**Northeast Climate Science Center**

**SUMMARY OF NE CSC FY12 ANNUAL PROJECT REPORTS: 2012 – 2013**

**January 15, 2014**

**1. Project Title:** *Extending the Northeast Terrestrial Habitat Map to Atlantic Canada*

**Lead PI:** Mark G. Anderson

**Purpose/Objective(s):** In the US, the Northeast Terrestrial Habitat Map, developed by the authors of this proposal, is a fundamental building block for the North Atlantic Landscape Conservation Cooperative (NALCC). A comparable and consistent dataset available for the entire international region would be of great utility to this LCC, and would provide a platform for the coordination of projects across state, provincial, and international boundaries.

**Preliminary results and accomplishments:** Compiled and created datasets for geology, landforms, climate, wetlands, land cover, streams, political boundaries. Completed initial description of potential ecological system types.

**Products and presentations:** To date presentations have only been made to steering committee. One manuscript is anticipated but not until after the map is complete. A short (3-page) Overview Document was produced for project Steering Committee.

**Stakeholder outreach and communication:** 3 WebEx meetings with project Steering Committee (Steering Committee is composed of agency scientists from four Canadian provinces, and NGO leaders from Canadian conservation groups).

**2. Project Title:** *Critically Evaluating Existing Methods and Supporting a Standardization of Terrestrial and Wetland Habitat Classification and Mapping that Includes Characterization of Climate Sensitive Systems.*

**Lead PI:** David D. Diamond

**Purpose/Objective(s):** Work with key national, regional, and local partners to (1) a review existing map products in terms of classification (map legend), input data, and methods used, (2) compare existing maps in a quantitative (tabular) and spatially specific (GIS database) fashion in order to highlight areas of agreement and disagreement among maps, (3) summarize current product pros and cons and future needs based on a regional partner meeting designed to review products from the first two steps, (4) as possible based on outcomes from previous steps, provide a comprehensive map legend, and a merged and improved map with a focus on the Appalachian LCC, and (5) provide recommendations of alternatives (including cost) for future regional map improvements.

**Preliminary results and accomplishments:** All appropriate classifications were evaluated, a master legend cross-walk was produced, and quantitative analyses of how the maps overlap was completed but not evaluated.

**Products and presentations:** A geodatabase with all classifications and a series of data tables defining legend conceptual and spatial overlap has been compiled. Workshop is planned for June 2014.

**3. Project Title:** *Environmental Effects of Agricultural Practices (EEAP), Eastern Tallgrass Prairie and Big Rivers Landscape Conservation Cooperative (LCC) and Upper Midwest and Great Lakes LCC – Literature search*

**Lead PI:** Kasey Hutchinson

**Purpose/Objective(s):** The purpose of this project was to conduct an extensive search for both published and ongoing research that, in general, deals with climate change and agriculture in a water quality context for the Eastern Tallgrass Prairie and Big Rivers Landscape Conservation Cooperative (LCC) and Upper Midwest and Great Lakes LCC.

**FINAL results and accomplishments:** The final result of the effort is a compilation of citations and project titles and affiliated information as an EndNote database, with a total of just over 1400 citations. The data can be exported and converted to other formats and/or incorporated into applications such as the EEAP Agricultural Research Map, an interactive tool that can be used to identify current projects dealing with the topic of the agricultural effects on water quality in a changing climate.

**Products and presentations:** EndNote database/library categorized by geographic location but can be categorized using various criteria and keyword searches within EndNote

**4. Project Title:** *Characterization of Spatial and Temporal Variability in Fishes in Response to Climate Change*

**Lead PI:** Brian Irwin

**Purpose/Objective(s):** This will help elucidate the extent to which quantifiable responses in spatial and temporal variability occur in different forms of fish population data.

**Preliminary results and accomplishments:** To date, efforts have included recruitment and successful enrollment of a graduate student (Tiffany Vidal) and purchasing necessary computing equipment to get started. Tiffany has been focused on coursework, becoming more familiar with fishery-independent data from the Great Lakes basin, and preliminary model development. There has been one successful in-person meeting with project partner Dr. Ty Wagner to discuss project ideas and analytical approaches. Thus far, the PIs have focused on long-term gillnet data from Oneida Lake, NY collected by Cornell University.

**Products and presentations:**

1. Irwin, B.J., and T. Wagner. 2013. Shifting variance structure as a potential indicator of fish-population responses to large-scale perturbation. Southern Division, AFS, Nashville, TN.
2. Irwin, B.J., and T. Wagner. 2013. Using mixed models to quantify variability in fish populations. GA Chapter of AFS, Jekyll Island, GA.
3. Potential 2014 conference presentation: Irwin et al. Shifting Variance Structure as an Indicator of Large-scale Ecological Change. 2014 ESA meeting**.**

**Stakeholder outreach and communication:** In August 2012 provided advice & additional contacts to Jillian Cohen – who works for Congressmen Ed Markey, Ranking Member on the House Committee on Natural Resources – regarding potential expectations for fish population responses to climate change and management strategies that allow for stakeholder participation.

**5. Project Title:** *Developing Fish Trophic Interaction Indicators of Climate Change for the Great Lakes*

**Lead PI:** Richard Kraus

**Purpose/Objective(s):** Our goal is to provide managers with a better understanding of food web changes that may occur as different fish guilds compete for habitat and prey resources under forecasted climate conditions, and to provide tools for monitoring fisheries in the form of indicator variables based on diet and natural energy tracers of food web structure.

**Preliminary results and accomplishments:** PIs completed fieldwork for this project in September 2013, and are in the process of analyzing samples and data from 2012 and 2013. Contract laboratory analysis of zooplankton composition and stable isotope makers is ongoing and complete results from these laboratories are expected by May 2014. In addition, processing of hydroacoustic data on fish distribution is ongoing, and an analysis will be performed, combining water quality mapping results with the hydroacoustic data similar to the preliminary analysis of 2011 data for the Lake Erie Committee’s Yellow Perch Task Group (YPTG).

**Products and presentations:** Results of this study have been presented at annual meetings of the Lake Erie Committee task groups in 2012, and 2013, and additional presentations are being prepared for the 2014 cycle that occurs in February. In addition, presentations have been contributed at scientific conferences relevant to fishery managers in the Great Lakes (e.g., American Fisheries Society, and International Association of Great Lakes Researchers), and the P.I.’s are committed to preparing manuscripts of the results for publication in a peer-reviewed scientific journal.

**Stakeholder outreach and communication:**

* In 2012, the YPTG convened a special meeting to develop an interim decision rule for dealing with this problem. As this research into climate change effects on Great Lakes food webs involved developing fine scale spatial information on the responses of fish to hypoxia, the PIs contributed preliminary results to fishery managers at this meeting. Results aided the development of both an interim rule and research objectives to better understand this phenomenon and inform stock assessment analyses.
* The PIs worked with Ohio Department of Natural Resources to devise a trawl sampling technique that could quantify whether the majority of the catch was obtained while the gear was being deployed/retrieved versus the period when it was in contact with the bottom. These results quantify the impact of hypoxia on trawl survey catches and were presented in December 2013 at a workshop for Great Lakes researchers on trawl sampling.
* As part of the PIs research on climate forces that impact food webs in Lake Erie, they mapped the edge of the dead zone at one of their study sites and deployed data loggers to understand the temporal variability. Results were in stark contrast with established notions of gradual development and senescence of the dead zone: especially near the edges of the dead zone where observed that dissolved oxygen could change rapidly from normoxia to anoxia (and back) in the course of a few hours. Results were presented to the EPA’s Great Lakes National Program Office, and are now working with them to develop a network of underwater data loggers to better quantify the spatial and temporal dynamics of the dead zone as it relates to the Great Lakes Water Quality Agreement goal of shrinking the size of the dead zone in Lake Erie.
* The three years of results from this current food web study are proving invaluable for informing study design decisions for the Coordinated Science and Monitoring Initiative (CSMI) work in 2014. For example, study sites from this project are now incorporated into the CSMI study design in order to support analyses of inter-annual food web variability, and address a key deficiency in the CSMI framework. In addition, the same types of sample analyses will be performed in order to better understand the dynamics of Lake Erie foodwebs and account for unique environmental signatures that characterize individual years.

**6. Project Title:** *Bringing people, data, and models together – addressing impacts of climate change on stream temperature*

**Lead PI:** Austin Polebtiski

**Purpose/Objective(s):** A monitoring campaign that consists of gathering existing stream temperature data within the DOI-Northeast region and deploys data loggers where additional data are needed; conduct an intercomparison of state-of-the-art statistical and deterministic stream temperature models that evaluates their ability to replicate point stream temperature measurements as well as model scalability to non-gaged sites with the Northeast region.

**Preliminary results and accomplishments:** 1)Acquired geographic locations from nearly 7900 continuous stream temperature monitoring sites from approximately 45 Federal, State, Universities, and NGOs and entered into webportal. 2) Deployed loggers and made contact with numerous Federal, State, and local agencies, and NGO's, deployed approximately 200 loggers, more will be deployed through summer 2014. 3) The team examined three stream temperature modeling frameworks, one physical (VIC-RBM) and two statistical (a nonlinear regression and a spatial statistical model). The majority of the work focused on the nonlinear stream temperature model developed by Mohseni (1998) and a subsequent MS Thesis was produced on applying the nonlinear model across broad spatial ranges.

**Products and presentations:**

1. December AGU 2012 Meeting – Poster
2. March 14th, 2013 - North Atlantic Landscape Conservation Cooperative (NALCC) meeting - Integrating Stream Science Efforts across the North Atlantic and Appalachian LCC Regions, Austin Polebitski, "Bringing people, data, and models together – addressing impacts of climate change on stream temperature”
3. Kyle O’Neil M.S. Thesis Defense – July 2013 “Bringing people, data, and models together – addressing impacts of climate change on stream temperature"
4. December AGU 2013 Meeting – Poster
5. Daily stream temperature data sets from raw data and deployed logger data that is still coming in.
6. An R model to fit and estimate non-linear stream temperature model.

**Stakeholder outreach and communication:** 1)March 27th, 2013 - Webinar and discussions with USFS to discuss USFS stream temperature database and NorWeST stream temperature mapper (USFS, Dan Isaak, Gwynne Chandler, Callie McConnell). 2) Helped acquire stream temperature logger locations from 45 different Federal, State, Universities, and NGOs. Nearly 7900 sites have been added to the NorEaST mapper. 3) Stream temperature data from agencies interested in data sharing are being loaded into the NorEaST web portal. 4) Currently working with WIDNR, USFS Mark Twain, USFS Shawnee, USFS Hoosier, MA Trout Unlimited, MO DNR, and Millers River Watershed Association to deploy loggers, more contacts to be made over the next year

**7. Project Title:** *A Stream Temperature Inventory Network and Decision Support Metadata Mapper –Evaluating the Resources to Understanding Climate Change Effects on Streams in New England, the Mid Atlantic and Great Lakes States*

**Lead PI:** Jana S Stewart

**Purpose/Objective(s):** This proposed project seeks to move towards development of a coordinated, multi-agency regional stream temperature framework and database for New England (ME, VT, NH, CT, RI, MA) and the Great Lakes States (MN, WI, IL, MI, IN, OH, PA, NY) by first compiling metadata about existing stream temperature monitoring locations and networks; developing a web-based decision support mapper to display, integrate, and share that information; building a community of contacts with interest in this effort; and developing data portal capabilities that integrate stream temperature data from several data sources.

**Preliminary results and accomplishments:** Developed NorEaST web portal to map and store data. NorEaST Web portal (mapper and database for continuous stream temperature locations and data); For mapper use preferred browser (Google Chrome or Mozilla Firefox). http://wim.usgs.gov/noreast/ The data portal has also been developed and is in the testing phase by project team members. Also, the link between NorEaST mapper and NorEaST data portal is not yet available outside of developers testing. We are in the process of doing internal testing and loading of data.

Developed a community of contacts who have been collecting continuous stream temperature data and acquired 7900 stream temperature locations where continuous stream temperature data have been collected and are in the process of acquiring stream temperature data and loading into NorEaST web portal.

**Products and presentations:**

1. Dec 9th - 12, 2012 - Midwest Fish and Wildlife Conference, Oral Presentation, Yin-Phan Tsang, “A Stream Temperature Inventory Network and Decision Support Metadata Mapper for North East U.S.”
2. March 14th, 2013 - North Atlantic Landscape Conservation Cooperative (NALCC) meeting - Integrating Stream Science Efforts across the North Atlantic and Appalachian LCC Regions, Jana Stewart, "Stream Temperature Inventory Mapper and Data Portal"
3. Sept 9th - 12, 2013 - American Fisheries Society, Oral Presentation, Jana Stewart (presented by Yin-Phan Tsang), "A Stream Temperature Inventory Network and Decision Support Metadata Mapper for North East U.S. "
4. Dec 9th, 2013, Webinar on Data Infrastructure - processing and storing continuous data, organized by Jen Stamp (TetraTech) and Britta Bierwagen (EPA ORD); Jana Stewart presented and overview of the NorEaST web portal
5. NorEaST Web portal (mapper and database for continuous stream temperature locations and data); http://wim.usgs.gov/noreast/

**Stakeholder outreach and communication:** 1)March 27th, 2013 - Webinar and discussions with USFS to discuss USFS stream temperature database and NorWeST stream temperature mapper (USFS, Dan Isaak, Gwynne Chandler, Callie McConnell). 2) Discussions and presentations made by USFS helped guide us in development of the NorEaST web portal. 3) Acquired stream temperature logger locations from 45 different Federal, State, Universities, and NGOs.

**8. Project Title:** *A Research and Decision Support Framework to Evaluate Sea-level Rise Impacts in the Northeastern U.S.*

**Lead PI:** E. Robert Thieler

**Purpose/Objective(s):** This project seeks to improve upon previous efforts by developing a decision support model providing regional coverage to quantify coastal vulnerability to sea-level rise impacts and for which the underlying assumptions are uniformly valid. To meet this goal, we will develop a probabilistic modeling approach to forecast potential sea level increases and distinguish the corresponding coastal response type (dynamic vs. inundated/static) for several time steps throughout the Northeast region.

**Preliminary results and accomplishments:** Acquired necessary data sets to build probabilistic model; the probabilistic model has been developed, tested, and results vetted for a subsection of the region (coastal Massachusetts).Regional coverage for all datasets has been completed and is in final stages of processing for model integration. Three sea level projection periods have been integrated: 2020, 2050, and 2080.

**Products and presentations:**

1. Presentation at Northeast Regional Oceans Council Meeting, November 2013: "A Research and Decision Support Framework to Evaluate Sea-Level Rise Impacts in the Northeastern U.S." E. Lentz, R. Thieler, N. Plant, S. Stippa, D. Gesch, and R. Horton.
2. WebEx to North Atlantic Landscape Conservation Cooperative Coastal and Marine Technical Team, February 2013: "Research and Decision Support Framework to Evaluate Sea-Level Rise Impacts for the U.S. Atlantic Coast" E.Lentz, N. Plant, R. Thieler, A. Turecek

**Stakeholder outreach and communication:** E. Lentz participated in week-long structured decision making training workshop in September 2012 with NA LCC coordinators (Andrew Milliken, NA LCC Coordinator; Tim Jones, FWS Atlantic Coast Joint Venture; Dorina Frizzera, NJ DEP Coastal Management Program; Bill Hulslander: NPS Assateague Island National Seashore; Matt Whitbeck, FWS Blackwater NWR; Kevin Kalasz DE Division of Fish and Wildlife; Adam Whelchel, The Nature Conservancy). In the week long workshop, participants defined the decision problem, objectives, and actions to be taken as a result of this information. Semi-annual briefings continue to keep this team and the NA LCC Coastal Technical team (the decision maker) abreast of developments and iterations, as well as to solicit feedback.

**FY 13**

**1. Project Title:** *Shifting Seasons: Tribal Climate Adaptation Training for Northeastern Tribes*

**Lead PI:** Chris Caldwell

**Purpose/Objective(s):** College of Menominee Nation Sustainable Development Institute will host a Shifting Seasons Summit that will serve as a training and networking event for indigenous practitioners, tribal leaders, tribal land managers and federal and state agencies and academic researchers. The summit has two primary goals: To 1) facilitate a better understanding of the CSC, and other federally led opportunities for tribes in addressing climate change impacts on tribal resources; 2) facilitate the development, improvement, and inclusion of tribal communities climate change needs to develop a best management practices approach for engagement of tribes in the development of research agendas, project development, and policy development related to tribes and climate change, specifically in the northeast.

**Preliminary results and/or accomplishments:** Developed preliminary planning for incorporating BIA and NECSC funding into one overall project.

**Products and presentations:** (Anticipated)Shifting Seasons Summit 10/2014

**Primary Stakeholders:** Tribes in the Northeastern region, tribes throughout the nation.

**Stakeholder outreach and communication:** (Anticipated) CSC networks, LCC networks, Inter-tribal organizations- specific target northeast, but will distribute broadly.

**2. Project Title:** *Modeling Effects of Climate Change on Spruce-Fir Forest Ecosystems and Associated Priority Bird Populations*

**Lead PI:** Tony D'Amato

**Purpose/Objective(s):** Project goal is to develop tools to identify refugia sites most likely to support spruce-fir forest and its associated high-priority obligate spruce-fir bird species over the long-term under projected climate change scenarios. Specific research objectives include: (1) producing high-resolution (temporal and spatial) projections of spruce-fir forests, including stand characteristics like structure and composition; (2) estimating future changes in the distribution, productivity and stand characteristics of the spruce-fir forest type due to potential changes in climate; (3) comparing the distribution and condition of spruce-fir forest for different climate change scenarios to identify areas with key physiographic settings likely to support refugia for this forest type; (4) modeling bird occurrence, distribution, nesting phenology and productivity as functions of climate and these modeled values for forest structure and composition; (5) linking these bird-habitat models to projected climatic and forest conditions to predict future bird occurrence, distribution and nesting phenology and productivity across the region; and (6) identifying areas with the greatest richness of priority bird species across climate scenarios.

**Preliminary results and/or accomplishments:** The main accomplishment of the project team to date has been the development of a large-scale database on long-term forest vegetation measurements from the United States and Canada for examining past dynamics of spruce-fir systems and parameterizing future projections and climate envelope models. Similarly, through partnership with Dr. Gerald Niemi at University of Minnesota-Duluth, we have also been able to add a temporally and spatially rich database of long-term bird populations from the Superior and Chippewa National Forests to complement existing datasets across the project team for the Northeastern US.

**Products and presentations:** Jane Foster (UMN post-doc) presented a summary of the project at the LANDIS-II workgroup meeting in Madison, WI on January 9, 2014

**Primary Stakeholders:** State and federal forest managers in the Lake States, New England, and New York, Tribal land management organizations, the National Park Service, the Upper Midwest and Great Lakes, Appalachian, and North Atlantic LCCs, and the US Fish and Wildlife Service

**Stakeholder outreach and communication:** PIs have been in discussions with the WCS, Climate Change Ecologist, Erika Rowland, regarding their interests in expanding this work to the Adirondack region of New York given the vast areas of spruce-fir in those areas and associated long-term bird data. The PIs have not redesigned our project in response to this request, but will be developing a framework that should allow for transferabilty to the landscapes of this region.

**3. Project Title:** *Making decisions in complex landscapes: headwater stream management across multiple agencies*

**Lead PI:** Evan Grant

**Purpose/Objective(s):** There is growing evidence that headwater stream ecosystems are especially vulnerable to changing climate and land use, but their conservation is challenged by the need to address the threats at a landscape scale, often through coordination with multiple management agencies and landowners. This project seeks to fill a gap, providing an example of cooperative landscape decision-making to address the conservation of headwater stream ecosystems in the face of climate change. Predictive models will be built for critical resources to examine the effects of the potential alternative actions on the objectives, taking account of climate effects and examining whether there are key uncertainties that impede decision making. Results will provide decision analyses that are (1) relevant to the management partners in question; (2) emblematic of landscape-scale cooperative decisions; and (3) sensitive to the practical consequences of climate change.

**Preliminary results and/or accomplishments:** First workshop held, draft problem statement and decision framing in progress.

**Products and presentations:** (Anticipated) ESA 2014 - organized session through NECSC

**Primary Stakeholders:** FWS, USFS, NPS

**Stakeholder outreach and communication:** The successful application of SDM requires the involvement of resource managers at each step in the decision. By involving three federal management agencies (NPS, FWS, USFS), the PIs will ensure that the decision outcomes are suitable for all involved. Though they may identify a decision which is not optimal for each management agency, species group, or protected area of a given watershed individually, collectively results will be able to satisfy the regional objectives for headwater stream systems.

**4. Project Title:** *A Decisions Support Mapper for Conserving Stream Fish Habitats of the NE CSC Region*

**Lead PI:** Craig Paukert

**Purpose/Objective(s):** To integrate results of a current condition habitat assessment of stream habitats that accounts for fish response to human land use, water quality impairment, and fragmentation by dams with estimates of future stream habitats that may change with climate. This will be accomplished by 1) Characterization of the current condition of stream fish habitats throughout the NE CSC region based on responses of target fish species to a diverse set of landscape-scale disturbances; 2) Identification of stream reaches predicted to change with climate and likely to change distributions of target fish species throughout the region; and 3) Development of a spatially-explicit web-based decision support viewer showing measures of current landscape condition along with estimates of changes in habitat that may occur with changes in climate.

**Preliminary results and/or accomplishments:** Completed compiling fish database, which is now ready for analysis. Completed summary statistics describing fish data, Land Use changes from NLCD 2001 to NLCD 2006. Planning for web-based stakeholder meeting has begun - anticipating late April.

**Products and presentations:** (Anticipated) Web-based stakeholder meeting in April 2014.

**Primary Stakeholders:** Will attend web-based meeting to be held in April

**Stakeholder outreach and communication:** Attendance at web-based meeting to be held in April

**5. Project Title:** *NorEaST – Stream Temperature Web Portal Demonstration and Application*

**Lead PI:** Jana Stewart

**Purpose/Objective(s):** The NorEaST web portal was developed to serve as a coordinated, multi-agency regional framework to map and store continuous stream temperature locations and data for New England, Mid Atlantic, and Great Lakes States. Stream temperature monitoring locations and metadata can be viewed for nearly 7900 monitoring locations across 22 states, contributed by 41 different organizations. The objectives of the project are to 1) Identify common data fields and structures that are state-of-the-art for maintaining water quality data. Using this information, the PIs will build a data template and framework to store incoming stream temperature data, build web services to output these standards, and format select datasets to demonstrate applications of these data, 2) Conduct user testing to engage agencies and other users/data stewards to refine the web portal for data access and management purposes, and 3) Develop and apply models for targeted applications of selected data to demonstrate the utility of large scale, consistent stream temperature data in decision making.

**Preliminary results and/or accomplishments:** PIs have built the NorEaST web portal to map stream temperature locations, store stream temperature data, and deliver stream temperature data through webservices. To date, they have locations from 41 different organizations for a total of 8,249 stream temperature sites, which can be seen on the NorEaST mapper. They have loaded stream temperature data for 1,120 of the 8,249 sites into the NorEaST data application to demonstrate the data management and retrieval side of the NorEaST web portal. They have identified common data fields and mapped these fields to WaterML2 standards, and lastly, developed webservices to deliver stream temperature data to stakeholders. The PIs have conducted internal user testing and made improvements to the NorEaST web portal based on internal feedback.

**Products and presentations:** (Anticipated) 1) New England Association of Environmental Biologists (NEAEB) Annual Conference in Burlington, VT (March 25 - 28th); Presenter: Dave Armstrong; 2) Webinar with Northeast stream temperature folks (meeting being organized by Ralph Able, EPA); meeting was slated for January 2014 but is being rescheduled for Spring 2014 due to bad weather.

(Completed) 1) Dec 9, 2013: Presented overview of NorEaST to Northeast stakeholders as part of a Webinar organized by EPA and TetraTech (Presenter: Jana Stewart); 2) January 2014: Webinar with NY DEC to provide overview of NorEaST (Presenter: Jim McKenna); 3) February 7, 2014: Presentation at NY AFS meeting for GAP stakeholders meeting to provide overview of NorEaST web portal (Presenter: Jim McKenna)

NorEaST Web Portal:

1) NorEaST stream temperature mapper http://wim.usgs.gov/NorEaST/

2) NorEaST data application https://cida.usgs.gov/noreast/apex/f?p=noreast:

3) NorEaST Webservices http://cida.usgs.gov/noreast-sos/

4) NorEaST graphing application (Example: http://cida.usgs.gov/noreast-sds/results/MN\_PCA\_08LM043

**Primary Stakeholders:** State and Federal Natural Resource Agencies, NGOs, River Commissions who collected stream temperature data or who are interested in relations between stream temperature, climate and aquatic ecosystems.

**Stakeholder outreach and communication:** Have been contacting our contributors (listed in project management plan) to describe our progress, point them to the NorEaST web portal, and determine if they can participate in user testing later this spring.

**6. Project Title:** *Changes in Forested Landscapes of the Northeastern U.S. Under Alternative Climate Scenarios*

**Lead PI:** Frank Thompson

**Purpose/Objective(s):** To predict the distribution and abundance of up to 20 dominant tree species across the Northeastern U.S. under alternative climate scenarios from present to the end of the century.

**Preliminary results and/or accomplishments:** Began gathering data

**Primary Stakeholders:** North Atlantic LCC, US Forest Service

**7. Project Title:** *Fitting the Climate Lens to Grassland Bird Conservation: Assessing Climate Change Vulnerability Using Demographically-Informed Species Distribution Models*

**Lead PI:** Ben Zuckerberg

**Purpose/Objective(s):** To develop the framework to identify demographic sensitivities and assess the vulnerability of grassland bird species to future climate change. Objectives are to (1) Develop a strong partnership among managers and researchers to understand how climate change could be accounted for in conservation and management planning for grassland birds throughout the NE CSC region. (2) Develop spatially-explicit and temporally dynamic species distribution models for a select group of grassland birds. (3) Evaluate current “on-the-ground” prairie and grassland management practices and the placement of existing and proposed conservation areas relative to future climate change.

**Products and presentations:** Stakeholder workshop and notes (see links below)

**Primary Stakeholders:** Curtice Griffin (UMass Amherst), Scott Hull (WI DNR), David King (US Forest Service- Amherst), Katie Koch (US FWS), Melinda Knutson (US FWS), Andy Paulios (WI DNR), Rosalind Renfrew (Vermont Center of Ecostudies), David Sample (WI Dept. of Natural Resources), Susan Skagen (USGS-Fort Collins), and Chris Trosen (US FWS)

**Stakeholder outreach and communication:** Held stakeholder workshop as per Objective 1 on December 4-5, 2013, in Madison, Wisconsin. See DOI website for announcement of meeting: http://www.doi.gov/csc/northeast/news/grassland-bird-climate-change-vulnerability-assessment-meeting.cfm. Notes of the meeting have already been posted on the NE CSC website: https://necsc.umass.edu/news/grassland-bird-climate-change-vulnerability-assessment-meeting

**8. Project Title:** *Understanding Conservation Management Decisions in the Face of Sea-Level Rise Along the U.S. Atlantic Coast*

**Lead PI:** R. Palmer / Linda Deegan

**Purpose/Objective(s):** To develop a framework for addressing the problems faced by managers responsible for coastal waterbird management by providing scenarios and conducting a workshop that will be attended by both managers and coastal scientists.

**Focus of this reporting period:** Planning and conducting the workshop.

**Preliminary results and/or accomplishments:** Planning phone calls were held and a workshop proposed for March.