15,000 .  
 2005-2007 Validation of In Stream Habitat Models for the Fenton River, Storrs, Connecticut. State Wildlife Grant, CT Dept. of Environmental Protection, Warner, G.S. (PI), P. Parasiewicz and J. Vokoun (Co-PIs). \$ 83,262.  
 2005-2006 Fiscal Year 2005 Water Resources Institute Annual 104(b) Base Program, Department of Interior, U.S. Geological Survey, \$ 92,524.  
 2005-2006 Warner, G.S. and F. Ogden. Supplement to “Long-term impact analysis of the University of Connecticut's Fenton River water supply wells on the habitat of the Fenton River”. Architectural and Engineering Services, University of Connecticut. \$ 25,000.  
 2002-2006 Warner, G.S. and F. Ogden, Long-term impact analysis of the University of Connecticut's Fenton River water supply wells on the habitat of the Fenton River. Architectural and Engineering Services, University of Connecticut. \$ 571,289.

## Yang

2012 Chinese Ministry of Water Resources: Ecological buffer. \$81,692  
 2012 Sichuan University: Study Abroad: \$8,169.  
 2012 SSC in river flow: USDA Hatch. \$13,900.  
 2012-2013 Biomass offset coal use, USDA-NIFA-Hatch. \$13,900.  
 2012 Biomass feedstock, USDA – Hatch. \$25,000.  
 2010-2012 Bio-energy, Department of Energy. \$115,000.  
 2008-2013 Climate and climate change, USDA/Hatch. \$96,317.  
 2011-2013 Offset potential of biomass, USDA/Hatch. \$27,854.  
 2008-2011 Climate Center Support. USDA Agricultural Experiment Station. \$35,105.  
 2009 Shanxi Province, China: YIAMA, 2009. \$490,149. 2010. \$163,383.

## Intramural Grants

### Anyah

2010 – 2011 Center for Environmental Sciences and Engineering (CESE) Summer Graduate Fellowships award, Menberu Bitew (Environmental Engineering): Faculty Mentor. Quantifying Blue and Green Water of the Blue Nile River Basin under Changing Climate. \$8,500  
 2010 – 2011 Center for Environmental Sciences and Engineering (CESE) Summer Graduate Fellowships award, Jason Parent (Natural Resources): Faculty Mentor. The Effects of Wind on Tree Island Distribution in the Florida Everglades. \$8,500

**Bosker**

2012-2013 The Impact of Dihydrotestosterone on Mummichog Exposed Under Freshwater and Estuarine Conditions. UCRF Faculty Large Grant \$20,800.

**Rittenhouse, T.**

2013-2013 Effects of temperature variability on larval wood frog growth and development. UConn Large Faculty Grant. \$12,000.

**Rudnicki, M.**

2008 Interacting Fluid and Structural Mechanics in Forest Canopies . PI: Mark Rudnicki University of Connecticut, Center for Environmental Sciences and Engineering – GRA Competition. \$11,254

**Vokoun, J.**

2009-2010 *NRE 1235: Environmental Conservation*. \$7,725. UCONN/Provost’s General Education Course Enhancement Grant Competition, PI.

2005-2006 Improved modeling methods for fish habitat quality using bioenergetics endpoints. \$19,128. UCONN Research Foundation Internal Competitive Large Grants Program, funded. PI.

**Yang, X.**

2010 Watershed modeling of sediment simulations. CESE. \$14,000

2008-2009 Climate Center Support. UCRF. \$4,500.

2011 UN-UConn: Global citizenship:. \$4,000.

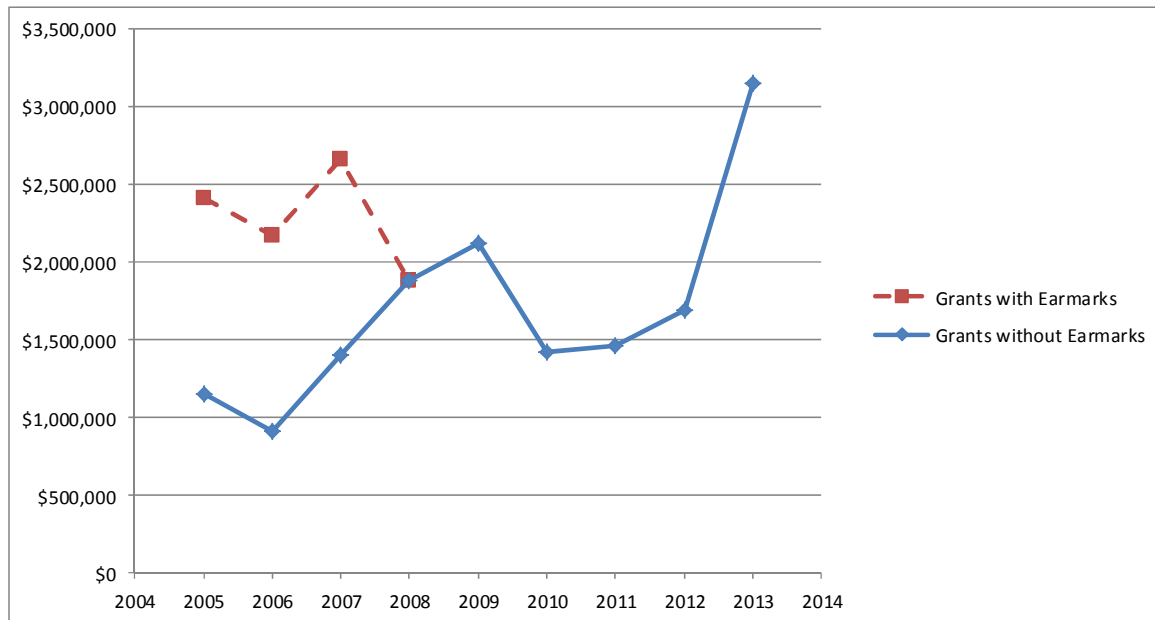


Figure B1. Grants received by NRE faculty 2005-2013 with and without earmarks.

**Appendix B7. List of peer and aspirant programs\* .**

| <b>Institution</b>               | <b>Program</b>                                         | <b># faculty</b> |
|----------------------------------|--------------------------------------------------------|------------------|
| Clemson                          | Dept Forestry & Natural Resources                      | 30               |
| <b>Colorado State University</b> | Warner College of Natural Resources                    | 86               |
| <b>Cornell</b>                   | Dept of Natural Resources                              | 24               |
| Duke University                  | School of the Environment                              |                  |
| Iowa State                       | Dept of Natural Resource Ecology & Mgmt                | 31               |
| Oklahoma state                   | Dept Natural Resources Ecol. & Mgmt.                   | 27               |
| Pennsylvania State University    | School of For. Res. + Dept ecosys sci & mgmt (-soils)  | 38               |
| Purdue University                | Dept of Forestry and Natural Resources                 | 53               |
| Rutgers                          | Dept of Ecology, Evolution & Natural Resources         |                  |
| Southern Illinois Univ           | Environmental Resources & policy                       | 57               |
| Texas A & M                      | Dept of Wildlife & Fisheries Science                   |                  |
| Texas A & M                      | Dept Ecosystems and Management                         |                  |
| <b>Texas Tech</b>                | Dept of Natural Resources Management                   | 15               |
| U Wahington                      | School of Environmental & Forest Sciences              | 52               |
| <b>U Illinois</b>                | Dept of Natural Resources & Environmental Science      | 21               |
| U Maryland                       | Natural resources management program                   |                  |
| U Maryland                       | Dept of Environmental Science & Technology             | 21               |
| <b>U Michigan</b>                | School of Natural Resources & Environment              |                  |
| U New Hampshire                  | Dept Natural Resources & the Environment               | 44               |
| <b>U Rhode Island</b>            | Dept Natural Resources Science                         | 14               |
| U Texas                          | College of Natural Sciences                            |                  |
| U. Arizona                       | School of Natural Resources & the Environment          | 45               |
| <b>U. Connecticut</b>            | <b>Dept of Natural Resources &amp; the Environment</b> | <b>12</b>        |
| U. Wisconsin                     | Dept of Forestry & Wildlife Ecology                    | 20               |
| UC Berkeley                      | College of Natural Resources                           |                  |
| U Massachusetts                  | Dept of Environmental Conservation                     | 46               |
| University of Florida            | Wildife Dept & School of Forest Res. & Cons            |                  |
| University of Georgia            | School of Forestry & Natural Resources                 |                  |
| Utah state Univ                  | Human dimension of Ecosystem Science                   | 10               |
| Virginia Tech                    | Dept of Forest Resources & Environmental Cons          | 28               |
| Washington State Univ            | Dept Natural Resources Sciences                        | 48               |

\* Bolded programs are either peer or aspirant programs.

## **Appendix B8. List of Review Panels served by NRE Faculty.**

- Anyah, R. National Science Foundation, Review Panel for the Atmospheric Sciences Program. Arlington, Virginia: 7-9 VA, 2010
- Anyah, R. National Science Foundation, Science and Technology Center (STC) Site Review Panel. Colorado State University, Fort Collins, CO: 15-18 February, 2010
- Bartok, J. New England Greenhouse Conference – grant review committee. 2008-2009
- Bartok, J. 2008-2009 USDA – SBIR – grant review committee.
- Clausen, J. Northeastern States Research Cooperative: Research for the Northern Forest. 2008 Grant Competition.
- Clausen, J. USDA NRI Watershed Processes and Water Resources Panel, 2005
- Meyer, T. LIDAR proposals for the Army Corps of Engineers. Sept. 2008
- Ortega, I. Secretaria Nacional de Ciencia, Tecnología e Innovación (SENACYT) 2009 Grant Competition, Panama City, Panama.
- Ortega, I. Secretaria Nacional de Ciencia, Tecnología e Innovación (SENACYT) 2011 Grant Competition, Panama City, Panama.
- Yang, X. 2008-10 BARD, United States – Israel Bi-National Agricultural Research and Development Programs
- Yang, X. CNSF, China Natural Science Foundation 2011-present.
- Yang, X. Chinese Academy of Sciences Agricultural and Environmental Research Programs 2012.
- Yang, X. *USDA Small Business Innovation Research Program (SBIR) 2012.*
- Yang, X. *HK Research Grants Council20\_\_?*
- Yang, X. China Natural Sciences Foundation International Programs 2010-present.

## **Appendix B9. NRE Faculty Serving as Officers of Professional Associations**

- Barclay, J. Elected to Board of Directors, North Atlantic Chapter SETAC, 2008-2011.
- Barclay, J. Elected CT Representative on Executive Board, New England Chapter, The Wildlife Society. 2011-2013.
- Barclay, J. Chair. 2005-2006, Past Chair 2006-2007, and Chair Elect 2004-2005. Wildlife Toxicology Working Group, The Wildlife Society. Executive Board Member.
- Civco, D. American Society for Photogrammetry and Remote Sensing. Education and Professional Development Committee. Chair, 2010-2012. Deputy Chair, 2007-2009.
- Meyer, T. Past President. New England Section, American Congress for Surveying and Mapping.
- Meyer, T. Board member. New England Section, American Congress for Surveying and Mapping.
- Meyer, T. Board member. American Association for Geodetic Surveying.
- Ortega, I. American Society of Mammalogists. Board Member, 2006-2009; Human Diversity in Mammalogy Committee, 2009-2012; Informatics Committee, 2008 – present.
- Rittenhouse, C. President-elect, Climate Change Working Group, The Wildlife Society (2012 – 2013).
- Rittenhouse, T. New England Chapter of The Wildlife Society, Connecticut Representative (Regional, Professional Society), 01/2013 – present .
- Robbins, G. National Ground Water Association. 2013 Chair, Awards Committee.
- Vokoun, J. Chair, Excellence in Fisheries Education Award Selection Committee, American Fisheries Society 2009-present.
- Vokoun, J. Northeastern Division Representative of the Fisheries Management Section, American Fisheries Society 2008-2010.
- Vokoun, J. Skinner Student Travel Award Committee, American Fisheries Society 2006-2009.
- Vokoun, J. Northeastern Division Representative of the Education Section; American Fisheries Society 2004-2006.
- Vokoun, J. Member of the Southern New England Chapter Executive Council, American Fisheries Society 2005-present.
- Vokoun, J. Established the UCONN American Fisheries Society student sub-unit in 2006 and serve as its faculty advisor.
- Yang, X. 2010 President, Association of Chinese American Agricultural Scientists
- Yang, X. 2010 Permanent Board Member, Chair of the Yangling Academy Committee, Association of Overseas Chinese Agricultural, Biological and Food Engineers.



## Appendix B10. Distinguished Positions held by NRE Faculty.

- Anyah, R. Member, Scientific Steering Group: World Climate Research Program, Global Energy and Water Exchanges ((GEWEX), 2012-2015.
- Anyah, R. Selected as one of the 30 US, Canada and European based Junior Faculty to participate at the NSF-funded NCAR Junior Faculty Forum on Connecting Weather and Climate through Models, Theory and Observations. Boulder, Colorado: 13-16 July, 2009 .
- Anyah, R. Member CLIVAR (2009-2013) Task Group on Capacity Building: World Climate Research Program, Climate Variability and Predictability (CLIVAR) May, 2009-Present.
- Anyah, R. Panel member: World Meteorological Organization (WMO)-World Climate Research Program on African Climate Variability and Predictability (CLIVAR-VACS): 9/06-present.
- Anyah, R. Expert Reviewer: Intergovernmental Panel on Climate Change (IPCC), Working Group II (WGII) 4<sup>th</sup> Assessment Draft Reports (Chap.9: Impacts, vulnerability and adaptation to climate change in Africa) (2005-2007).
- Anyah, R. Expert Reviewer: Intergovernmental Panel on Climate Change (IPCC, AR4 2007) Synthesis Report of the Fourth Assessment Report on global climate change (5/07- 7/07).
- Barclay, J. Director, Wildlife Conservation Research Center, College of Agriculture and Natural Resources, Dept. of natural Resources Management & Engineering. 10% of Apptmt.
- Barclay, J. Trustee, Conway Graduate School of Sustainable Landscape Design, and Chairman, Academic Standards Committee. Conway, MA. Full NEASC accreditation renewed in 2006.
- Barclay, J. Founding Member, Scaup Action Team. International ad hoc waterfowl conservation organization sanctioned by U.S. & Canadian Wildlife agencies, regional migratory bird flyway management units, and private non-profit organizations in 2006.
- Civco, D. Future of U.S. Workforce for Geospatial Intelligence, National Research Council (NRC) Committee, October 2010-present.
- Civco, D. National Advisory Board, The Institute for Advanced Education in Geospatial Sciences Curriculum in GeoSpatial Information Science and Technology, 2003-present.
- Civco, D. Center for Land use Education And Research (CLEAR) Director, 2002-present.
- Civco, D. UConn Space Grant College Consortium Campus Director, 2000-2008.
- Civco, D. UConn Research Director for Connecticut EPSCoR, 2000-2006.
- Meyer, T. Governmental Advisory Committee. American Association of Geodetic Surveyors.
- Meyer, T. Connecticut Association of Land Surveyors. GNSS Positioning Guidelines for Land Surveying in CT. 2008 to present.
- Meyer, T. Connecticut Association of Land Surveyors. Real-time Network Oversight Committee. October, 2008.
- Rittenhouse, T. DEEP Taxonomic Advisory Committee for Amphibians and Reptiles, Member (State, Government Agencies), 05/2013 – present.
- Rittenhouse, T. Ranavirus Study Steering Committee for Northeast Regional Conservation Needs Grant, Member (Regional, Government Agencies), 12/2012 – present
- Rittenhouse, T. Partners in Amphibian and Reptile Conservation, Member (National, Professional Organization) Member of Disease Task Team.
- Robbins, G. 2006-present, member of the Connecticut Geological and Natural History Survey Geologic Mapping Advisory Committee
- Robbins, G. 2005-present, member of the Dept. of Public Health Source Water Protection Stakeholders Group.
- Volin, J. Visiting Fellow, Center for Creative Solutions, Marlboro College Graduate School – 2012 - Present.
- Volin, J. Connecticut Urban Forest Council board member 2007 – present.
- Volin, J. Connecticut Forest Conservation and Research Forum committee member 2008 – 2011.
- Volin, J. Natural Resources Working Group Core Team member of the CT Governor’s Subcommittee on

Climate Change Impacts 2009 – present.

Volin, J. National Research Council of the National Academies reviewer of NRC’s Water Science and Technology report entitled: “Progress Toward Restoring the Everglades – The Third Biennial Review, 2010”

Yang, X. Founder and Overseas Dean, Yangling International Academy of Modern Agriculture (2011-present).

Yang, X. Chairman of the Academic Commission, Yangling International Academy of Modern Agriculture Honorary Adjunct Professorship (2010-2011).

Yang, X. Chinese Academy of Sciences Institute of Soil and Water Conservation. Honorary Adjunct Professorship. (2009-present).

Yang, X. China Northwest A&F University Honorary Adjunct Professorship.(2007-present).

Yang, X. Beijing Normal University Honorary Adjunct Professorship.(2006-present).

Yang, X. Chinese Academy of Sciences Center for Agricultural Resources Research (Honorary Adjunct Professorship.2004-present).

Yang, X. Chinese Academy of Sciences Institute of Geographical Science and Natural Resources Research Honorary Adjunct Professorship.(2004-present).

Yang, X. China Agricultural University Honorary Adjunct Professorship. (2004-present).

Yang, X. Reviewer, Multimedia Working Group’s assessment on the biodiesel and renewable diesel multimedia evaluations, California Air Resources Board (2013).

Yang, X. Review Board, China Arid/Semi-arid Water Resources Management Project (Xinjiang) (2010).

Yang, X. Chairman, Academic Panel, Yangling International Academy of Modern Agriculture (2010-present).

Yang, X. Panel, BARD, United States – Israel Bi-National Agricultural Research and Development Fund (2006-2009).

Yang, X. Review Board, China National Natural Science Foundation (CNSF), (2003-2008).

Yang, X. Vice Chair, Academic Steering Commission, Chinese Academy of Sciences Center for Agricultural Resources Research (2004-2007).

Yang, X. Honorary Associate Director, Chinese Academy of Sciences Center of Regional Economics and Development (2007-present) .

Yang, X. Advisor, CAST-CT, the Chinese Association for Science and Technology in Connecticut (2007-present).

Yang, X. Member, Overseas Expert Consultant Committee of the State Council of China (2005-present)

Yang, X. Honorary overseas expert (Member, Overseas Advisory Board), Shanxi Association for Overseas Chinese Affairs, From July 2012.

Yang, X. Honorary overseas expert (Member, Overseas Advisory Board), Guizhou Association of Science and Technology, From July 2012.

Yang, X. Honorary overseas expert (Member, Overseas Advisory Board), Haikou Municipal Government, from August 2011.

Yang, X. Invited guest for meeting and having a group-photo taken with the honorable Chinese Premier Wen Jiabao in his visit to the United States. September, 2010.

Yang, X. UConn delegation member to China led by the Dean and the Provost, May and November, 2010

Yang, X. Principal Scientist, X. H. Technology. Beijing, China. (2010-present).

Yang, X. Invited national guest for attending the 60<sup>th</sup> anniversary celebration of the People’s Republic of China, Beijing. October 2009.

Yang, X. Overseas Advisor, Haikou Municipal Government. From April 2008.

Yang, X. Honorary Executive Board Member, Sichuan Provincial Association for International Exchanges. From April 2007.

Yang, X. Senior Overseas Advisor, Hubei Provincial Government. From February 2007.

Yang, X. Advisory Board Member, Changzhi Municipal Government. From January 2007.

Yang, X. Invited Special Overseas Member for the 7<sup>th</sup> Congress of China Association of Science and Technology. Beijing, May 2006.

## Appendix B11. Conference leadership by NRE Faculty

- Anyah, R. Co-Chair: Scientific and Technical Committee organizing First Pan-Africa Climate Science Conference in October 2013.
- Anyah, R. Co-Chair: Connecticut Conference on Natural Resources 2012.
- Anyah, R. Co-Director: Fifth ICTP-TWAS-ICPAC International Workshop on regional climate modeling for Eastern Africa. Nairobi, Kenya. 20-24 June 2011.
- Anyah, R. Co-Director: Fifth ICTP Workshop on theory and use of regional climate models. ICTP, Trieste Italy. 31 May-11 June 2010.
- Anyah, R. Co-Director: ICTP-TWAS-ICPAC workshop on Regional climate change modeling in support of impacts and adaptation assessments in the agriculture and water sectors. ICPAC, Nairobi: 20-24 June 2011.
- Anyah, R. Co-Director: 5<sup>th</sup> International Workshop on the theory and use of regional climate models. International Center for Theoretical Physics (ICTP), Trieste Italy: May 31-June 11 2010.
- Anyah, R. Course-Director: ICTP-TWAS-ICPAC workshop on Regional climate change modeling in support of impacts and adaptation assessments in the agriculture and water sectors, Addis Ababa Ethiopia October 31-November 7 2009.
- Barclay, J. Organized and Chaired Annual Business Meeting of the WTWG, Anchorage, Alaska, 25 Sep. '07.
- Civco, D. SPIE Europe Remote Sensing Conference Chair, 2008-present. Remote Sensing for Environmental Monitoring, GIS Applications, and Geology.
- Civco, D. International Workshop on Multi-Temporal Imagery Analysis (MultiTemp). Conference Organizer and Host, 2009.
- Civco, D. Connecticut Conference on Natural Resources. 2010 Co-Chair, 2011, Chair,
- Clausen, J. Connecticut Conference on Natural Resources. 2009 Co-Chair, 2010 Chair,
- Meyer, T. Connecticut Conference on Natural Resources. 2011 Co-Chair, 2012, Chair,
- Robbins, G. 2013 Chair, 2012, Co-Chair. Connecticut Conference on Natural Resources.
- Rudnicki, M. 20 Chair, 2007-08 Co-Chair. Connecticut Conference on Natural Resources.
- Vokoun, J. Co-founded the Connecticut Conference on Natural Resources. conference chair in 2007 and 2008.
- Warner, G. NABEC (Northeast Agricultural and Biological Engineering Conference): Chair (2009-2010), First Vice-Chair (2008-09), Program Chair (2007-08), Secretary(2006-07), member of program & planning committee (2003-08),
- Warner, G. 20 Chair, 20 Co-Chair. Connecticut Conference on Natural Resources.
- Yang, X. Vice Chair and Principal Organizer: Sino-US Forum on Ecosystem and Water Resources. Beijing and Yangling, China. May, 2011.
- Yang, X. Co-Chair and keynote speaker, Third Forum on Overseas Chinese Intellectuals in Supporting Technology Development in China. Kunming, China. August 2009 .
- Yang, X. Academic Committee member, Conference chairperson, International Conference on Earth Science and Technology 2009. Beijing, China. May 2009.
- Yang, X. Conference organizer and keynote speaker, Connecticut Conference on Sustainable Energy. March 2008.
- Yang, X. Meeting organizer, ASABE Conferences on China Exchange. July 2006.
- Yang, X. Invited Program Committee Member, Keynote Speaker, and Session Organizer, SPIE's International Symposium on Remote Sensing and Modeling of Ecosystems for Sustainability III. San Diego. August 2006.

## Appendix B12. Editorial positions held by NRE Faculty.

- Anyah, R. Guest Editor, *Climate Research: Special Issue on Theory and Use of Regional Climate Models*. August 2010-February 2011
- Bartok, J. 2008. Contributing Editor and Monthly Columnist – *GMPro Magazine*, Branch-Smith Publishing Co. Fort Worth TX
- Bartok, J. 2009-present. Contributing Editor and Monthly Columnist – *Greenhouse Production & Management*, GIE Media, Inc., Richfield OH
- Civco, D. *Journal of Photogrammetry and Remote Sensing*. Associate Editor, 2009-present
- Meyer, T. Editorial board. *Journal of Surveying Engineering*.
- Ortega, M. 2008-present. Associate Editor of the “*Anales del Instituto de la Patagonia*,” Magallanes, Chile
- Robbins, G. Past Associate Editor, *Ground Water*; 2011-2012.
- Vokoun, J. Associate Editor: *Transactions of the American Fisheries Society* 2010-Present
- Vokoun, J. Associate Editor: *North American Journal of Fisheries Management* 2004-2006
- Warner, G. Associate Editor of Land and Water Engineering Division, *International Journal of Agricultural and Biological Engineering*
- Yang, X. Associate Editor, *Frontiers of Earth Science* (2013-present)
- Yang, X. Member, Editorial/Advisory Board of *Open Access Books in Environmental Studies* (2012-present)
- Yang, X. Vice Chair, Editorial Board of *International Journal of Agricultural and Biological Engineering* (2008-Present)
- Yang, X. Division Editor, *International Journal of Agricultural and Biological Engineering* (2008-Present)
- Yang, X. Member, Editorial Board of *Science and Technology Review* (2008-present)
- Yang, X. Member, Editorial Board of *Agricultural Mechanization Research* (2006-present)
- Yang, X. Editor-in-chief, World Scientific Publishers Book Series *Advances in Agricultural Science and Technology* (1999-present)
- Yang, X. Member, Editorial Board of *Transactions of the CSAE* (1998-present)

## C. Undergraduate Programs

### Appendix C. Enrollment trends in Undergraduate majors and minors.

Table C1. The number of students in fall “10<sup>th</sup>-day” enrollment census spanning 05-06 through 12-13. NATRES is the Natural Resources major, ENVSCI is the Environmental Science major (students enrolled through CANR only).

|                             | Fall<br>2005 | Fall<br>2006 | Fall<br>2007 | Fall<br>2008 | Fall<br>2009 | Fall<br>2010 | Fall<br>2011 | Fall<br>2012 |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Majors</b>               |              |              |              |              |              |              |              |              |
| NATRES full-time (Storrs)   | 71           | 80           | 80           | 70           | 71           | 89           | 96           | 120          |
| NATRES part-time (Storrs)   | 4            | 4            | 3            | 2            | 5            | 5            | 10           | 10           |
| NATRES full-time (Regional) | 2            | 3            | 0            | 5            | 5            | 7            | 3            | 4            |
| NATRES part-time (Regional) | 0            | 2            | 1            | 0            | 1            | 1            | 2            | 0            |
| ENVSCI (Storrs)             | 27           | 29           | 26           | 30           | 51           | 54           | 55           | 49           |
| ENVSCI (Regional)           | 8            | 2            | 2            | 6            | 12           | 10           | 8            | 14           |

Table C2. The number of students in the fall “10<sup>th</sup>-day” enrollment census spanning 05-06 through 12-12 in the Natural Resources major broken down by concentration. Concentrations within the major are 19-23 credit areas of focused study. Students must complete at least one concentration to fulfill graduation requirements. *Note:* Concentrations first appeared in the 05-06 catalog year, and therefore do not represent the entire student cohort (freshmen to senior) until 2009.

|                                     | Fall<br>2005 | Fall<br>2006 | Fall<br>2007 | Fall<br>2008 | Fall<br>2009 | Fall<br>2010 | Fall<br>2011 | Fall<br>2012 |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>NATRES Concentration</b>         |              |              |              |              |              |              |              |              |
| Climate and Water Resources         | 0            | 1            | 3            | 9            | 12           | 12           | 10           | 19           |
| Environmental Conservation          | 0            | 3            | 8            | 7            | 14           | 32           | 31           | 29           |
| Fisheries and Wildlife Conservation | 3            | 19           | 37           | 31           | 30           | 40           | 55           | 65           |
| Geomatics                           | 4            | 1            | 4            | 5            | 6            | 6            | 5            | 4            |
| Sustainable Forest Resources        | 8            | 5            | 12           | 12           | 11           | 8            | 19           | 21           |

Table C3. The number of undergraduate students graduated spanning 05-06 through 12-13 by major and minor. NATRES is the Natural Resources major and ENVSCI is the Environmental Science major (CANR graduates only), WLDCON is the Wildlife Conservation minor (created in 06-07 catalog year).

|              | 05-06 | 06-07 | 07-08 | 08-09 | 09-10 | 10-11 | 11-12 | 12-13 |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|
| NATRES       | 20    | 29    | 28    | 22    | 24    | 28    | 35    | 48    |
| ENVSCI       | 7     | 6     | 5     | 7     | 9     | 9     | 17    | 17    |
| WLDCON minor | -     | 2     | 4     | 1     | 5     | 2     | 2     | 4     |

Table C4. Two-year retention percent rates (sophomore to junior) for Natural Resources majors spanning the 05-06 through the 11-12 academic years.

|                          | Fall 2005 | Fall 2006 | Fall 2007 | Fall 2008 | Fall 2009 | Fall 2010 | Fall 2011 |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Retained at UCONN        | 71.4      | 83.3      | 80.0      | 86.7      | 75        | 87        | 80        |
| Retained as NATRES major | 57.1      | 75.0      | 73.3      | 73.3      | 63.0      | 69.6      | 66.7      |
| Switched Majors          | 0.0       | 8.3       | 6.7       | 6.7       | 0.0       | 0.0       | 0.0       |

Table C5. NRE and ENVS Commencement Survey of Graduate School and Employment 2010-2013.

|                   | 2010                                                           | 2011                                   | 2012                                                                              | 2013                                                       | Total | %    |
|-------------------|----------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------|-------|------|
| # Complete Survey | 10                                                             | 31                                     | 36                                                                                | 33                                                         | 110   |      |
| # Graduate School | 4                                                              | 7                                      | 2                                                                                 | 4                                                          | 17    | 15.5 |
| # Jobs            | 3                                                              | 7                                      | 15                                                                                | 7                                                          | 32    | 29.1 |
|                   | Amircorps Cape Cod, Rocasset, MA                               | Cross Sound Ferry Services - part time | ATC Associates Inc., East Hartford, CT                                            | Triumvirate Environmental                                  |       |      |
|                   | CT DEP. Wildlife division. Sessions woods WMA in Burlington.   | Illianos Grill, Yantic, CT             | CT DEEP                                                                           | Monomoy National Wildlife Refuge                           |       |      |
|                   | Naugatuck Valley Council of Government. Waterbury, CT Planning | Reet Corp. Berlin, CT                  | Summer Hudson River Park Trust, NYC                                               | The Care of Trees                                          |       |      |
|                   |                                                                | Northeast Utilities, Berlin, CT        | Department of Energy and Environmental Protection, Marine Fisheries Division, Old | USDA-NRCS 60 Quaker Lane, Warwick RI                       |       |      |
|                   |                                                                | CT DEP Sessions Woods                  | Montana Conservation Core, Billings, MT                                           | Prides Corner, Lebanon                                     |       |      |
|                   |                                                                | Finish Line                            | Resource Assoc, Burlington, CT                                                    | Seasonal-National Park Service, Cape Cod National Seashore |       |      |
|                   |                                                                | Triumvirate, Portland, CT              | Bartlett Tree Experts, 74 Custer St, West Hartford                                | Peace Corps                                                |       |      |
|                   |                                                                |                                        | University of Connecticut                                                         |                                                            |       |      |
|                   |                                                                |                                        | Blackmer Farms - 441 Quinebaug Rd, N Grosvendate, CT 06255                        |                                                            |       |      |
|                   |                                                                |                                        | Lucas Tree Experts, P.O. Box 958, Portland, ME 04104                              |                                                            |       |      |
|                   |                                                                |                                        | US Air Force                                                                      |                                                            |       |      |
|                   |                                                                |                                        | Arboreta Landscapes, Milford, CT                                                  |                                                            |       |      |
|                   |                                                                |                                        | Department of Energy and the Environment, Hartford, CT                            |                                                            |       |      |
|                   |                                                                |                                        | Indian Rock: Environmental Learning Center                                        |                                                            |       |      |
|                   |                                                                |                                        | Silver Lake Park, Vermont                                                         |                                                            |       |      |

Table C6.

| <b>Summary of Alumni Survey Results: Natural Resources &amp; the Environment</b>                                       |                  |                                                          |      |      |      |      |      |      |      |       |
|------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------|------|------|------|------|------|------|------|-------|
| <i>2005 - 2012</i>                                                                                                     |                  |                                                          |      |      |      |      |      |      |      |       |
| Survey Question                                                                                                        |                  | Graduating Class (Natural Resources and the Environment) |      |      |      |      |      |      |      |       |
|                                                                                                                        |                  | 2005                                                     | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total |
| <b>Total # of Graduates in Natural Resources Program</b>                                                               |                  | 16                                                       | 20   | 29   | 28   | 22   | 24   | 28   | 35   | 202   |
| <b>Total # of Survey Respondents</b>                                                                                   |                  | 4                                                        | 6    | 5    | 11   | 11   | 6    | 12   | 15   | 70    |
| 11) Decide NRE major                                                                                                   | Before college   | 1                                                        |      | 1    | 3    |      | 3    |      | 3    | 11    |
|                                                                                                                        | As a freshman    |                                                          | 1    |      |      | 2    | 1    | 1    | 1    | 6     |
|                                                                                                                        | As a sophomore   | 3                                                        | 3    | 1    | 6    | 4    | 1    | 8    | 7    | 33    |
|                                                                                                                        | As a junior      |                                                          | 1    | 3    | 2    | 5    | 1    | 2    | 2    | 16    |
|                                                                                                                        | As a senior      |                                                          |      |      |      |      |      |      | 1    | 1     |
|                                                                                                                        | I don't remember |                                                          | 1    |      |      |      |      | 1    |      | 2     |
| No Response                                                                                                            |                  |                                                          |      |      |      |      |      | 1    | 1    | 1     |
| Overall experience with (1: 'extremely dissatisfied' - 7: 'extremely satisfied'):                                      |                  |                                                          |      |      |      |      |      |      |      |       |
| 20) Required School/College courses outside your major field                                                           |                  | 4.8                                                      | 5.2  | 4.4  | 5.1  | 4.6  | 4.7  | 5.2  | 4.8  | 4.9   |
| 21) Courses in your major field                                                                                        |                  | 6.0                                                      | 5.7  | 6.0  | 6.2  | 5.5  | 6.2  | 5.6  | 6.1  | 5.9   |
| Assessment of the overall quality of instruction in (1: 'extremely dissatisfied' - 7: 'extremely satisfied'):          |                  |                                                          |      |      |      |      |      |      |      |       |
| 25) Required School/College courses outside your major field                                                           |                  | 4.8                                                      | 5.8  | 5.0  | 5.4  | 5.1  | 4.8  | 5.3  | 5.4  | 5.3   |
| 26) Courses in your major field                                                                                        |                  | 6.0                                                      | 6.5  | 5.8  | 6.3  | 5.9  | 6.2  | 5.8  | 6.4  | 6.1   |
| Satisfaction with the range of courses available to you (1: 'extremely dissatisfied' - 7: 'extremely satisfied'):      |                  |                                                          |      |      |      |      |      |      |      |       |
| 28) In your major field                                                                                                |                  | 5.0                                                      | 5.3  | 6.0  | 4.9  | 4.7  | 5.5  | 4.9  | 5.7  | 5.2   |
| Experience with the accessibility of instructors (1: 'extremely dissatisfied' - 7: 'extremely satisfied'):             |                  |                                                          |      |      |      |      |      |      |      |       |
| 30) In your major field                                                                                                |                  | 7.0                                                      | 5.8  | 6.4  | 6.6  | 6.3  | 7.0  | 6.1  | 6.1  | 6.3   |
| Experience with the quality of the academic advising process (1: 'extremely dissatisfied' - 7: 'extremely satisfied'): |                  |                                                          |      |      |      |      |      |      |      |       |
| 34) For your major field                                                                                               |                  | 6.3                                                      | 5.0  | 6.0  | 6.2  | 5.5  | 6.7  | 5.3  | 6.0  | 5.8   |
| Assessment of your program in terms of (1: 'extremely dissatisfied' - 7: 'extremely satisfied'):                       |                  |                                                          |      |      |      |      |      |      |      |       |
| 42) Entering graduate or professional school                                                                           |                  | 5.0                                                      | 4.6  | 5.4  | 5.4  | 4.3  | 4.3  | 4.7  | 4.9  | 4.8   |
| 43) Finding a position appropriate to your major field                                                                 |                  | 4.3                                                      | 4.7  | 5.0  | 4.5  | 3.9  | 5.2  | 4.2  | 4.9  | 4.5   |
| Number of course requirements (1: 'too few' - 7: 'too many'):                                                          |                  |                                                          |      |      |      |      |      |      |      |       |
| 45) Required courses in your major                                                                                     |                  | 3.8                                                      | 3.5  | 4.6  | 3.6  | 3.3  | 3.0  | 3.2  | 3.8  | 3.5   |
| 47) Employment                                                                                                         | Full-time        | 1                                                        | 5    | 3    | 9    | 7    | 1    | 6    | 5    | 37    |
|                                                                                                                        | Part-time        | 3                                                        | 1    |      | 1    | 1    | 3    | 3    | 6    | 18    |
|                                                                                                                        | Not Employed     |                                                          |      | 2    | 1    | 3    | 2    | 3    | 4    | 15    |
| 48b) State of degree-related employment                                                                                | Connecticut      |                                                          | 2    | 1    |      | 4    | 2    | 3    | 4    | 16    |
|                                                                                                                        | Massachusetts    | 1                                                        |      |      |      | 1    |      |      |      | 2     |
|                                                                                                                        | Maine            |                                                          |      |      |      |      |      | 1    | 1    | 2     |
|                                                                                                                        | Florida          |                                                          |      |      |      |      |      | 1    |      | 1     |
|                                                                                                                        | Georgia          |                                                          |      |      |      |      | 1    |      |      | 1     |
|                                                                                                                        | Nevada           |                                                          |      |      |      |      |      |      | 1    | 1     |
|                                                                                                                        | South Dakota     |                                                          |      |      |      |      |      |      | 1    | 1     |
|                                                                                                                        | No Response      |                                                          |      | 1    | 8    |      |      | 1    | 1    | 11    |



| 49) Degree-related occupation                                                                                    |                                       |     |     |     |     |     |     |     |     |     |   |
|------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| Ag & Natural Sciences                                                                                            | Forester                              |     |     |     |     |     | 1   | 1   | 1   | 3   |   |
|                                                                                                                  | Other Agricultural & Natural Sciences |     |     |     |     |     |     | 1   | 3   | 4   |   |
|                                                                                                                  | Park ranger                           |     |     |     |     |     |     | 1   |     | 1   |   |
|                                                                                                                  | No Response                           | 1   | 1   |     | 7   |     |     |     |     | 9   |   |
| Clerical or Sales                                                                                                | Insurance adjuster, examiner          |     |     |     |     |     |     |     | 1   | 1   |   |
| Professional, Managerial, Administrative, and Technical                                                          | Biological Scientist                  |     |     |     |     |     |     | 2   |     | 2   |   |
|                                                                                                                  | Engineering or science technician     |     |     |     |     |     |     | 1   |     | 1   |   |
|                                                                                                                  | Urban or regional planner             |     |     |     |     |     | 1   |     |     | 1   |   |
|                                                                                                                  | No Response                           |     | 1   | 2   | 1   |     |     |     |     | 4   |   |
| Teaching                                                                                                         | Other Teaching                        |     |     |     |     |     |     |     | 1   | 1   |   |
|                                                                                                                  | Secondary teacher                     |     |     |     |     |     |     |     | 1   | 1   |   |
|                                                                                                                  | Teaching assistant                    |     |     |     |     |     | 1   |     |     | 1   |   |
| Multiple Response/Other                                                                                          | Other/Unknown/Multiple Response       |     |     |     |     |     |     |     | 1   | 1   |   |
| No Response                                                                                                      | No Response                           |     |     |     |     | 5   |     |     |     | 5   |   |
| 50) Helpfulness of degree when applying for job                                                                  | Yes                                   | 1   | 4   | 3   | 8   | 6   | 3   | 7   | 8   | 40  |   |
|                                                                                                                  | No                                    | 3   | 2   |     | 1   | 2   | 1   | 2   | 3   | 14  |   |
|                                                                                                                  | No Response                           |     |     | 2   | 2   | 3   | 2   | 3   | 4   | 16  |   |
| 55) Obtain career training - knowledge and skills applicable to specific job/work                                |                                       |     |     |     |     |     |     |     |     |     |   |
| (a) Importance to you (1: 'not' - 7: 'very')                                                                     |                                       | 6.5 | 6.5 | 6.6 | 6.3 | 6.2 | 6.8 | 6.7 | 6.6 | 6.5 |   |
| (b) UConn Helped you (1: 'very little' - 7: 'very much')                                                         |                                       | 4.5 | 4.5 | 5.2 | 4.9 | 4.6 | 5.0 | 4.2 | 4.9 | 4.7 |   |
| 56) Acquire background and specialization for further education in a professional, scientific or scholarly field |                                       |     |     |     |     |     |     |     |     |     |   |
| (a) Importance to you (1: 'not' - 7: 'very')                                                                     |                                       | 5.0 | 5.2 | 6.6 | 6.2 | 5.9 | 6.8 | 6.3 | 6.2 | 6.1 |   |
| (b) UConn Helped you (1: 'very little' - 7: 'very much')                                                         |                                       | 5.0 | 4.3 | 5.4 | 6.1 | 5.0 | 5.7 | 4.8 | 5.1 | 5.2 |   |
| 60) Write clearly and effectively                                                                                |                                       |     |     |     |     |     |     |     |     |     |   |
| (a) Importance to you (1: 'not' - 7: 'very')                                                                     |                                       | 6.3 | 5.5 | 5.6 | 5.8 | 6.3 | 6.5 | 6.0 | 5.9 | 6.0 |   |
| (b) UConn Helped you (1: 'very little' - 7: 'very much')                                                         |                                       | 6   | 5   | 6   | 6   | 5   | 6   | 5   | 6   | 5   |   |
| 64) Develop your own values and ethical standards                                                                |                                       |     |     |     |     |     |     |     |     |     |   |
| (a) Importance to you (1: 'not' - 7: 'very')                                                                     |                                       | 4.0 | 5.5 | 6.2 | 6.1 | 6.2 | 5.3 | 6.2 | 6.1 | 5.9 |   |
| (b) UConn Helped you (1: 'very little' - 7: 'very much')                                                         |                                       | 5.0 | 4.3 | 4.0 | 4.4 | 4.2 | 5.0 | 4.6 | 5.1 | 4.6 |   |
| 71) Think analytically and logically                                                                             |                                       |     |     |     |     |     |     |     |     |     |   |
| (a) Importance to you (1: 'not' - 7: 'very')                                                                     |                                       | 6.0 | 5.7 | 6.4 | 6.3 | 6.1 | 6.3 | 6.3 | 6.2 | 6.2 |   |
| (b) UConn Helped you (1: 'very little' - 7: 'very much')                                                         |                                       | 5.0 | 5.2 | 5.0 | 6.1 | 5.4 | 5.7 | 5.2 | 6.1 | 5.6 |   |
| 72) Think in quantitative terms, understand probabilities, proportions, etc.                                     |                                       |     |     |     |     |     |     |     |     |     |   |
| (a) Importance to you (1: 'not' - 7: 'very')                                                                     |                                       | 5.5 | 5.5 | 6.4 | 6.0 | 5.7 | 6.3 | 5.2 | 5.7 | 5.7 |   |
| (b) UConn Helped you (1: 'very little' - 7: 'very much')                                                         |                                       | 5.3 | 5.0 | 5.6 | 6.1 | 5.1 | 5.3 | 5.1 | 5.3 | 5.3 |   |
| 75) Know how to speak before groups, actively participate in group discussions, function as a team member        |                                       |     |     |     |     |     |     |     |     |     |   |
| (a) Importance to you (1: 'not' - 7: 'very')                                                                     |                                       | 5.3 | 5.8 | 6.4 | 6.4 | 6.0 | 6.5 | 6.3 | 6.0 | 6.1 |   |
| (b) UConn Helped you (1: 'very little' - 7: 'very much')                                                         |                                       | 6.3 | 5.8 | 5.0 | 6.0 | 5.5 | 5.8 | 5.5 | 5.8 | 5.7 |   |
| 80) Future Plans                                                                                                 | Employment in CT                      |     |     |     |     |     |     | 2   | 3   | 4   | 9 |
|                                                                                                                  | Employment outside CT                 |     |     |     |     |     |     |     | 3   | 2   | 5 |
|                                                                                                                  | Graduate/Prof'l School                |     |     |     |     |     |     | 1   | 2   | 2   | 5 |
|                                                                                                                  | Multiple Response                     |     |     |     |     |     |     |     |     | 6   | 6 |
|                                                                                                                  | Starting/Raising a Family             |     |     |     |     |     |     |     | 1   |     | 1 |
|                                                                                                                  | No Response                           |     |     |     |     |     |     | 3   | 3   | 1   | 7 |
| 81) Recommend UConn                                                                                              | Yes                                   | 4   | 6   | 5   | 10  | 10  | 6   | 12  | 13  | 66  |   |
|                                                                                                                  | No                                    |     |     |     | 1   |     |     |     |     | 1   |   |
|                                                                                                                  | No Response                           |     |     |     |     | 1   |     |     | 2   | 3   |   |

Table C7. NRE Graduates Places of employment Based on Alumni Survey 2005-2012.

|                                                  |
|--------------------------------------------------|
| CT Department of Energy & Environment Protection |
| CT Department                                    |
| Board of Education                               |
| Central Naugatuck Valley Council Of Government   |
| Clean Harbors Env. Services                      |
| Conestoga- Rover & Associates                    |
| Consolidation School Dist of NB                  |
| Deep                                             |
| Discovery Museum                                 |
| Florida Fish and Wildlife Commission             |
| Fuss & O'Neil Inc.                               |
| Great Basin Institute                            |
| HRP Associates Inc.                              |
| Little Sebago Lake Association                   |
| Lucas Tree Experts                               |
| Norcross Wildlife Sanctuary                      |
| Town of Wellesley                                |
| Traveler's Insurance                             |
| Triumvirate                                      |
| Uga                                              |
| Ulusaba                                          |
| University of Connecticut                        |
| University of Connecticut Coop Extension         |
| US Army                                          |
| Virginia Tech                                    |

Table C8. Natural Resources and the Environment Program Review: Enrollment by Ethnicity and Gender, 2005-2012.

| University of Connecticut                                                                |      |                    |        |                           |        |                                  |        |       |        |                 |        |       |        |                        |        |                                           |        |                   |        |                 |        |       |
|------------------------------------------------------------------------------------------|------|--------------------|--------|---------------------------|--------|----------------------------------|--------|-------|--------|-----------------|--------|-------|--------|------------------------|--------|-------------------------------------------|--------|-------------------|--------|-----------------|--------|-------|
| Natural Resources and the Environment Program Review: Enrollment by Ethnicity and Gender |      |                    |        |                           |        |                                  |        |       |        |                 |        |       |        |                        |        |                                           |        |                   |        |                 |        |       |
|                                                                                          |      | Non-Resident Alien |        | Black or African American |        | American Indian or Alaska Native |        | Asian |        | Hispanic/Latino |        | White |        | Race/Ethnicity Unknown |        | Native Hawaiian or Other Pacific Islander |        | Two or More Races |        | Total Headcount |        |       |
|                                                                                          |      | Male               | Female | Male                      | Female | Male                             | Female | Male  | Female | Male            | Female | Male  | Female | Male                   | Female | Male                                      | Female | Male              | Female | Male            | Female | Total |
| Fall 2005                                                                                | UGRD |                    |        |                           | 1      | 1                                |        |       |        | 1               |        | 37    | 17     | 14                     | 6      |                                           |        |                   |        | 53              | 24     | 77    |
|                                                                                          | GRAD | 3                  | 2      |                           |        |                                  |        | 1     |        | 1               |        | 11    | 8      | 2                      | 1      |                                           |        |                   |        | 18              | 11     | 29    |
| Fall 2006                                                                                | UGRD |                    |        |                           |        |                                  |        |       |        | 1               |        | 48    | 25     | 12                     | 3      |                                           |        |                   |        | 61              | 28     | 89    |
|                                                                                          | GRAD | 5                  | 3      | 1                         |        | 1                                |        | 1     |        |                 |        | 10    | 11     | 3                      | 2      |                                           |        |                   |        | 21              | 16     | 37    |
| Fall 2007                                                                                | UGRD |                    |        |                           | 1      |                                  |        | 1     | 1      | 2               |        | 36    | 29     | 12                     | 2      |                                           |        |                   |        | 51              | 33     | 84    |
|                                                                                          | GRAD | 5                  | 3      | 1                         |        | 1                                |        | 1     |        | 1               |        | 12    | 11     | 2                      | 2      |                                           |        |                   |        | 23              | 16     | 39    |
| Fall 2008                                                                                | UGRD |                    |        |                           |        |                                  |        | 1     | 1      | 2               |        | 40    | 23     | 9                      | 1      |                                           |        |                   |        | 52              | 25     | 77    |
|                                                                                          | GRAD | 5                  | 2      | 1                         |        | 1                                |        | 1     |        | 1               |        | 14    | 9      | 1                      | 1      |                                           |        |                   |        | 24              | 12     | 36    |
| Fall 2009                                                                                | UGRD |                    |        |                           |        |                                  |        |       |        | 2               | 2      | 46    | 22     | 5                      | 5      |                                           |        |                   |        | 53              | 29     | 82    |
|                                                                                          | GRAD | 7                  | 2      | 1                         |        | 1                                |        | 1     |        | 1               |        | 14    | 9      | 1                      |        |                                           |        |                   |        | 26              | 11     | 37    |
| Fall 2010                                                                                | UGRD | 1                  |        |                           | 1      |                                  |        |       | 1      | 3               | 2      | 55    | 24     | 8                      | 7      |                                           |        |                   |        | 67              | 35     | 102   |
|                                                                                          | GRAD | 5                  | 3      |                           |        | 1                                |        |       |        |                 |        | 12    | 10     | 1                      | 1      |                                           |        |                   |        | 19              | 14     | 33    |
| Fall 2011                                                                                | UGRD |                    |        |                           | 1      | 1                                |        |       | 2      | 3               | 3      | 55    | 27     | 9                      | 10     |                                           |        |                   |        | 68              | 43     | 111   |
|                                                                                          | GRAD | 3                  | 4      |                           |        | 1                                |        |       |        |                 |        | 10    | 10     | 1                      | 1      |                                           |        |                   |        | 15              | 15     | 30    |
| Fall 2012                                                                                | UGRD |                    |        |                           | 1      | 1                                |        |       |        | 7               | 5      | 67    | 35     | 8                      | 9      |                                           |        |                   | 1      | 84              | 50     | 134   |
|                                                                                          | GRAD | 3                  | 4      |                           |        |                                  |        |       |        | 1               |        | 11    | 8      | 1                      | 1      |                                           |        |                   |        | 16              | 13     | 29    |
| UGRD total                                                                               |      | 1                  | 0      | 0                         | 5      | 3                                | 0      | 2     | 5      | 21              | 12     | 384   | 202    | 77                     | 43     | 0                                         | 0      | 1                 | 0      | 489             | 267    | 756   |
| GRD total                                                                                |      | 36                 | 23     | 4                         | 0      | 6                                | 0      | 5     | 0      | 5               | 0      | 94    | 76     | 12                     | 9      | 0                                         | 0      | 0                 | 0      | 162             | 108    | 270   |
| OIRE/November 2013                                                                       |      |                    |        |                           |        |                                  |        |       |        |                 |        |       |        |                        |        |                                           |        |                   |        |                 |        |       |

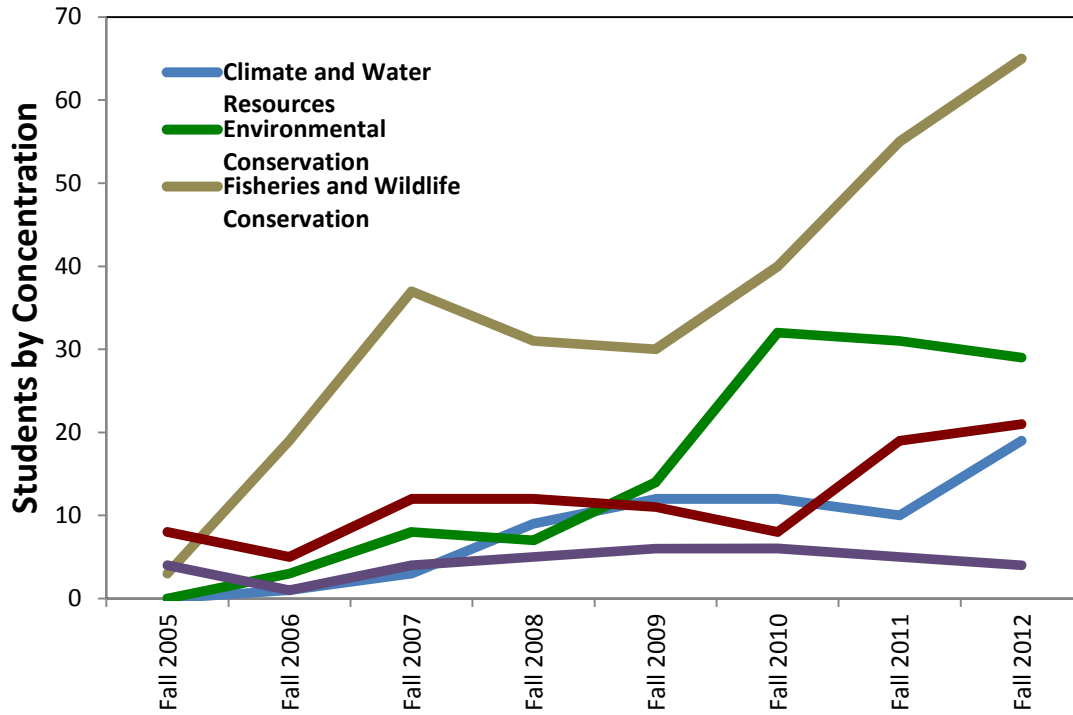


Figure C1- The enrollment of students in the Natural Resources major broken out by concentration. Concentrations within the major are 19-23 credit areas of focused study. Students must complete at least one concentration to fulfill graduation requirements. *Note:* Concentrations first appeared in the 05-06 catalog year, and therefore do not represent the entire student cohort (freshmen to senior) until 2009.

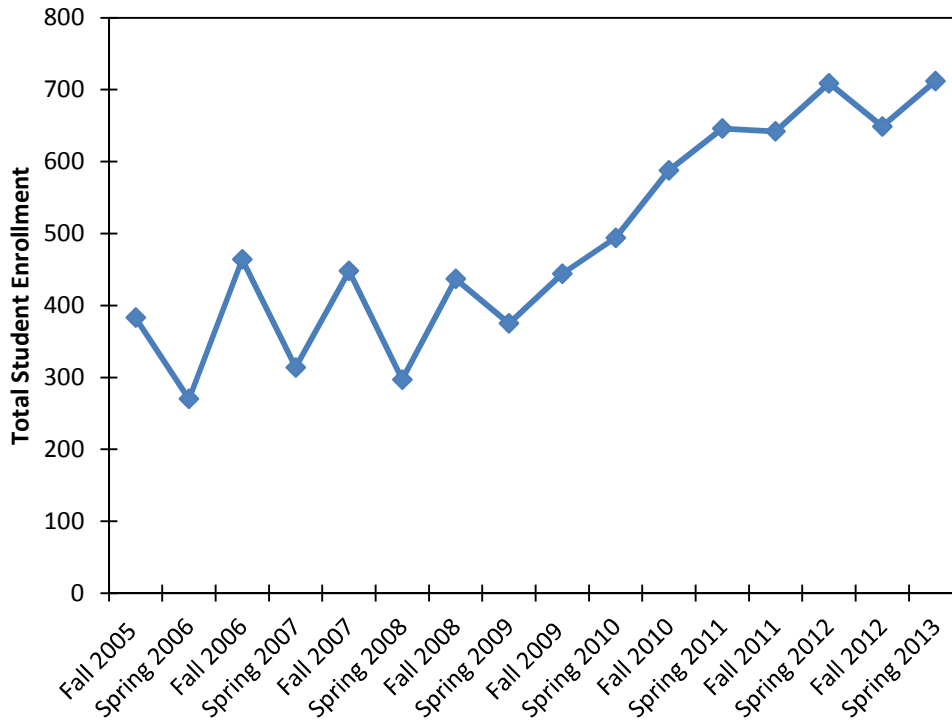


Figure C.2- The number of students enrolled in undergraduate courses (with the NRE prefix) offered each semester spanning fall 2005 through spring 2013.

## D. Graduate Programs

Table D1- Student enrollments in the Natural Resources graduate program, by degree, for the period spanning academic years 2005-2006 through 2012-2013.

|            | Fall<br>2005 | Fall<br>2006 | Fall<br>2007 | Fall<br>2008 | Fall<br>2009 | Fall<br>2010 | Fall<br>2011 | Fall<br>2012 |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>MS</b>  | 16           | 23           | 23           | 23           | 18           | 16           | 15           | 15           |
| Full-time  | 8            | 16           | 18           | 17           | 12           | 10           | 9            | 9            |
| Part-time  | 8            | 7            | 5            | 6            | 6            | 6            | 6            | 6            |
| <b>PhD</b> | 13           | 14           | 16           | 13           | 19           | 17           | 15           | 15           |
| Full-time  | 11           | 9            | 10           | 9            | 13           | 13           | 9            | 11           |
| Part-time  | 2            | 5            | 6            | 4            | 6            | 4            | 6            | 4            |

Table D2- Graduates and known placements from the Natural Resources Graduate Program spanning May 2005 through May 2013.

| Name               | Degree | Year | Current Title                               | Employer                                          | Major Advisor |
|--------------------|--------|------|---------------------------------------------|---------------------------------------------------|---------------|
| Arifuzzaman, Kazi  | PhD    | 2010 | unknown                                     | unknown                                           | Meyer         |
| Bandy, Leslie      | MS     | 2009 | Consulting Field Biologist                  | Olofson Environmental, Inc.                       | Volin         |
| Bedan, Erik        | MS     | 2005 | Environmental Analyst                       | CT DEEP Bureau of Water Protection and Land Reuse | Clausen       |
| Bighinatti, Scott  | MS     | 2005 | Consulting Hydrologist                      | Milone and MacBroome, Inc.                        | Warner        |
| Burns, Daniel      | MS     | 2006 | Consulting Forester                         |                                                   | Rudnicki      |
| Campiformio, Anna  | MS     | 2012 | Science Teacher                             | Sedgwick Middle School, CT                        | Rudnicki      |
| Dietz, Michael     | PhD    | 2005 | Assistant Cooperative Extension Educator    | University of Connecticut                         | Clausen       |
| Dixon, Christopher | MS     | 2007 | Fisheries Research Biologist                | USGS Biological Resources Division                | Vokoun        |
| Dreiss, Lindsay    | MS     | 2011 | PhD Student                                 | University of Connecticut                         | Volin         |
| Drinkuth, Holly    | MS     | 2009 | Director of Outreach and Watershed Programs | The Nature Conservancy                            | Clausen       |
| Edwards, Dustin    | MS     | 2007 | Inventory and Purchasing                    | Cabela's Inc.                                     | Vokoun        |
| Gahagan, Benjamin  | MS     | 2010 | Fisheries Biologist                         | Massachusetts Division of Marine Fisheries        | Vokoun        |

|                           |     |      |                                  |                                                             |          |
|---------------------------|-----|------|----------------------------------|-------------------------------------------------------------|----------|
| Gregoire, Bruce           | MS  | 2010 | Faculty Instructor (part-time)   | Three Rivers Community College                              | Clausen  |
| Hier, Michelle            | MS  | 2007 | Teacher                          | Captain Nathan Hale Middle School                           | Clausen  |
| Hood, Mark                | MS  | 2005 | unknown                          | CT Dept. of Econ. & Comm. Develop.                          | Clausen  |
| Hoover, Mark              | MS  | 2011 | GIS Specialist                   | Greater Bridgeport Regional Council                         | Civco    |
| Huang, Min                | PhD | 2010 | Wildlife Biologist               | CT DEEP Wildlife Division                                   | Barclay  |
| Jemison (Rodriguez), Lisa | MS  | 2005 | Director of Programs             | Research Triangle Foundation, NC                            | Ortega   |
| Jensen, Timothy           | MS  | 2012 | Theology Student                 | Non-denominational Bible Studies, CA.                       | Vokoun   |
| Kanno, Yoichiro           | PhD | 2010 | Assistant Professor              | Clemson University, School of Ag, Forest, and Env. Sciences | Vokoun   |
| Kilpatrick, Howard        | PhD | 2010 | Wildlife Biologist               | CT DEEP Wildlife Division                                   | Barclay  |
| Kliger, Krystal           | MS  | 2008 | GIS Specialist                   | Montgomery County Dept. of Environmental Protection, MD     | Civco    |
| LaBonte, Andrew           | MS  | 2011 | Wildlife Biologist               | CT Dept. of Energy and Environmental Protection             | Barclay  |
| Landi, Alicia             | MS  | 2011 | Consulting Fisheries Biologist   | PRS Applied Science Associates, Inc.                        | Vokoun   |
| Lawrence-Apfel, Kirstin   | MS  | 2009 | PhD Student                      | University of Connecticut                                   | Ortega   |
| Lengyel, Balint           | MS  | 2011 | unknown                          | unknown                                                     | Robbins  |
| Li, Xianglian             | PhD | 2008 | Assistant Professor in Residence | Missouri University of Science and Technology               | Yang     |
| Lubega, Musa              | MS  | 2009 | CEO and Director                 | Gorilla Mist Camp/Great Apes Uganda Safaris                 | Ortega   |
| Luo, Yuxhou               | PhD | 2006 | Research Assistant Professor     | University of California, Davis                             | Yang     |
| Martin, Rose              | MS  | 2012 | PhD Student                      | University of Rhode Island                                  | Clausen  |
| McDowell, Christopher     | MS  | 2012 | Fisheries Biologist              | CT DEEP Inland Fisheries Division                           | Vokoun   |
| McIntosh, Nicholas        | MS  | 2010 | Technical Support Consultant II  | University of Connecticut                                   | Rudnicki |
| Metcalf, Meredith         | PhD | 2013 | Assistant Professor              | Eastern Connecticut State University                        | Robbins  |

|                      |     |      |                                                   |                                                                     |         |
|----------------------|-----|------|---------------------------------------------------|---------------------------------------------------------------------|---------|
| Osterberg, Krista    | MS  | 2006 | Surface Water Section & Outreach Unit, Supervisor | Arizona Dept of Environmental Quality                               | Clausen |
| Parent, Jason        | MS  | 2006 | PhD Student                                       | University of Connecticut                                           | Civco   |
| Rand, Charolette     | MS  | 2011 | Assistant Extension Educator in Residence         | University of Connecticut                                           | Volin   |
| Reale-Munroe, Kynoch | MS  | 2009 | Research Analyst                                  | Resource Cons. and Development Council, US Virgin Islands           | Warner  |
| Reif, Nicholas       | MS  | 2010 | PhD Student                                       | University of Vermont                                               | Volin   |
| Renshaw, Christopher | MS  | 2007 | Lieutenant Firefighter                            | University of Connecticut Fire Dept.                                | Ortega  |
| Rondeau, Judith      | MS  | 2010 | Conservation Educator                             | CT DEEP Goodwin Nature Center                                       | Warner  |
| Rosa, David          | MS  | 2013 | PhD Student                                       | University of Connecticut                                           | Clausen |
| Rubiano, Astrith     | MS  | 2008 | Veterinarian                                      | Occoquan Animal Hospital, VA                                        | Ortega  |
| Ruta, Meghan         | MS  | 2009 | Environmental Analyst                             | CT DEEP Bureau of Water Protection and Land Reuse                   | Civco   |
| Saurez, Lee          | MS  | 2010 | Environmental Analyst                             | CT DEEP Bureau of Water and Land Reuse                              | Robbins |
| Schmit, Robbette     | MS  | 2009 | Fisheries Biologist                               | USFWS, Leavenworth Fisheries Complex, WA                            | Warner  |
| Schimmer, Russell    | PhD | 2013 | CEO                                               | Spatiotemporal Information and Analysis Services (SIAS Global) LLC. | Civco   |
| Seymour, Jane        | MS  | 2009 | Resource Steward                                  | Belding Wildlife Management Area                                    | Barclay |
| Stella, Juan         | PhD | 2009 | Consulting Hydrologist                            | Uruguay                                                             | Warner  |
| Theve, Marissa       | MS  | 2013 | Soil Scientist                                    | Natural Resources Conservation Service                              | Warner  |
| Turner, Michael      | MS  | 2010 | Biological Science Technician                     | USDI - National Park Service                                        | Clausen |
| Twiss, Rhonda        | MS  | 2006 | Manager                                           | Willimantic Brewing Company, CT                                     | Ortega  |



|                   |     |      |                                                |                                                     |          |
|-------------------|-----|------|------------------------------------------------|-----------------------------------------------------|----------|
| Wang, Junming     | PhD | 2005 | Associate Professor                            | University of Illinois, Illinois State Water Survey | Yang     |
| Webb, Vincent     | PhD | 2011 | Lab Supervisor, Boston-Area Climate Experiment | University of Massachusetts-Boston                  | Rudnicki |
| Wilcox, Jeremy    | MS  | 2013 | Consulting Scientist                           | Milone & MacBroom, Inc.                             | Clausen  |
| Williams, Scott   | PhD | 2008 | Asst. Agricultural Scientist II                | CT Agricultural Experiment Station                  | Ortega   |
| Witharana, Chandi | PhD | 2013 | Post-Doctoral Researcher                       | University of Connecticut                           | Meyer    |
| Zimmerman, Carl   | PhD | 2012 | Lecturer                                       | Tufts University                                    | Civco    |

Table D3- Cohort demographics.

|                                | Fall 05 |      | Fall 06 |      | Fall 07 |      | Fall 08 |     | Fall 09 |      | Fall 10 |      | Fall 11 |      | Fall 12 |      |
|--------------------------------|---------|------|---------|------|---------|------|---------|-----|---------|------|---------|------|---------|------|---------|------|
|                                | MS      | PhD  | MS      | PhD  | MS      | PhD  | MS      | PhD | MS      | PhD  | MS      | PhD  | MS      | PhD  | MS      | PhD  |
| <b>Cohort Total Head Count</b> | 6       | 2    | 6       | 3    | 5       | 2    | 1       | 0   | 5       | 2    | 1       | 1    | 5       | 1    | 5       | 3    |
| <b>Average GPA<sup>1</sup></b> | 3.29    | 3.56 | 2.47    | 3.15 | 3.28    | 3.40 | 3.07    |     | 3.39    | 3.03 | 2.96    | 3.78 | 3.38    | 3.79 | 2.91    | 3.61 |
| <b>Average GRE<sup>2</sup></b> | 580     |      | 548     | 695  | 556     | 610  | 600     |     | 612     | 545  |         | 615  | 511     | 575  | 585     | 670  |
| <b>Ethnicity</b>               |         |      |         |      |         |      |         |     |         |      |         |      |         |      |         |      |
| <b>Black/African American</b>  |         |      |         | 1    |         |      |         |     |         |      |         |      |         |      |         |      |
| <b>White</b>                   | 5       | 1    | 4       |      | 4       | 1    | 1       |     | 4       | 1    | 1       |      | 4       | 1    | 5       | 3    |
| <b>Non-resident alien</b>      |         | 1    | 2       | 2    | 1       | 1    |         |     | 1       | 1    |         | 1    | 1       |      |         |      |
| <b>Unknown</b>                 | 1       |      |         |      |         |      |         |     |         |      |         |      |         |      |         |      |
| <b>Gender</b>                  |         |      |         |      |         |      |         |     |         |      |         |      |         |      |         |      |
| <b>Female</b>                  | 3       | 1    | 4       | 1    | 2       |      |         |     | 4       | 1    | 1       | 1    | 3       |      | 2       | 1    |
| <b>Male</b>                    | 3       | 1    | 2       | 2    | 3       | 2    | 1       |     | 1       | 1    |         |      | 2       | 1    | 3       | 2    |
| <b>State<sup>3</sup></b>       |         |      |         |      |         |      |         |     |         |      |         |      |         |      |         |      |
| <b>In-State</b>                | 6       | 1    | 3       |      | 3       |      |         |     | 4       | 1    | 1       |      | 3       | 1    | 5       | 3    |
| <b>Out-of-State</b>            |         |      | 1       | 1    | 1       | 1    | 1       |     |         |      |         |      | 1       |      |         |      |
| <b>Region<sup>3</sup></b>      |         |      |         |      |         |      |         |     |         |      |         |      |         |      |         |      |
| <b>Northeast</b>               | 6       | 1    | 3       | 1    | 3       | 1    |         |     | 4       | 1    | 1       |      | 4       | 1    | 5       | 3    |
| <b>South</b>                   |         |      | 1       |      |         |      | 1       |     |         |      |         |      |         |      |         |      |
| <b>West</b>                    |         |      |         |      | 1       |      |         |     |         |      |         |      |         |      |         |      |

1 Average Bachelor GPA for Master's cohorts and average Master's GPA for PhD cohort.

2 Average of GRE Q and GRE V test scores.

3 Exclude Non-resident aliens.

Table D4- Geographic origin of current graduate students in the Natural Resources MS and PhD degree programs.

| <b>Name</b>             | <b>Degree</b> | <b>Country of Origin</b> | <b>State/Province</b> |
|-------------------------|---------------|--------------------------|-----------------------|
| Benson, Judy            | MS            |                          |                       |
| Chlus, Adam             | MS            | USA                      |                       |
| Chung, Jinwon           | PhD           | Korea                    | Seoul                 |
| Dreiss, Lindsay         | PhD           | USA                      | Connecticut           |
| Evans, Michael          | PhD           | USA                      | New York              |
| Floyd, Megan            | MS            | USA                      |                       |
| Henry, Eric             | MS            | USA                      | Connecticut           |
| Hessenauer, Jan-Michael | PhD           | USA                      | Michigan              |
| Klinck, Jenna           | MS            | USA                      |                       |
| Lawrence, Kerstin       | PhD           | USA                      | New York              |
| Lei, Qian               | PhD           | China                    | Guangxi               |
| Michaud, Carissa        |               |                          |                       |
| Mwizerwa, Aimee         |               |                          |                       |
| O'Connor, Jason         | MS            | USA                      | North Carolina        |
| O'Connor, Kelly         | MS            | USA                      | Connecticut           |
| Otieno, Vincent         | PhD           | Kenya                    | Nyanza                |
| Parent, Jason           | PhD           | USA                      | Connecticut           |
| Pivarnik, Alexander     | MS            | USA                      | Rhode Island          |
| Rosa, David             | PhD           | USA                      | Connecticut           |
| Zvanarek, Karlo         |               |                          |                       |

Table D5- Graduate courses that routinely draw enrollment from other graduate programs/departments.

|         |                                            |
|---------|--------------------------------------------|
| NRE5115 | Field Methods in Hydrogeology              |
| NRE5155 | Principles of Nonpoint Source Pollution    |
| NRE5335 | Advanced Stream Ecology                    |
| NRE5461 | Landscape Ecology                          |
| NRE5575 | Natural Resource Applications of GIS       |
| NRE5585 | Geospatial Data Processing Techniques      |
| NRE5175 | Climate and Environmental Systems Modeling |

Table D6. Graduate Retention and Graduation Rates in Natural Resources and the Environment.

| University of Connecticut                                                        |            |                           |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|----------------------------------------------------------------------------------|------------|---------------------------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
| Graduate Retention and Graduation Rates in Natural Resources and the Environment |            |                           |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
| Fall 2005 - Fall 2011 Cohorts                                                    |            |                           |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
| Cohort                                                                           |            |                           | 2nd Yr |      | 3rd Yr |      | 4th Yr |      | 5th Yr |      | 6th Yr |      | 7th Yr |      | 8th Yr |      |
|                                                                                  |            |                           | #      | %    | #      | %    | #      | %    | #      | %    | #      | %    | #      | %    | #      | %    |
| FA 05                                                                            | MA<br>(6)  | Continued <sup>1</sup>    | 4      | 66.7 | 3      | 50.0 | 2      | 33.3 | 2      | 33.3 | 2      | 33.3 | 1      | 16.7 | 1      | 16.7 |
|                                                                                  |            | Discontinued <sup>2</sup> |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated <sup>3</sup>    | 2      | 33.3 | 3      | 50.0 | 4      | 66.7 | 4      | 66.7 | 4      | 66.7 | 5      | 83.3 | 5      | 83.3 |
|                                                                                  | PhD<br>(2) | Continued                 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 |        |      |        |      |
|                                                                                  |            | Discontinued              | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      |        |      |        |      | 1      | 50.0 | 1      | 50.0 |
| FA 06                                                                            | MA<br>(6)  | Continued                 | 5      | 83.3 | 1      | 16.7 |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 | 1      | 16.7 | 5      | 83.3 | 6      | 100  |        |      |        |      |        |      |        |      |
|                                                                                  | PhD<br>(3) | Continued                 | 3      | 100  | 3      | 100  | 3      | 100  | 1      | 33.3 | 1      | 33.3 | 1      | 33.3 |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      | 2      | 66.7 | 2      | 66.7 | 2      | 66.7 |        |      |
| FA 07                                                                            | MA<br>(5)  | Continued                 | 4      | 80.0 |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      | 1      | 20.0 | 1      | 20.0 | 1      | 20.0 | 1      | 20.0 |        |      |        |      |
|                                                                                  |            | Graduated                 | 1      | 20.0 | 4      | 80.0 | 4      | 80.0 | 4      | 80.0 | 4      | 80.0 |        |      |        |      |
|                                                                                  | PhD<br>(2) | Continued                 | 2      | 100  | 2      | 100  | 2      | 100  | 2      | 100  |        |      | 1      | 50.0 |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      | 1      | 50.0 |        |      |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
| FA 08                                                                            | MA<br>(1)  | Continued                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 | 1      | 100  |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  | PhD<br>(0) | Continued                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
| FA 09                                                                            | MA<br>(5)  | Continued                 | 3      | 60.0 |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 | 2      | 40.0 | 5      | 100  | 5      | 100  |        |      |        |      |        |      |        |      |
|                                                                                  | PhD<br>(2) | Continued                 | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              | 1      | 50.0 | 1      | 50.0 | 1      | 50.0 |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
| FA 10                                                                            | MA<br>(1)  | Continued                 | 1      | 100  | 1      | 100  |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  | PhD<br>(1) | Continued                 | 1      | 100  | 1      | 100  |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
| FA 11                                                                            | MA<br>(5)  | Continued                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              | 1      | 20.0 |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 | 4      | 80.0 |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  | PhD<br>(1) | Continued                 | 1      | 100  |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Discontinued              |        |      |        |      |        |      |        |      |        |      |        |      |        |      |
|                                                                                  |            | Graduated                 |        |      |        |      |        |      |        |      |        |      |        |      |        |      |

<sup>1</sup> Enrolled in Fall semester of the academic year.

<sup>2</sup> Not enrolled in Fall semester of the academic year.

<sup>3</sup> Accumulated count as of the end of the academic year.

## Appendix F1: NRE Faculty on State of Connecticut Committees (2005-2013)

Barclay, J. Connecticut Duck Stamp Fund Advisory Committee, CT Dept. of Environmental Protection.

Civco, D. UConn Space Grant College Consortium Campus Director, 2000-2008

Civco, D. UConn Research Director for Connecticut EPSCoR, 2000-2006

Civco, D., Member, Land Use and Land Cover Subcommittee, Data Inventory and Assessment Working Group, Connecticut Geospatial Information Systems (GIS) Council. 2008-present

Meyer, T. Connecticut Geodetic Infrastructure Committee, chair, 2006-present

Ortega, I. Member of the Advisory Board Connecticut Museum of Natural History. 2006 – present.

Rittenhouse, T. DEEP Taxonomic Advisory Committee for Amphibians and Reptiles, Member (State, Government Agencies), 05/2013 – present

Robbins, G. 2006-present, member of the Connecticut Geological and Natural History Survey Geologic Mapping Advisory Committee;

Robbins, G. 2005-present, member of the Dept. of Public Health Source Water Protection Stakeholders Group.

Rudnicki, M. Tree Protection Examination Board. 6/6/2012-present. Governor Appointee.

Vokoun, J. Fisheries Advisory Council to CT DEEP Bureau of Natural Resources (currently recording secretary)

Vokoun, J. Endangered, Threatened, and Species of Concern Taxonomic Advisory Committee (fishes sub-group) to CT DEEP Bureau of Natural Resources

Volin, J. Connecticut Urban Forest Council board member 2007 – present

Volin, J. Connecticut Forest Conservation and Research Forum committee member 2008 – 2011

Volin, J. Natural Resources Working Group Core Team member of the CT Governor’s Subcommittee on Climate Change Impacts 2009 – present

Warner, G. CT Legislature Water Summit Panel convened by Rep. John Hampton, October, 2013, Hartford, CT

Warner, G. Advisory Group for CASE (Connecticut Academy of Science and Engr.) for USGS I95 Water Quality Study for road salt impacts, 2009-2011

Warner, G. CT Governor’s Climate Change Adaptation Strategies Subcommittee-Dept. of Agriculture Workgroup, 2009-2010

Warner, G. CT DEP Instream Flow Science & Tech Workgroup, 2006-2009

Warner, G. The Nature Conservancy / Green Valley Institute’s Conservation Action Planning Committee for the Natchaug Basin. 2008-2010

Warner, G. Scientific and Technical Standards Workgroup of the CT DEEP In-Stream Flow Advisory Group. 2006-2011

Warner, G. Technical Advisory Group, Willimantic River Aquatic Study, UCONN Wellfield Impacts on Streamflow 2008-2010.

Warner, G. Pomperaug Drought Simulation Exercise Planning Committee (Pomperaug River Coalition) 2007-2009.

## **Appendix F2: NRE Faculty Service to the University (2005-2013).**

### **Anyah**

#### College

Member, CANR Diversity Committee, 2009 - 2012.

Member, CANR Excellence Committee, 2009 - 2013.

Member, CANR Junior Faculty Mentoring Committee Policy Framework, 2011 - 2012.

#### Department

Co-Chair, Connecticut Conference on Natural Resources, 2012-2014.

Member, Search Committee for Hydro-meteorological Hazards, Departments of Natural Resources and the Environment and Environmental Engineering, University of Connecticut. 2012.

Member, Search Committee for Wildlife Ecologist, 2010

Member, NRE seminar committee 2009-2011.

### **Barclay**

#### University

Member, University Environment and Land Use Committee, Sustainability subcommittee, 2004-2007

#### College

Member, CANR Diversity Committee, 2007-2009.

Director, Wildlife Conservation Research Center 2009-2010

Member, College Alumni & Development Committee, 1998-2005

#### Department

Member, NRE Search Committee, Assistant Professor, Forestry, 2005

### **Bosker**

#### University

Member, Center for Environmental Health and Health Promotion 2011-13.

Member, Teale Lecture Series Committee. 2011-13

#### Department

Member, NRE Sustainable Concentration Committee. 2011-13

### **Bresnahan**

Member, NRME Seminar Series Committee, 2008-2009.

Member, CCNR 2008, Steering Committee, 2008-2009.

### **Civco**

#### University

Member, General Education Oversight Committee, 2008

Co-chair, GEOC Information Literacy Subcommittee, 2008-2009.

Member, CESE Advisory Committee. Center for Environmental Science and Engineering. 2010 - Present).

Member, University Outstanding Graduate Awards Selection Committee. 2013.

UConn Space Grant College Consortium Campus Director, 2000-2008

UConn Research Director for Connecticut EPSCoR, 2000-2006.

Member, Search Committee for Geography position for Assistant/Associate, 2007

### College

Member, CANR Excellence Committee, 2000-2004  
Member, CANR-Research Advisory Council (RAC), 2011 - Present.  
Director, Center for Land use Education and Research (CLEAR). (April 2002 - Present).  
Mentor to four Graduate Fellows, UConn Center for Environmental Sciences and Engineering, 2008

### Department

Member, NRME Curriculum and Courses Committee, 1993-2007.  
NRE Transfer Credit Program Liaison, 1996-present.  
NRE Study Abroad Program Liaison, 2008-present  
Member, NRE PTR Committee. ( 2009 - Present).  
NRE Member of Search Committee for CEE-NRE-ARE Joint position for Assistant/Associate Professor of Water Resources Management under a Changing Climate, 2012  
Member, NRE Merit Committee. 2010 – Present.

### **Clausen**

#### University

Member, Capital Projects Advisory Committee. 2006 - Present.  
Ex-officio Member, Executive Compliance Committee, 2009 - 2012.  
Member, University Senate. 2004 - 2011.  
Member, University Senate Executive Committee.  
Chair, University Senate Executive Committee, 2009-2011.  
Member, Board of Trustees Distinguished Professor Selection Committee. 2012 - 2015.  
Member, Chief Operating Officer Search Committee 2011-2012.  
Member, Environmental Policy Advisory Committee.  
Member, President's Search Committee, 2010 - 2011.  
Member, Graduate Faculty Council. 2008 - 2011.  
Chair, Senate Scholastic Standards Committee, 2008-2009.  
Member, Graduate Programs Excellence Committee, 2008-2009.  
Member, Center For Environmental Sciences and Engineering Advisory Committee, 2008-present.  
Co-chair, Environmental Science Advisory Committee  
Chair, Senate Growth and Development Committee, 2005.  
Member, Dean 5-year Review committee, 2012.

### College

Member, CANR Renovation Committee, 2008-2009.  
Member, CANR Strategic Planning Writing Committee, 2008-2009.  
Member, CANR Assessment Task Force, 2008 - Present.  
Member, CANR Commencement Committee, 2008 - Present.  
Member, CANR Dean Review Committee, 2012.  
Member, 150 year Celebration Committee, 2012.

### Department

Chair, Human Dimensions in Natural Resources Search Committee, 2013-2014  
Member, NRE Merit Committee. 2010 - Present.  
Member, Landscape Ecology search committee, 2012.

### **Meyer**

#### University

Member, University Interdisciplinary Curricular Committee. 2009 - 2012.  
Member, GEOC Science and Technology Committee (CA III), (2005 - Present).

#### Department

Member, Dept. Courses and Curricula Committee, 2008 - Present.  
Member, PTR Committee, 2008-2009.  
Coordinator, NRE Scholarships, 1999 - Present.  
Coordinator, NRE Graduate Program, 2008-2009.  
Member, NRE Web Committee, 2008-2009.

#### **Ortega**

##### University

Coordinator, Early College Experience – NRE 1000-Environmental Science course 2009 - present  
Co-Director. Environmental Science Program College of Agriculture and Natural Resources. 2011-2012.  
Director, Global House, 2007 – 2010.  
Board member of the Puerto Rican Latino Cultural Center (PRLACC), 2004 to 2007; 2012 – present.  
Member, Study Abroad Advisory Committee (SAAC), 2004 to 2008; 2012 – present.  
Member, search committee for Director of Puerto Rican/Latin American Cultural Center (PRLACC), 2010.  
Member, Connecticut State Museum of Natural History Advisory Board, Collection Sub-Committee, 2006 - present.  
Member, Early College Experience (ECE) Board. 2012 – present.  
Member, Louis Stokes Alliance for Minority Participation (LSAMP), 2003 - 2009.  
Member, Task Force on International Affairs, 2009-2010.  
Member, Task Force on International Academic and Curricular Activities, 2007.  
Member, University Senate, 2006 – 2007; 2008 – 2012.  
Member, Senate Diversity Committee, 2009 – present  
Member, Senate Student Welfare Committee 2012 – present  
Member, Senate General Education Oversight Committee, 2008-2009.  
Member, Senate GEOC – Diversity and Multiculturalism Sub-Committee, 2005 to 2009.  
Member, Senate Courses and Curriculum Committee, 2008-2009.  
Member, Task Force on Developing Global Citizens, Spring 2006.  
Member, International Executive Council, 2009-2011.  
Member, Human Diversity, Disparity, and Rights Strategic Area Advisory Team (SAAT) for the University Academic Vision Committee, 2013

##### College

Member, Faculty Advisory Council for CANR Dean, 2013-2015.  
Member, CANR International Committee, 2003 to 2004; 2009-present.  
Member, CANR Courses and Curricula, 2003 to 2010.  
Member, RHSA Curricula and Courses committee, 2008-present.

##### Department

Dept. Newsletter Editor 2009-2010  
Dept. Web Master 2009-2010  
Dept. PTR Committee 2009-2010  
Member, NRE Courses and Curricula, 2003 to 2010  
Member, NRE Web page committee, 2007 to 2009  
Co-chair, NRE Wildlife Assistant Professor Search committee, 2011-2012.

Member, NRE Human Dimensions Assistant Professor Search Committee, 2013-2014.

**Rittenhouse, C.**

Department

Member, 3+2 Program: Sichuan University. 2013 - Present.

**Rittenhouse, T.**

College

Member, CANR Diversity Committee, 2012 – present.

Department

Chair, NRE Seminar Series Committee, Chair, 2013 – present.

Member, NRE Program Review Self-Assessment Committee, 2013 – present.

Member, Faculty Search Committee (Human Dimensions), 2013 – present.

Member, Natural Resources Conservation Academy, 2011 – present.

**Robbins**

College

Member, CANR Faculty Council. 2010 - 2013.

Maintainer of CANR PSLA Research Farm Ground Water Monitoring System, 2009 - Present.

Department

Editor, Dept. Newsletter, 2008 - 2013.

Webmaster, Dept. Website, 2008 - 2013.

Co-chair, 2013 Connecticut Conference on Natural Resources. (2012 - 2013).

Member, Dept. PTR Committee, 2008-2009.

Member, Dept C&C Committee, 2008-2009.

Geoscience Representative to the Graduate Faculty Council, 2008-2009.

**Rudnicki**

University

Member, Executive committee of Atmospheric Sciences Group (representing NRE). University of Connecticut. 2008-present. Chair 2008-2009.

College

Member, CANR Courses and Curricula committee. 2010- present.

Department

Member, Faculty search committee. 2012 - 2013.

Member, UConn Forest Advisory Committee. (2009 - Present).

Member, NRE Courses and Curricula Committee, 2008- present

Chair, NRE Courses and Curricula Committee, 2010- present.

Member, NRE Seminar committee, 2008-2009.

Member, NRE Website committee, 2008-2009.

**Vokoun**

University

Member, Graduate Faculty Council. (August 2012 - Present).

Member, UCONN Teale Lecture Committee, 2005-2011.

Member, Summer Undergraduate Research Fellowship (SURF) Selection Committee 2009 - 2012.



### College

Member, College of Agriculture and Natural Resources Vehicle Policy Committee, 2008-2009.  
Department Rep on CANR Academic Planning Committee. 2013 - Present.  
Member, UCONN College of Agriculture and Natural Resources Diversity Committee.

### Department

Member, Natural Resources and the Environment Departmental Seminar Committee, 2004-2009.  
Director, NRE Graduate Program. Graduate Program Admissions Committee. (2009 - 2013).  
Co-founded the Connecticut Conference on Natural Resources, served as conference chair in 2007 and 2008  
Co-chair, Faculty Search Committee, 2010-2011.  
Honors Advisor & Program Chair for Natural Resources, 2009-present.

### **Volin**

#### University

Co-chair, President's Climate Action Task Force, co-Chair of the Sustainable Development Workgroup, 2008-2010.  
Member, Provost's Academic Center/Institute Review Committee.  
EPAC Sustainable Development Workgroup Planning Committee. Committee Work. (2011 - 2012).  
Member, Center for Environmental Sciences and Engineering Advisory Committee. 2008-present.  
Member Center for Environmental Sciences and Engineering Executive Council. 2011-present  
Member, Environmental Policy Advisory Council. 2009-present.  
Member Environmental Science Undergraduate Program Advisory Committee, 2008-2013.  
Member, Nature & Environment: The Edwin Way Teale Lecture Series Committee. 2009-present.  
Member, Provost Annual Report Committee. 2013 - Present.  
Member, Vice President for Research Search Committee member. 2012 - 2013).  
UConn Steering Committee Member for UConn Day at DEEP. Committee Work. (October 2012).  
Member, Provost's Environment Committee - Environmental Studies Major Initiative Subcommittee. 2011-2012  
Member, Provost's Academic Plan Environment Committee, 2009-2012  
Member, Environmental Studies Undergraduate Program Advisory Committee, 2012 - Present).  
Chair, Provost's Academic Center/Institute Review Committee, 2010-2012.  
Chair, Provost's Environment Committee - University Environmental Research Initiative. 2011-2012  
Chair, EPAC Sustainable Development Workgroup Planning Committee. (2011 - Present).  
Member, university Senate, 2010-present.  
Co-Chair of the Environmental Research Initiative a subcommittee of the Provost's Environmental Committee, 2010-2011  
Co-Chair of the Environmental Faculty Expertise Database a subcommittee of the Provost's Environmental Committee, 2010-2011.

### College

Member, CANR Student Scholarship Committee, 2008-2013.  
Member, CANR Executive Council, 2007 - Present.  
Member, WB Young Renovation Committee, 2011-2013.  
Member, CANR Farm and Forest Resources Coordinating Committee 2008-2010.  
Member, CANR Graduate Student Stipends Committee, 2008-2010.  
Member, CANR Facilities, Space and Equipment Planning Committee, 2009-2010.  
Member, UConn Forest Committee, 2009-present.

### Department

Co-Chair, Landscape Biogeochemist Assistant Professor Search Committee, 2012 - 2012.

Co-Chair, Faculty Search Committee for Ecotoxicologist position, 2013.

### **Warner**

#### University

Member, Univ. SURF committee. UConn Summer Undergraduate Research Committee. 2012 - Present.

Member, University Academic Misconduct Panel, 2008 - 2013.

Member, Individualized Majors advisory and review committee, 2009 -2012.

Alternate Member, Graduate Faculty Council, 2006-2008

Alternate member, Capital Project Planning Advisory Committee, 2008-2009.

Member UConn Land Use and Sustainable Development Subcommittee, 2008-2009.

Member, UConn Climate Action Task Force: Sustainable Development Workgroup, 2008-2009.

Member, Search committee, "NU Endowed Chair" position, Civil and Envr. Engr. 2007-08

#### College

Member, CANR Dean's Promotion and Tenure Advisory Committee, 2008-2009.

Member, CANR Scholarship Committee, 2008-2009

Member, CANR Strategic Plan Committee, 2008-2009

Member and Co-chair, CANR Water Resources Team, 2008-2009

Member, CANR Extension and Outreach Advisory Committee. 2012 - Present).

### Department

Chair, NRE 3+2 and Grad Certificate planning committee, 2013 - Present.

Director, Connecticut Institute of Water Resources, 2000 – present.

Member, Department PTR committee, 2011 - 2013.

Member, Klinck endowment committee, 2008-2009.

### **Yang**

#### University

Member, Provost's China Delegation, 2010.

Member, UConn China Coordinating Committee, 1999-present.

Member, Steering Committee, UConn China Coordinating Committee, 2000-present.

Member, University of Connecticut Asian American Faculty and Staff Association Board 1992-present.

Member, Executive Committee, University of Connecticut Asian American Faculty and Staff Association, (1994-1995, 1999-2010).

Acting President University of Connecticut Asian American Faculty and Staff Association (2005-2006)

Member, University of Connecticut Asian American Cultural Center Advisory Board, 2005 – present.

Faculty advisor, Coalition of Chinese Students and Scholars at UConn, 1992-1994, 2008-present.

Director, Connecticut State Climatologist and Director, the Connecticut State Climate Center, 2009-present.

#### College

Member, Dean's China delegation, 2010, 2011, 2012.

Member, Cornucopia Organizing Committee, 2009-present.

Member, Scholarship Committee, 2008-2012.

Member, Dean's Advisory Committee for PTR, 2010-present.

Chair, CANR Cornucopia Committee. ( 2010 - Present).

Member, Dean's PTR Committee. 2011 - Present.

Department

Coordinator, China collaboration, 2011 - Present.

Member, NRE Course and curriculum committee, 1993-2994, 2010 - Present.

Member, NRE Scholarship Committee, 2008-2010.

Chair, NRE Scholarship Committee, 2008-2010.

Member, Atmospheric Scientists Faculty Search Committee, 2008.

Member, Klinck Fund Management Committee, 1999-2008.

Member, PTR Committee, 1998-2000, 2005, 2008-2010.

Coordinator, Cornucopia, 2009-present.

Member, Department Seminar Committee, 2010-2011.

**Appendix H.1. Total indirects returned to NRE by year.**

| Year | Indirects |
|------|-----------|
| 2012 | \$11,729  |
| 2011 | \$14,522  |
| 2010 | \$18,578  |
| 2009 | \$16,118  |
| 2008 | \$21,679  |
| 2007 | \$21,169  |
| 2006 | \$16,153  |
| 2005 | \$26,324  |

## Appendix H2. Undergraduate Student SURF and Holster Awards.

Table H2. Undergraduate students completing research with Summer Undergraduate Research Funds Awards.

| <b>Year</b>  | <b># of Students</b> | <b>Student Name</b> | <b>Faculty Advisor</b>      |
|--------------|----------------------|---------------------|-----------------------------|
| 2013         | 2                    | Jenna Blessington   | Isaac (Morty) Ortega        |
|              |                      | Annie Stupik        | Chadwick Rittenhouse        |
| 2012         | 3                    | Samantha Kremidas   | Isaac (Morty) Ortega        |
|              |                      | Tanya Lama          | Thijs Bosker                |
|              |                      | Kelly O'Connor      | Tracy Rittenhouse           |
| 2010         | 2                    | Rebecca Millichamp  | Isaac (Morty) Ortega        |
|              |                      | Rebecca Trueman     | James Hurd and Daniel Civco |
| 2007         | 1                    | Kathryn Hoffman     | Glenn Warner                |
| 2005         | 3                    | Sam Bourret         | Jason Vokoun                |
|              |                      | Althena Talleos     | Isaac (Morty) Ortega        |
|              |                      | Jesse Senko         | Isaac (Morty) Ortega        |
| <b>Total</b> | <b>11</b>            |                     |                             |

Table H3. Freshman undergraduate completing summer research as Holster Scholar.

| <b>Year</b> | <b># of Students</b> | <b>Student Name</b> | <b>Faculty Advisor</b> |
|-------------|----------------------|---------------------|------------------------|
| 2013        | 1                    | Cristina Macklem    | Tracy Rittenhouse      |

### Appendix H3. CANR Undergraduate and Graduate Student Awards and Scholarships 2005-2012.

Table H4. Awards and Scholarship administered by College of Agriculture and Natural Resources and received by undergraduates and graduate students in Natural Resources and the Environment. A total of \$399,850 was awarded to 263 students from 2005 – 2012.

| Year | Career | Amount  | Student Name              | Scholarship Name                                                            |
|------|--------|---------|---------------------------|-----------------------------------------------------------------------------|
| 2005 | GRAD   | \$5,000 | Hiller,Brian James        | Ellen Bishop Carder                                                         |
| 2005 | GRAD   | \$5,000 | Hiscox,April Lynn         | Ellen Bishop Carder                                                         |
| 2005 | UGRD   | \$500   | Donohue,Robin Newell      | Beulah Shanley Baldwin                                                      |
| 2005 | UGRD   | \$500   | Kelleher,Brenna L.        | Thomas A. DiBenedetto Memorial                                              |
| 2005 | UGRD   | \$500   | Tingley III,Ralph William | Harry Farnham Memorial                                                      |
| 2005 | UGRD   | \$500   | Bourret,Samuel Leonard    | Merle and Irene Klinck                                                      |
| 2005 | UGRD   | \$500   | Bumstead,Alissa L.        | Merle and Irene Klinck                                                      |
| 2005 | UGRD   | \$500   | Harland,Mark Louis        | Merle and Irene Klinck                                                      |
| 2005 | UGRD   | \$500   | Hoffmann,Kathryn Ann      | Merle and Irene Klinck                                                      |
| 2005 | UGRD   | \$500   | Kelleher,Brenna L.        | Merle and Irene Klinck                                                      |
| 2005 | UGRD   | \$500   | Tingley III,Ralph William | Merle and Irene Klinck                                                      |
| 2005 | UGRD   | \$500   | Talleos,Athena Chante     | Albert Wadsworth Meserve and Helen Clark Meserve Memorial Trust Fund        |
| 2005 | UGRD   | \$500   | Harland,Mark Louis        | The New York Farmers                                                        |
| 2005 | UGRD   | \$1,000 | Tingley III,Ralph William | Willard H. Allen                                                            |
| 2005 | UGRD   | \$1,000 | Hoffmann,Kathryn Ann      | College of Agriculture and Natural Resources Dean's Recruitment Scholarship |
| 2005 | UGRD   | \$1,000 | Belinsky,Edward Paul      | Merle and Irene Klinck (Environthon)                                        |
| 2005 | UGRD   | \$1,000 | Bourret,Samuel Leonard    | The New York Farmers                                                        |
| 2005 | UGRD   | \$1,000 | Bumstead,Alissa L.        | The New York Farmers                                                        |
| 2005 | UGRD   | \$1,000 | Hoffmann,Kathryn Ann      | The New York Farmers                                                        |
| 2005 | UGRD   | \$1,000 | Kelleher,Brenna L.        | The New York Farmers                                                        |

|      |      |         |                            |                                                                             |
|------|------|---------|----------------------------|-----------------------------------------------------------------------------|
| 2005 | UGRD | \$1,000 | Tingley III,Ralph William  | The New York Farmers                                                        |
| 2005 | UGRD | \$1,000 | Bumstead,Alissa L.         | Cornelius and Mary Jane York                                                |
| 2005 | UGRD | \$1,500 | Bourret,Samuel Leonard     | Roberts Family Fund                                                         |
| 2005 | UGRD | \$1,500 | Donohue,Robin Newell       | Roberts Family Fund                                                         |
| 2005 | UGRD | \$1,500 | Hoffmann,Kathryn Ann       | Roberts Family Fund                                                         |
| 2005 | UGRD | \$1,500 | Kelleher,Brenna L.         | Roberts Family Fund                                                         |
| 2005 | UGRD | \$1,500 | Talleos,Athena Chante      | Roberts Family Fund                                                         |
| 2005 | UGRD | \$2,000 | Belinsky,Edward Paul       | New England Farm and Garden Association                                     |
| 2005 | UGRD | \$2,000 | Talleos,Athena Chante      | The New York Farmers                                                        |
| 2006 | GRAD | \$400   | Rubiano,Astrith            | Emanuel "Mike" Hirth Family Endowed Scholarship                             |
| 2006 | GRAD | \$3,000 | Lawrence-Apfel,Kirstin     | Ellen Bishop Carder Scholarship                                             |
| 2006 | GRAD | \$4,000 | Dixon,Christopher James    | Ellen Bishop Carder Scholarship                                             |
| 2006 | UGRD | \$500   | Donohue,Robin Newell       | Beulah Shanley Baldwin Scholarship                                          |
| 2006 | UGRD | \$500   | Clark,Elizabeth Helen      | Harry Farnham Award                                                         |
| 2006 | UGRD | \$500   | Gregoire,Bruce Gregory     | Albert Wadsworth Meserve & Helen Clark Meserve Memorial Scholarship         |
| 2006 | UGRD | \$1,000 | Tingley III,Ralph William  | Agriculture Dean's Scholarship                                              |
| 2006 | UGRD | \$1,000 | Benoit,Elise Fay           | Willard H. Allen Scholarship                                                |
| 2006 | UGRD | \$1,000 | Benoit,Elise Fay           | College of Agriculture and Natural Resources Dean's Recruitment Scholarship |
| 2006 | UGRD | \$1,000 | Hoffmann,Kathryn Ann       | College of Agriculture and Natural Resources Dean's Recruitment Scholarship |
| 2006 | UGRD | \$1,000 | Kelleher,Brenna L.         | Horace C. Eriksson Forestry Scholarship                                     |
| 2006 | UGRD | \$1,000 | Zadora,Andrew Joseph       | Henry G. Haalck Scholarship                                                 |
| 2006 | UGRD | \$1,000 | Bumstead,Alissa L.         | Merle S. Klinck and Irene Klinck Memorial Award                             |
| 2006 | UGRD | \$1,000 | Clark,Elizabeth Helen      | Merle S. Klinck and Irene Klinck Memorial Award                             |
| 2006 | UGRD | \$1,000 | Hoffmann,Kathryn Ann       | Merle S. Klinck and Irene Klinck Memorial Award                             |
| 2006 | UGRD | \$1,000 | Jung,Matthew Jakob Linwood | Merle S. Klinck and Irene Klinck Memorial Award                             |

|      |      |          |                            |                                                                |
|------|------|----------|----------------------------|----------------------------------------------------------------|
| 2006 | UGRD | \$1,000  | Kelleher,Brenna L.         | Merle S. Klinck and Irene Klinck Memorial Award                |
| 2006 | UGRD | \$1,000  | Tingley III,Ralph William  | Merle S. Klinck and Irene Klinck Memorial Award                |
| 2006 | UGRD | \$1,000  | Watrous,Daniel Carl        | Merle S. Klinck and Irene Klinck Memorial Award                |
| 2006 | UGRD | \$1,000  | Tingley III,Ralph William  | Will Mraz Trout Unlimited Scholarship                          |
| 2006 | UGRD | \$1,000  | Bumstead,Alissa L.         | New York Farmers Scholarship                                   |
| 2006 | UGRD | \$1,000  | Clark,Elizabeth Helen      | New York Farmers Scholarship                                   |
| 2006 | UGRD | \$1,000  | Hoffmann,Kathryn Ann       | New York Farmers Scholarship                                   |
| 2006 | UGRD | \$1,000  | Jung,Matthew Jakob Linwood | New York Farmers Scholarship                                   |
| 2006 | UGRD | \$1,000  | Kelleher,Brenna L.         | New York Farmers Scholarship                                   |
| 2006 | UGRD | \$1,000  | Tingley III,Ralph William  | New York Farmers Scholarship                                   |
| 2006 | UGRD | \$1,000  | Watrous,Daniel Carl        | New York Farmers Scholarship                                   |
| 2006 | UGRD | \$1,000  | Donohue,Robin Newell       | Cornelius and Mary Jane York Scholarship                       |
| 2006 | UGRD | \$1,500  | Bouthillier,Mark Carter    | Clinton S. Roberts Foundation Scholarship                      |
| 2006 | UGRD | \$1,500  | Bumstead,Alissa L.         | Clinton S. Roberts Foundation Scholarship                      |
| 2006 | UGRD | \$1,500  | Condon,Tomas Paul          | Clinton S. Roberts Foundation Scholarship                      |
| 2006 | UGRD | \$1,500  | Gregoire,Bruce Gregory     | Clinton S. Roberts Foundation Scholarship                      |
| 2006 | UGRD | \$1,500  | Shaw,Tiffany-Lane Nicole   | Clinton S. Roberts Foundation Scholarship                      |
| 2006 | UGRD | \$2,000  | Trumbo,Bradly Allen        | New England Outdoor Writers Association Scholarship            |
| 2006 | UGRD | \$3,000  | Brand,Evan John            | Connecticut Horticultural Society Scholarship                  |
| 2006 | UGRD | \$10,000 | Benoit,Elise Fay           | James V. Spignesi, Jr. Memorial Scholarship                    |
| 2007 | GRAD | \$2,000  | Hoover,Mark Douglas        | Ellen Bishop Carder Scholarship                                |
| 2007 | GRAD | \$4,000  | Metcalf,Meredith J.        | Ellen Bishop Carder Scholarship                                |
| 2007 | GRAD | \$7,000  | Grunwald,David John        | Ellen Bishop Carder Scholarship                                |
| 2007 | UGRD | \$500    | Job,Kevin Leland           | Merle S. Klinck and Irene Klinck Memorial Award for Envirothon |
| 2007 | UGRD | \$600    | Condon,Tomas Paul          | The Thomas A. DiBenedetto Scholarship                          |



|      |      |         |                            |                                                                     |
|------|------|---------|----------------------------|---------------------------------------------------------------------|
| 2007 | UGRD | \$800   | Lazarus,Rachel Joann       | Alan S. Farwell Scholarship                                         |
| 2007 | UGRD | \$800   | Derwin,Jill Marie          | Cornelius and Mary Jane York Scholarship                            |
| 2007 | UGRD | \$1,000 | Clark,Elizabeth Helen      | Merle S. Klinck and Irene Klinck Memorial Award                     |
| 2007 | UGRD | \$1,000 | Watrous,Daniel Carl        | Merle S. Klinck and Irene Klinck Memorial Award                     |
| 2007 | UGRD | \$1,000 | Clark,Elizabeth Helen      | New York Farmers Scholarship                                        |
| 2007 | UGRD | \$1,000 | Watrous,Daniel Carl        | New York Farmers Scholarship                                        |
| 2007 | UGRD | \$1,000 | Alix,Diane Michelle        | Smyrski Farm Scholarship                                            |
| 2007 | UGRD | \$1,000 | Condon,Tomas Paul          | Smyrski Farm Scholarship                                            |
| 2007 | UGRD | \$1,000 | Manfre,Dory J.             | Smyrski Farm Scholarship                                            |
| 2007 | UGRD | \$1,000 | Maynard,George Alphonse    | Smyrski Farm Scholarship                                            |
| 2007 | UGRD | \$1,000 | Watrous,Daniel Carl        | Smyrski Farm Scholarship                                            |
| 2007 | UGRD | \$1,000 | Jung,Matthew Jakob Linwood | New York Farmers Scholarship                                        |
| 2007 | UGRD | \$1,300 | Watrous,Daniel Carl        | Albert Wadsworth Meserve & Helen Clark Meserve Memorial Scholarship |
| 2007 | UGRD | \$1,500 | Leung,Justina Marie        | Willard H. Allen Scholarship                                        |
| 2007 | UGRD | \$1,500 | Condon,Tomas Paul          | Clinton S. Roberts Foundation Scholarship                           |
| 2007 | UGRD | \$1,500 | Derwin,Jill Marie          | Clinton S. Roberts Foundation Scholarship                           |
| 2007 | UGRD | \$1,500 | Leung,Justina Marie        | Clinton S. Roberts Foundation Scholarship                           |
| 2007 | UGRD | \$1,500 | Watrous,Daniel Carl        | Clinton S. Roberts Foundation Scholarship                           |
| 2007 | UGRD | \$2,000 | Chevett,Kelly Lynn         | K&M Connelly Sisters Scholarship                                    |
| 2007 | UGRD | \$2,000 | Condon,Tomas Paul          | K&M Connelly Sisters Scholarship                                    |
| 2007 | UGRD | \$2,000 | Derwin,Jill Marie          | K&M Connelly Sisters Scholarship                                    |
| 2007 | UGRD | \$2,000 | Leung,Justina Marie        | K&M Connelly Sisters Scholarship                                    |
| 2007 | UGRD | \$2,000 | Watrous,Daniel Carl        | K&M Connelly Sisters Scholarship                                    |
| 2007 | UGRD | \$5,000 | Beyer,Amy Marie            | Horace C. Eriksson Forestry Scholarship                             |
| 2007 | UGRD |         | Manfre,Dory J.             | Clinton S. Roberts Foundation Scholarship                           |

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|      |      |          |                         |                                                                   |
|------|------|----------|-------------------------|-------------------------------------------------------------------|
| 2008 | GRAD | \$250    | Hoover,Mark Douglas     | Emanuel "Mike" Hirth Family Endowed Scholarship                   |
| 2008 | GRAD | \$250    | Webb,Vincent Allen      | Emanuel "Mike" Hirth Family Endowed Scholarship                   |
| 2008 | GRAD | \$2,000  | Hoover,Mark Douglas     | Ellen Bishop Carder Scholarship                                   |
| 2008 | GRAD | \$3,000  | Gregoire,Bruce G.       | Connecticut Trustees of the Eastern States Exposition Scholarship |
| 2008 | GRAD | \$4,000  | Metcalf,Meredith J.     | Ellen Bishop Carder Scholarship                                   |
| 2008 | GRAD | \$7,000  | Grunwald,David John     | Ellen Bishop Carder Scholarship                                   |
| 2008 | GRAD | \$10,000 | Gahagan,Benjamin Ian    | James V. Spignesi, Jr. Memorial Scholarship                       |
| 2008 | UGRD | \$500    | Clark,Elizabeth Helen   | James V. Spignesi, Jr. Memorial Scholarship                       |
| 2008 | UGRD | \$500    | Maynard,George Alphonse | James V. Spignesi, Jr. Memorial Scholarship                       |
| 2008 | UGRD | \$500    | Watrous,Daniel Carl     | James V. Spignesi, Jr. Memorial Scholarship                       |
| 2008 | UGRD | \$500    | Job,Kevin Leland        | Merle S. Klinck and Irene Klinck Memorial Award                   |
| 2008 | UGRD | \$600    | Condon,Tomas Paul       | The Thomas A. DiBenedetto Scholarship                             |
| 2008 | UGRD | \$800    | Lazarus,Rachel Joann    | Alan S. Farwell Scholarship                                       |
| 2008 | UGRD | \$800    | Derwin,Jill Marie       | Cornelius and Mary Jane York Scholarship                          |
| 2008 | UGRD | \$1,000  | Cyrus,Nathaniel Greene  | George E. Cloutier Scholarship                                    |
| 2008 | UGRD | \$1,000  | Dietrich,Kurt M         | Henry G. Haalck Memorial Award                                    |
| 2008 | UGRD | \$1,000  | Clark,Elizabeth Helen   | Merle S. Klinck and Irene Klinck Memorial Award                   |
| 2008 | UGRD | \$1,000  | Watrous,Daniel Carl     | Merle S. Klinck and Irene Klinck Memorial Award                   |
| 2008 | UGRD | \$1,000  | Clark,Elizabeth Helen   | New York Farmers Scholarship                                      |
| 2008 | UGRD | \$1,000  | Watrous,Daniel Carl     | New York Farmers Scholarship                                      |
| 2008 | UGRD | \$1,000  | Alix,Diane Michelle     | Smyrski Farm Scholarship                                          |
| 2008 | UGRD | \$1,000  | Condon,Tomas Paul       | Smyrski Farm Scholarship                                          |
| 2008 | UGRD | \$1,000  | Manfre,Dory J.          | Smyrski Farm Scholarship                                          |
| 2008 | UGRD | \$1,000  | Maynard,George Alphonse | Smyrski Farm Scholarship                                          |
| 2008 | UGRD | \$1,000  | Watrous,Daniel Carl     | Smyrski Farm Scholarship                                          |

|      |      |             |                         |                                                                     |
|------|------|-------------|-------------------------|---------------------------------------------------------------------|
| 2008 | UGRD | \$1,000     | Smigel,Anson Earle      | The Robert Malloy CT Bass Scholarship                               |
| 2008 | UGRD | \$1,300     | Watrous,Daniel Carl     | Albert Wadsworth Meserve & Helen Clark Meserve Memorial Scholarship |
| 2008 | UGRD | \$1,500     | Condon,Tomas Paul       | Clinton S. Roberts Foundation Scholarship                           |
| 2008 | UGRD | \$1,500     | Derwin,Jill Marie       | Clinton S. Roberts Foundation Scholarship                           |
| 2008 | UGRD | \$1,500     | Leung,Justina Marie     | Clinton S. Roberts Foundation Scholarship                           |
| 2008 | UGRD | \$1,500     | Manfre,Dory J.          | Clinton S. Roberts Foundation Scholarship                           |
| 2008 | UGRD | \$1,500     | Watrous,Daniel Carl     | Clinton S. Roberts Foundation Scholarship                           |
| 2008 | UGRD | \$1,500     | Leung,Justina Marie     | Willard H. Allen Scholarship                                        |
| 2008 | UGRD | \$2,000     | Condon,Tomas Paul       | K&M Connelly Sisters Scholarship                                    |
| 2008 | UGRD | \$2,000     | Derwin,Jill Marie       | K&M Connelly Sisters Scholarship                                    |
| 2008 | UGRD | \$2,000     | Leung,Justina Marie     | K&M Connelly Sisters Scholarship                                    |
| 2008 | UGRD | \$2,000     | Watrous,Daniel Carl     | K&M Connelly Sisters Scholarship                                    |
| 2008 | UGRD | \$2,500     | Beyer,Amy Marie         | Horace C. Eriksson Forestry Scholarship                             |
| 2008 | UGRD | \$2,500     | Condon,Tomas Paul       | New England Outdoor Writers Association Scholarship                 |
| 2009 | GRAD | \$ 1,500.00 | Gregoire,Bruce G.       | Ellen Bishop Carder Scholarship                                     |
| 2009 | GRAD | \$ 1,500.00 | Turner,Michael James    | Ellen Bishop Carder Scholarship                                     |
| 2009 | GRAD | \$ 5,000.00 | Lawrence-Apfel,Kirstin  | Ellen Bishop Carder Scholarship                                     |
| 2009 | GRAD | \$ 6,000.00 | Jensen,Timothy Aaron    | James V. Spignesi, Jr. Memorial Scholarship                         |
| 2009 | UGRD | \$ 500.00   | Sherman,John Robert     | George E. Cloutier Scholarship                                      |
| 2009 | UGRD | \$ 500.00   | Schoppmann,Neil Roger   | George E. Cloutier Scholarship                                      |
| 2009 | UGRD | \$ 500.00   | Derwin,Jill Marie       | David B. Schroeder Scholarship                                      |
| 2009 | UGRD | \$ 700.00   | Maynard,George Alphonse | Cornelius and Mary Jane York Scholarship                            |
| 2009 | UGRD | \$ 800.00   | Downey,Alisen Elizabeth | Kinsman Family International Agriculture Scholarship                |
| 2009 | UGRD | \$ 950.00   | Pastore,Nicholas Ercole | The Robert Malloy-CT Bass Federation Nation Scholarship             |
| 2009 | UGRD | \$ 1,000.00 | Watrous,Daniel Carl     | John P.H. Brand Travel Fellowship                                   |

|      |      |             |                         |                                                                     |
|------|------|-------------|-------------------------|---------------------------------------------------------------------|
| 2009 | UGRD | \$ 1,000.00 | Cassone,Joseph Louis    | Alan S. Farwell Scholarship                                         |
| 2009 | UGRD | \$ 1,000.00 | Downey,Alisen Elizabeth | Gavitt Agriculture and Natural Resources Communications Award       |
| 2009 | UGRD | \$ 1,000.00 | Sherman,John Robert     | Henry G. Haalck Memorial Award                                      |
| 2009 | UGRD | \$ 1,000.00 | Watrous,Daniel Carl     | Henry & Ebba Hansen Memorial Scholarship                            |
| 2009 | UGRD | \$ 1,000.00 | Watrous,Daniel Carl     | Merle S. Klinck and Irene Klinck Memorial Award                     |
| 2009 | UGRD | \$ 1,000.00 | Watrous,Daniel Carl     | New York Farmers Scholarship                                        |
| 2009 | UGRD | \$ 1,000.00 | Alix,Diane Michelle     | Smyrski Farm Scholarship                                            |
| 2009 | UGRD | \$ 1,000.00 | Beyer,Amy Marie         | Smyrski Farm Scholarship                                            |
| 2009 | UGRD | \$ 1,000.00 | Kehmna,Daniel Frank     | Smyrski Farm Scholarship                                            |
| 2009 | UGRD | \$ 1,000.00 | Qiu,Weini               | Smyrski Farm Scholarship                                            |
| 2009 | UGRD | \$ 1,500.00 | Downey,Alisen Elizabeth | Willard H. Allen Scholarship                                        |
| 2009 | UGRD | \$ 1,500.00 | Job,Kevin Leland        | Housatonic Fly Fisherman's Association Scholarship                  |
| 2009 | UGRD | \$ 1,500.00 | Schmitt,Jessica B       | Albert Wadsworth Meserve & Helen Clark Meserve Memorial Scholarship |
| 2009 | UGRD | \$ 1,500.00 | Cassone,Joseph Louis    | New England Outdoor Writers Association Scholarship                 |
| 2009 | UGRD | \$ 1,500.00 | Derwin,Jill Marie       | Clinton S. Roberts Foundation Scholarship                           |
| 2009 | UGRD | \$ 1,500.00 | Downey,Alisen Elizabeth | Clinton S. Roberts Foundation Scholarship                           |
| 2009 | UGRD | \$ 1,500.00 | Robinson,Samantha Grace | Clinton S. Roberts Foundation Scholarship                           |
| 2009 | UGRD | \$ 1,500.00 | Watrous,Daniel Carl     | Clinton S. Roberts Foundation Scholarship                           |
| 2009 | UGRD | \$ 1,500.00 | Cassone,Joseph Louis    | Wilfred B. Young Leadership and Service Award                       |
| 2009 | UGRD | \$ 2,500.00 | Beyer,Amy Marie         | Horace C. Eriksson Forestry Scholarship                             |
| 2009 | UGRD | \$ 2,500.00 | Schoppmann,Neil Roger   | Horace C. Eriksson Forestry Scholarship                             |
| 2009 | UGRD | \$ 2,500.00 | Lembo,Alysse Annette    | New Haven County Agricultural Internship                            |
| 2010 | GRAD | \$ 350.00   | Cheriyana,Acima T.      | Emanuel "Mike" Hirth Family Endowed Scholarship                     |
| 2010 | GRAD | \$ 350.00   | Lawrence-Apfel,Kirstin  | Emanuel "Mike" Hirth Family Endowed Scholarship                     |
| 2010 | GRAD | \$ 3,000.00 | Grunwald,David John     | Ellen Bishop Carder Scholarship                                     |

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|------|------|-------------|--------------------------|---------------------------------------------------------------------|
| 2010 | GRAD | \$ 3,000.00 | Schimmer,Russell Francis | Connecticut Trustees of the Eastern States Exposition Scholarship   |
| 2010 | GRAD | \$ 6,000.00 | Spera,Helen Elizabeth    | Ellen Bishop Carder Scholarship                                     |
| 2010 | UGRD | \$ 400.00   | Beyer,Amy Marie          | New York Farmers Scholarship/CANR Ambassador                        |
| 2010 | UGRD | \$ 500.00   | Schoppmann,Neil          | George E. Cloutier Scholarship                                      |
| 2010 | UGRD | \$ 500.00   | Robinson,Samantha Grace  | Harry Farnham Scholarship                                           |
| 2010 | UGRD | \$ 500.00   | Beyer,Amy Marie          | Henry G. Haalck Memorial Award                                      |
| 2010 | UGRD | \$ 500.00   | Sherman,John Robert      | Henry G. Haalck Memorial Award                                      |
| 2010 | UGRD | \$ 500.00   | Sherman,John Robert      | David B. Schroeder Scholarship                                      |
| 2010 | UGRD | \$ 500.00   | Downey,Alisen Elizabeth  | David B. Schroeder Scholarship                                      |
| 2010 | UGRD | \$ 700.00   | Robinson,Samantha Grace  | Cornelius and Mary Jane York Scholarship                            |
| 2010 | UGRD | \$ 1,000.00 | Sherman,John Robert      | Beulah Shanley Baldwin Scholarship                                  |
| 2010 | UGRD | \$ 1,000.00 | Klinck,Jenna             | George E. Cloutier Scholarship                                      |
| 2010 | UGRD | \$ 1,000.00 | Job,Kevin Leland         | Robert S. Malloy CT BASS Scholarship                                |
| 2010 | UGRD | \$ 1,000.00 | Sherman,John Robert      | Peck Lane Sportmans Club Scholarship                                |
| 2010 | UGRD | \$ 1,000.00 | Beyer,Amy Marie          | Smyrski Farm Scholarship                                            |
| 2010 | UGRD | \$ 1,000.00 | Kehmna,Daniel Frank      | Smyrski Farm Scholarship                                            |
| 2010 | UGRD | \$ 1,000.00 | Qiu,Weini                | Smyrski Farm Scholarship                                            |
| 2010 | UGRD | \$ 1,000.00 | Puza,Carin Stefania      | Smyrski Farm Scholarship                                            |
| 2010 | UGRD | \$ 1,500.00 | Downey,Alisen Elizabeth  | Willard H. Allen Scholarship                                        |
| 2010 | UGRD | \$ 1,500.00 | Beyer,Amy Marie          | Albert Wadsworth Meserve & Helen Clark Meserve Memorial Scholarship |
| 2010 | UGRD | \$ 1,500.00 | Job,Kevin Leland         | New England Outdoor Writers Association Scholarship                 |
| 2010 | UGRD | \$ 1,500.00 | Downey,Alisen Elizabeth  | Clinton S. Roberts Foundation Scholarship                           |
| 2010 | UGRD | \$ 1,500.00 | Robinson,Samantha Grace  | Clinton S. Roberts Foundation Scholarship                           |
| 2010 | UGRD | \$ 1,500.00 | O'Connor,Kelly Marie     | Clinton S. Roberts Foundation Scholarship                           |
| 2010 | UGRD | \$ 1,500.00 | Puza,Carin Stefania      | Clinton S. Roberts Foundation Scholarship                           |
| 2010 | UGRD | \$ 1,500.00 | Vajda,Andrea             | Clinton S. Roberts Foundation Scholarship                           |

|      |      |             |                          |                                                                     |
|------|------|-------------|--------------------------|---------------------------------------------------------------------|
| 2010 | UGRD | \$ 1,500.00 | Downey,Alisen Elizabeth  | Wilfred B. Young Leadership and Service Award                       |
| 2010 | UGRD | \$ 2,500.00 | Beyer,Amy Marie          | Horace C. Eriksson Forestry Scholarship                             |
| 2010 | UGRD | \$ 4,000.00 | O'Connor,Kelly Marie     | New England Farm & Garden Association Scholarship                   |
| 2010 | UGRD | \$ 6,200.00 | Pastore,Nicholas Ercole  | James V. Spignesi, Jr. Memorial Scholarship                         |
| 2010 | UGRD | n/a         | Leshane,Lauren Deborah   | Outstanding Senior Woman CANR                                       |
| 2011 | GRAD | \$ 2,000.00 | Grunwald,David John      | Ellen Bishop Carder Scholarship                                     |
| 2011 | GRAD | \$ 6,000.00 | Lawrence-Apfel,Kirstin   | Ellen Bishop Carder Scholarship                                     |
| 2011 | UGRD | \$ 100.00   | Mangs,Zachary William    | Harry Farnham Scholarship                                           |
| 2011 | UGRD | \$ 400.00   | Beyer,Amy Marie          | New York Farmers Scholarship/CANR Ambassador                        |
| 2011 | UGRD | \$ 400.00   | Kremidas,Samantha Marie  | New York Farmers Scholarship/CANR Ambassador                        |
| 2011 | UGRD | \$ 500.00   | Klinck,Jenna Marie       | George E. Cloutier Scholarship                                      |
| 2011 | UGRD | \$ 500.00   | Lama,Tanya Marjorie      | George E. Cloutier Scholarship                                      |
| 2011 | UGRD | \$ 800.00   | Kremidas,Samantha Marie  | Cornelius and Mary Jane York Scholarship                            |
| 2011 | UGRD | \$ 1,000.00 | Rose,Patrick Robert      | Willard H. Allen Scholarship                                        |
| 2011 | UGRD | \$ 1,000.00 | Lyons,Andrew Walter      | Beulah Shanley Baldwin Scholarship                                  |
| 2011 | UGRD | \$ 1,000.00 | Klinck,Jenna Marie       | Horace C. Eriksson Forestry Scholarship                             |
| 2011 | UGRD | \$ 1,000.00 | Lama,Tanya Marjorie      | Horace C. Eriksson Forestry Scholarship                             |
| 2011 | UGRD | \$ 1,000.00 | Pivarnik,Alexander James | Alan S. Farwell Scholarship                                         |
| 2011 | UGRD | \$ 1,000.00 | Rose,Patrick Robert      | Henry G. Haalck Memorial Award                                      |
| 2011 | UGRD | \$ 1,000.00 | Mangs,Zachary William    | Smyrski Farm Scholarship                                            |
| 2011 | UGRD | \$ 1,000.00 | Brogan,Timothy Francis   | Smyrski Farm Scholarship                                            |
| 2011 | UGRD | \$ 1,000.00 | Ellingwood,Daniel Dowd   | Smyrski Farm Scholarship                                            |
| 2011 | UGRD | \$ 1,000.00 | Savage,Hannah Elizabeth  | Smyrski Farm Scholarship                                            |
| 2011 | UGRD | \$ 1,500.00 | George,Alexi Kathleen    | Horace C. Eriksson Forestry Scholarship                             |
| 2011 | UGRD | \$ 1,500.00 | Mangs,Zachary William    | Albert Wadsworth Meserve & Helen Clark Meserve Memorial Scholarship |

|      |      |             |                            |                                                     |
|------|------|-------------|----------------------------|-----------------------------------------------------|
| 2011 | UGRD | \$ 1,500.00 | Kremidas,Samantha Marie    | New England Outdoor Writers Association Scholarship |
| 2011 | UGRD | \$ 1,500.00 | Rose,Patrick Robert        | Clinton S. Roberts Foundation Scholarship           |
| 2011 | UGRD | \$ 1,500.00 | O'Connor,Kelly Marie       | Clinton S. Roberts Foundation Scholarship           |
| 2011 | UGRD | \$ 1,500.00 | Pivarnik,Alexander James   | Clinton S. Roberts Foundation Scholarship           |
| 2011 | UGRD | \$ 1,500.00 | Caruso,Erin Christine      | Clinton S. Roberts Foundation Scholarship           |
| 2011 | UGRD | \$ 1,500.00 | Lyons,Andrew Walter        | Clinton S. Roberts Foundation Scholarship           |
| 2011 | UGRD | \$ 2,500.00 | Beyer,Amy Marie            | Horace C. Eriksson Forestry Scholarship             |
| 2011 | UGRD | \$ 4,000.00 | O'Connor,Kelly Marie       | New England Farm & Garden Association Scholarship   |
| 2011 | UGRD | \$ 4,000.00 | Richardson,Amy Lynn        | James V. Spignesi, Jr. Memorial Scholarship         |
| 2012 | GRAD | \$ 1,000.00 | Hessenauer,Jan-Michael     | Robert S. Malloy CT BASS Scholarship                |
| 2012 | GRAD | \$ 2,000.00 | Hessenauer,Jan-Michael     | New England Outdoor Writers Association Scholarship |
| 2012 | GRAD | \$ 7,000.00 | Schimmer,Russell Francis   | Ellen Bishop Carder Scholarship                     |
| 2012 | UGRD | \$ 150.00   | Bilich,Andy Joseph         | Gary A. & Eunice M. Miles Award                     |
| 2012 | UGRD | \$ 400.00   | Gordon,Samuel William      | New York Farmers Scholarship/CANR Ambassador        |
| 2012 | UGRD | \$ 400.00   | Kremidas,Samantha Marie    | New York Farmers Scholarship/CANR Ambassador        |
| 2012 | UGRD | \$ 500.00   | Feyers,Shane Michael       | Henry G. Haalck Memorial Award                      |
| 2012 | UGRD | \$ 500.00   | Rojas,David Nelson         | David B. Schroeder Scholarship                      |
| 2012 | UGRD | \$ 750.00   | Bilich,Andy Joseph         | Del Favero Agricultural Economics Scholarship       |
| 2012 | UGRD | \$ 800.00   | Varvitsotis,Cecily Marie   | Cornelius and Mary Jane York Scholarship            |
| 2012 | UGRD | \$ 1,000.00 | Feyers,Shane Michael       | Willard H. Allen Scholarship                        |
| 2012 | UGRD | \$ 1,000.00 | Feyers,Shane Michael       | George E. Cloutier Scholarship                      |
| 2012 | UGRD | \$ 1,000.00 | Lama,Tanya Marjorie        | Alan S. Farwell Scholarship                         |
| 2012 | UGRD | \$ 1,000.00 | Kalita,Robert Edward       | Robert S. Malloy CT BASS Scholarship                |
| 2012 | UGRD | \$ 1,000.00 | Feyers,Shane Michael       | Smyrski Farm Scholarship                            |
| 2012 | UGRD | \$ 1,000.00 | Fitzpatrick,Heidi Robinson | Smyrski Farm Scholarship                            |

|      |      |             |                            |                                                                        |
|------|------|-------------|----------------------------|------------------------------------------------------------------------|
| 2012 | UGRD | \$ 1,000.00 | Rojas,David Nelson         | Smyrski Farm Scholarship                                               |
| 2012 | UGRD | \$ 1,000.00 | Rose,Patrick Robert        | Smyrski Farm Scholarship                                               |
| 2012 | UGRD | \$ 1,000.00 | Varvitsotis,Cecily Marie   | UConn Agriculture and Natural Resources Alumni Association Scholarship |
| 2012 | UGRD | \$ 1,500.00 | Feyers,Shane Michael       | Henry & Ebba Hansen Memorial Scholarship                               |
| 2012 | UGRD | \$ 1,500.00 | Bilich,Andy Joseph         | Clinton S. Roberts Foundation Scholarship                              |
| 2012 | UGRD | \$ 1,500.00 | Fitzpatrick,Heidi Robinson | Clinton S. Roberts Foundation Scholarship                              |
| 2012 | UGRD | \$ 1,500.00 | Lama,Tanya Marjorie        | Clinton S. Roberts Foundation Scholarship                              |
| 2012 | UGRD | \$ 1,500.00 | McInerney,Emily Rachel     | Clinton S. Roberts Foundation Scholarship                              |
| 2012 | UGRD | \$ 1,500.00 | Rose,Patrick Robert        | Clinton S. Roberts Foundation Scholarship                              |
| 2012 | UGRD | \$ 1,500.00 | Varvitsotis,Cecily Marie   | Clinton S. Roberts Foundation Scholarship                              |
| 2012 | UGRD | \$ 1,500.00 | Solmo,Matthew James        | Clinton S. Roberts Foundation Scholarship                              |
| 2012 | UGRD | \$ 1,500.00 | Rose,Patrick Robert        | Wilfred B. Young Leadership and Service Award                          |
| 2012 | UGRD | \$ 1,500.00 | Bilich,Andy Joseph         | Albert Wadsworth Meserve & Helen Clark Meserve Memorial Scholarship    |
| 2012 | UGRD | \$ 1,500.00 | George,Alexi Kathleen      | Horace C. Eriksson Forestry Scholarship                                |
| 2012 | UGRD | \$ 2,400.00 | Gordon,Samuel William      | New Haven County Agricultural Internship                               |
| 2012 | UGRD | \$ 4,000.00 | O'Connor,Kelly Marie       | New England Farm & Garden Association Scholarship                      |
| 2012 | UGRD | \$ 5,400.00 | Ritter,Nicole Gale         | James V. Spignesi, Jr. Memorial Scholarship                            |

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## Appendix H4.

### ADDENDUM

#### **3+2 Program General Agreement *Between* University of Connecticut *and* Sichuan University**

**Partner Institution: College of Life Sciences (CLS), Sichuan University**

**UCONN Department/School: College of Agriculture and Natural Resources (CANR)**

Introduction: The University of Connecticut (UCONN) is proud to collaborate with Sichuan University (SU) on this 3+2 degree program. This addendum stipulates that outstanding undergraduate students from the College of Life Sciences of Sichuan University (SU) can couple the final year of study to complete their bachelor's degree requirements for SU at UCONN's College of Agriculture and Natural Resources with subsequent academic work to complete a master's degree contingent on admission to the Graduate School.

This addendum specifies that the signed agreement entitled, "3+2 Program General Agreement *Between* University of Connecticut *and* Sichuan University" applies to SCU's College of Life Sciences (CLS) and UCONN's College of Agriculture and Natural Resources (CANR). SCU-CLS students that are accepted into the "3+2" program will enroll in undergraduate and/or graduate level courses appropriate to their Bachelor's (B.S.) degree plan of study and which will prepare them for admission into a Master's of Science program in a related program within CANR. The specific curriculum to be followed will depend on any remaining SCU-CLS B.S. degree requirements, preparation received at SCU-CLS, faculty advisor input and student interests and career aspirations.

Note: All 3+2 (or equivalent) program agreements (i.e., MOU or addenda to existing agreements) must be reviewed and approved by the relevant Dean's Office, the UCONN Provost's Office, the Graduate Dean, and the Partner Institution before students are admitted to the program.

Signatures:

**University of Connecticut**

**Sichuan University**

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Gregory J. Weidemann                      Date  
Dean  
College of Agriculture and Natural Resources

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Zhixiong Xiao                                      Date  
Dean  
College of Life Sciences