| Year | Project Title | P.I.s and Organizations | Status | Completion Date | LCC Funding | Abstract |
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| 2010 | Evaluating the Vulnerabilities of Ecological Resources to Climate Change in the Northeast (continuation of RCN) | Hector Galbraith, Manomet Center for Conservation Sciences, Austin Kane, National Wildlife Federation | Ongoing | 12/31/2012 | $100,000 | The Northeast Association of Fish and Wildlife Agencies (NEAFWA) is working with Manomet Center for Conservation Sciences and National Wildlife Federation to evaluate the vulnerabilities of important fish and wildlife habitats in the Northeast to current and future climate change. Specific objectives of this research include: quantifying the likely vulnerabilities of habitats to changing climate; mapping the variability in habitat vulnerabilities across the entire region; providing essential information to inform future decisions about the allocation of finite conservation resources among the 13 states of the region; and helping build capacity among state agencies to respond to current and future climate change. Project includes application of a predictive model for evaluating climate change impacts to non-coastal resources including forests, grasslands, wetlands, rivers, lakes and ponds. For coastal habitats, project outcomes are a comprehensive catalogue and database of past and current climate change-related research, restoration, and adaptation work in the Northeast; a user-friendly tool for evaluating the vulnerabilities of coastal sites and parcels; and the application and testing of the coastal tool . |
| 2010 | Designing Sustainable Landscapes for Wildlife: forecasting changes to landscapes, habitats and species & development of decision support tools | Kevin McGarigal, University of Massachusetts – Amherst | Ongoing | 06/01/2012 | $435,000 | There is an increasing need for conservation planning over broad spatial extents that accounts for uncertainty in the effects of future climate, urban growth and other land use changes on ecological integrity and wildlife habitat capability. To address this concern in the Northeast under the auspices of the North Atlantic Landscape Conservation Cooperative (LCC), we are developing a modeling framework that will allow us to 1) simulate landscape changes driven by climate, urban growth and other disturbance processes, 2) assess the consequences of those changes to ecological integrity (coarse filter) and habitat capability for representative species (fine filter), and 3) identify priorities for land protection (e.g., what lands to protect to get the biggest bang for the buck), land management (e.g., what should be the management priorities on existing conservation lands), and ecological restoration (e.g., where should we place a wildlife road crossing structure or upgrade a stream culvert to achieve the greatest improvement in ecological integrity). First phase of this project is designed to build the core components of the landscape change and assessment model and apply it to three pilot watersheds distributed throughout the region. |
| 2010 | North Atlantic Landscape Conservation Cooperative: Wildlife Habitat Models for Terrestrial Vertebrates | Terri Donovan, Vermont Cooperative Fish and Wildlife Research Unit | Complete | 10/1/2011 | $90,005 | For representative species selected for the North Atlantic LCC, we will develop models that relate characteristics of the landscape at multiple scales to suitability of the landscape as species-specific terrestrial wildlife habitat. The ultimate goal is to be able to assess the capability of the landscape to support populations of wildlife. These species habitat relationship models for representative species are part of the broader *Designing Sustainable Landscapes* project. |
| 2010 | Forecasting changes in aquatic systems and resilience of aquatic populations | Ben Letcher, USGS Silvio Conte Anadromous Fish Lab | Ongoing | 12/31/2013 | $420,000 | The objective of this project is to develop a web-based decision support system (DSS) for evaluating effects of alternate management strategies on local population persistence of brook trout under different climate change scenarios. This DSS will include a hierarchical Bayesian model that accounts for multiple scales and sources of uncertainty in climate change predictions; it will include models to predict stream flow and temperature based on air temperature and precipitation; and it will incorporate climate change forecasts into population persistence models. |
| 2010 | Forecast effects of sea level rise on habitat of piping plovers & identify responsive conservation strategies | Sarah Karpanty, Virginia Tech | Ongoing | 12/31/2013 | $204,445 | Sea level rise and associated changes in storm magnitude and frequency are major issues of concern associated with climate change in the North Atlantic LCC. Low-lying coastal areas are of paramount importance because they are most vulnerable to such climate change effects. Piping Plovers (*Charadrius melodus*) respond rapidly to change and depend on these areas throughout their life cycle, making them excellent indicators of climate change effects. We are developing predictions of how Piping Plover breeding habitat will change as a result of sea level rise and altered storminess using a coupled risk assessment model. The first portion of the model assesses changes to coastal geomorphology using dynamic sea-level rise predictions and is linked to the second portion of the model that assesses plover habitat selection. The first task will utilize the vast data sets documenting plover habitat preference for, and utilization of topographic, hydrodynamic, and vegetation regimes. This task will develop a plover model that is quantitatively tied to measurable physical variables including elevation, slope, frequency of inundation and overwash, and amount of vegetation. Future scenarios will be modeled in order to analyze the efficacy of existing and alternate conservation strategies against plausible sea level and other future climate variables. |
| 2010 | Total | | | | $1,249,450 | |
| 2011 | Northeast Regional Species Vulnerability Assessment incorporating the NatureServe Climate Change Vulnerability Index | Lesley Sneddon, NatureServe | Ongoing | 12/31/2012 | $75,000 | Numerous studies show that ongoing climate change will have major effects on the distribution and conservation status of much of our biodiversity. Resource managers urgently need a means to identify which species and habitats are most vulnerable to decline in order to direct resources where they will be most effective. To address this need, NatureServe and Heritage Program collaborators have developed a Climate Change Vulnerability Index (CCVI) to provide a rapid, scientifically defensible assessment of species’ vulnerability to climate change. The CCVI integrates information about exposure to altered climates and species-specific sensitivity factors known to be associated with vulnerability to climate change. This project will apply the CCVI to 60 species to be selected in collaboration with state wildlife experts, the Science Technical Review committee of the North Atlantic Coast, and with Manomet. Species selected for assessment will represent a) representative species for the North Atlantic LCC, b) foundation species for habitats currently being assessed for climate change vulnerability by the Manomet Center for Conservation Sciences, and c) high concern, high responsibility Species of Greatest Conservation Need (SGCN) identified by the Northeast states. |
| 2011 | Species-habitat modeling of additional representative species for the for the Designing Sustainable Landscapes project | Kevin McGarigal, University of Massachusetts – Amherst | Ongoing | 06/01/2012 | $45,000 | UMass will assume the lead role for developing models for an additional set of representative species to evaluate the species-habitat model and its complementarity to the ecological integrity model in three pilot watersheds during using the landscape modeling framework developed in theDesigning Sustainable Landscapes project. |
| 2011 | Permeable Landscapes for Species of Greatest Conservation Need and Representative Species | Mark Anderson, The Nature Conservancy | Ongoing | 12/31/2013 | $49,868 | Landscape permeability is the ability of a heterogeneous land area to provide for passage of animals, equivalent to what some authors call “habitat connectivity.” In this project we will evaluate and map the relative landscape permeability across a region of thirteen states, and determine how permeability coincides with the locations and habitat of species of greatest conservation concern. The analysis will be based on new analytical tools (e.g. Circuitscape and Resistant Kernel models) applied to the Northeast Regional Habitat Map, and corroborated with species locations and land cover maps. We aim to identify where the most important regional movement concentrations are, particularly those areas where movements may be funneled due to constriction in the landscape. Using this information, we will measure the amount of flow, permeability and resistance present in the region’s roads and secured-lands network. The project will be by guided by a thirteen-state steering committee. We propose to spend the first quarter preparing the permeability data sets, the second quarter analyzing the patterns relative to species and habitats, the third quarter evaluating roads and secured lands, and the last quarter preparing the final products. |
| 2011 | Information Management Needs Assessment | Applied Geographics | Underway | 06/01/2012 | $45,600 | The North Atlantic LCC, along with its partners, is working together on an information management needs assessment. LCC staff have assembled a team that will be in charge of selecting, working with, and reviewing the work done by an assessment contractor. The assessment will be distributed broadly to partners and users in the LCC conservation community. After the needs assessment is completed and the highest priority needs are selected, the team will select the contractor best suited to develop an information management needs system |
| 2011 | Application of the Coastal and Marine Ecological Classification Standards (CMECS)to the Northeast | Jennifer Greene, The Nature Conservancy; | Contract complete | 12/31/2013 | $130,000 | This project will utilize the national Coastal and Marine Ecological Classification Standard (CMECS) to classify estuarine and marine environments in the Northwest Atlantic region (Maine to Virginia). Since CMECS is on the verge of release and has not been applied to this region previously, this classification effort will be informed by the habitat mapping approach that The Nature Conservancy (TNC) developed for the Northwest Atlantic. Several commonalities exist between the two habitat classification schemes; namely each has a multi-scale hierarchical framework, relies on structural environmental features, and seeks to convey physical-biological linkages. Ensuring CMECS and the TNC classifications are compatible will avoid redundancy and bring appropriate specificity to the application of CMECS to the region. In addition to utilizing the TNC classification for guidance, we will identify and crosswalk existing state marine classification systems to CMECS. We will coordinate, as appropriate, with regional activities surrounding offshore benthic habitat mapping that are being led by the Northeast Regional Ocean Council (NROC) and academic and non-profit partners. Since CMECS will be released in the next few months, our aim is to work closely with the CMECS Implementation Group to appropriately apply CMECS. We anticipate the process of applying CMECS will require an active dialog with regional partners to resolve issues regarding thresholds and units. Lastly, we will examine the scalability of this classification by conducting pilot projects at three different scales relevant to planning and conservation efforts. At the regional scale (1:5,000,000), we will apply the classification to the Nature Conservancy’s Benthic Habitat Model from the 2010 Northwest Atlantic Marine Assessment. An intermediate-scale classification (1:250,000) will utilize datasets assembled for marine spatial planning efforts in Rhode Island, Massachusetts, and adjacent federal waters. Finally, we will classify small scale estuary-specific, high-resolution benthic information for Boston Harbor (1:5,000 scale). These pilots will allow us to assess the ability of CMECS to convey consistent ecological data across several relevant scales. Our timeline includes phone meetings in the first year, followed by the pilot efforts in the second year and a workshop. |
| 2011 | Assessing Priority Amphibian & Reptile Conservation Areas (PARCAs) and Vulnerability to Climate Change in the North Atlantic Landscape Conservation Cooperative | Priya Nanjappa, Association of Fish & Wildlife Agencies; Kyle Barrett, University of Georgia; Phillip deMaynadier, Maine Department of Inland Fisheries and Wildlife; Cyndy Loftin,Maine Cooperative Fish and Wildlife Research Unit | Ongoing | 04/01/2014 | $312,862 | Amphibians and reptiles are experiencing severe habitat loss throughout North America; however, this threat to herpetofaunal biodiversity may be mitigated by identifying and managing areas that serve a disproportionate role in sustaining herpetofauna. Identification of such areas must take into consideration the dynamic nature of habitat suitability. As climate rapidly changes it is possible that areas currently deemed suitable may no longer be so in the future. To address these needs, we are proposing to generate spatially-explicit data that will (1) identify those discrete areas most vital to maintaining reptile and amphibian diversity, (2) project regions of current and future climatic suitability for a number of priority reptiles and amphibians in the North Atlantic Landscape Conservation Cooperative, and (3) identify gaps in distributional data for these species that may prevent or inhibit the identification species-level climatic suitability.Objective 1, identification of Priority Amphibian and Reptile ConservationAreas (PARCAs) will proceed by collecting natural history information, distributional data, andby weighing expert opinion for key species. This process will result in a deductive modelingapproach akin to the national GAP analysis program. Objectives 2- 3 will rely on collection ofknown locality data and the use of inductive species distribution modeling. Collectively, thisprocess will take place over two years (2012 – 2013), and will represent the assembling andprocessing of all necessary information for identifying PARCAs. By synthesizing the deductiveand inductive modeling approaches we will offer a long-term assessment of PARCAs that mayprovide refugia as the climate changes. |
| 2011 | Mapping the Distribution, Abundance and Risk Assessment of Marine Birds in the Northwest Atlantic: Phase 1 | Tim Jones, Atlantic Coast Joint Venture and P.I. TBD | Final Proposal | 12/31/2013 | $175,000 | This project will develop a series of maps depicting the distribution, abundance and areas of high, medium and low risk to marine birds from offshore activities (e.g., energy development) in the northwestern Atlantic Ocean. There are numerous efforts underway to identify marine habitats of importance to marine birds in the offshore environments of the eastern U.S. Many of these efforts are gathering similar types of information (i.e., baseline data) but are focusing on different regions and using different technologies. This project will bring together a unique partnership to pull together data from a variety of sources including: ships of opportunity, aerial surveys, species specific telemetry studies, and the historic (from the 1970s to present) marine bird database (Atlantic Seabird Compendium) maintained by the US Geological Survey (USGS). These data will be used to model distribution and abundance patterns of many species or species groups of seabirds and then combine them with species risk assessments to create a spatially explicit risk surface. The resulting “best darn bird map” can be can be used for informing decisions about sitting offshore activities such as wind turbine installations, marine spatial planning efforts, or other uses requiring maps of seabird distributions such as identifying marine protected areas. Our goal in this effort is to document and predict areas of frequent use and aggregations of birds and the relative risk to marine birds within these areas. The resulting risk surface can be used to inform offshore energy development and more generally, marine spatial planning efforts about the importance of the pelagic habitats to marine birds. |
| 2011 | Complete terrestrial habitat map for Virginia & Maryland Piedmont and Coastal Plain to be consistent with rest of Region. | Mark Anderson, The Nature Conservancy | Ongoing |  | $14,470 | The Northeast Terrestrial Habitat Classification and Map has been underway for several years with support from the Doris Duke Foundation and NEAFWA. This project would complete the mapping in the Virginia & Maryland Piedmont and Coastal Plain to make the map comparable across the entire northeast region. |
| 2011 | Conservation design: compilation, synthesis, modification, translation and adoption of existing spatial data and tools | Steve Fuller, North Atlantic LCC | Ongoing |  | $91,627 | Establish cooperative means to make existing and future conservation design information and tools more available and accessible to conservation partners; to produce composite maps depicting landscape conservation designs; and to develop spatial data layers summarizing environmental conditions affecting a suite of important ecological and cultural resource elements in the Northeast. |
| 2011 | Total | | | | $935,331 | |
| 2012 | Total Funding Allocated, needs to be selected 4/18/2012 | | | | $1,250,000 | |