**North Atlantic LCC Project Abstracts**

1. Completing Northeast Regional Vulnerability Assessment incorporating the NatureServe Climate Change Vulnerability Index Bruce E. Young, Ph.D., Director, Species Science NatureServe

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 North Atlantic LCC Technical Committee in coordination with the Manomet and National Wildlife Federation habitat vulnerability analysis. Species selected for assessment will represent a) representative species in the North Atlantic LCC, b) foundational 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) as identified by NEAFWA.

1. North Atlantic Landscape Conservation Cooperative: Wildlife Habitat Models for Terrestrial Vertebrates; Dr. Therese Donovan, U.S.G.S. Vermont Cooperative Fish and Wildlife Research Unit

For 20 representative species, 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. We will review the scientific literature and solicit expert opinion to identify factors known or believed to be most important in determining the suitability of the landscape to representative terrestrial wildlife species. For species whose range spans a large fraction of the North Atlantic LCC, we will consider whether available information indicates that different regions of the LCC merit different versions of the habitat suitability models. We will use factors identified as important to habitat suitability (possibly varying by ecoregion) to generate suitability indices (SIs), which score landscapes on a scale from 0 (unsuitable) to 1 (optimal suitability). To the extent possible, the predictor variables will be readily derivable from datasets that are available for the entire North Atlantic LCC at a spatial resolution of 30 m, a commonly used resolution that will be used in the landscape change model. Predictor variables will include the habitat systems and modifiers in the Northeast Terrestrial Habitat Classification System and mapping based on Ecological Systems developed by NatureServe and The Nature Conservancy. The models will feed into the larger Designing Sustainable Landscapes project being led by the University of Massachusetts.

1. Permeable Landscapes for Species of Greatest Conservation Need and Representative Species; Mark G. Anderson Ph.D. Director of Conservation Science, The Nature Conservancy

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 need and representative species. The analysis will be based 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. The project will be coordinated with and be designed to complement the Designing Sustainable Landscapes project being led by the University of Massachusetts which includes local connectivity metrics.

1. Information Management Needs Assessment, BJ Richardson, GIS Coordinator, U.S. Fish and Wildlife Service

Assessment will include review of existing materials and relevant literature on needs assessments; with input from NALCC team, will develop list of questions to ask stakeholders; interview/survey stakeholders; will follow up with stakeholders if necessary to get as complete a response as possible; based on survey, will evaluate most important data/information needs that are unmet; and will make recommendations on the approach and structure of a information management system and for a pilot system. The assessment will build on the information collected at the Northeast Conservation Framework Workshop.

1. Development of a Northeast Regional Coastal and Marine Ecological Classification Standard, Mark G. Anderson, Ph.D. Director of Conservation Science

The Nature Conservancy, Eastern Division

This project will integrate NOAA and NatureServe’s Coastal and Marine Ecological Classification Standard (CMECS) and the Nature Conservancy and NatureServe’s Northeast Regional Habitat Classification System (NRHCS) in order to extend the latter system to estuarine and marine environments from Maine to Virginia. Several commonalities already exist between the two schemes; namely each has a multi-scale hierarchical framework, relies on structural environmental features, and seeks to convey physical-biological linkages. Making CMECS and NRHCS compatible will bring appropriate specificity to the application of the national CMECS standard to the region. We will coordinate with state, academic, and non-profit partners and existing ocean partnerships (NROC and MARCO) to identify and cross-walk existing state marine classification systems. We will examine the scalability of this classification by conducting pilot mapping projects at three different scales relevant to planning and conservation efforts. At the smallest scale (1:5,000,000), we will apply the classification to the Nature Conservancy’s 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 estuary-specific, high-resolution 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 relevant scales. Workshops and phone meetings will happen in the first year followed by the pilot efforts in the second year.

1. Assessing Priority Amphibian & Reptile Conservation Areas (PARCAs) and Vulnerability to Climate Change in the North Atlantic Landscape Conservation Cooperative; Priya Nanjappa, M.Sc., Amphibian & Reptile Coordinator, Association of Fish & Wildlife Agencies

Amphibians and reptiles are experiencing severe habitat loss throughout North America; however, this threat to biodiversity can 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 Priority Amphibian and Reptile Conservation Areas (PARCAs) – 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 of species-level climatic suitability.

1. Mapping the Distribution, Abundance and Risk Assessment of Marine Birds in the Northwest Atlantic: Phase 1; Tim Jones, Ph.D. ,Science Coordinator, Atlantic Coast Joint Venture

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 siting 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. Interest in developing wind resources in the offshore waters of the Mid-Atlantic and New England is increasing rapidly and information is needed to help managers select sites for wind turbines and other offshore uses. 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.

1. Integrating black duck habitat management and population ecology within an adaptive management framework; Conor P. McGowan, Alabama Cooperative Fish and Wildlife Research Unit

The goal of the black duck integrated modeling project is to develop an adaptive management framework that will identify the key uncertainties in black duck population dynamics and management, and work toward reducing those uncertainties. The adaptive management framework will focus on structural uncertainty by evaluating competing hypotheses regarding density dependence and black duck demographics (e.g., seasonal survival, productivity). The intention will be to aid resource managers in growing the black duck population by increasing continental carrying capacity through habitat management action.

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