



PROACTIVE RESEARCH FOR BIRD AND BAT MIGRATION ASSESSING THE RISK OF WIND DEVELOPMENT IN THE NORTHEAST

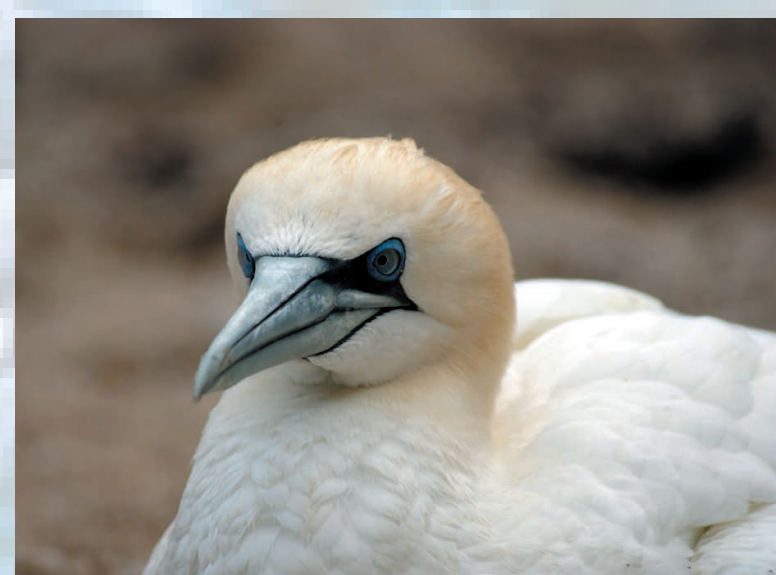


NORTH ATLANTIC

Project A Database of Marine Bird Distribution

Problem
It is not well understood how much marine bird data exists, where it is located, and what condition it is in.

Methods
To address the problem, the following methods are being used: a database is being developed (see below) of marine bird occurrence, biophysical, and oceanographic datasets for offshore Atlantic waters of the eastern United States; type of data, information and location of the data, etc. will be catalogued; search online resources such as OBIS-SEAMAP, conduct literature searches for marine bird studies in the Atlantic, and contact agencies and scientists with potential data; and gather relevant bio-physical data (e.g., bathymetry, temperature, bottom type) from a variety of sources such as National Climatic Data Center, National Oceanographic and Atmospheric Administration, and others.

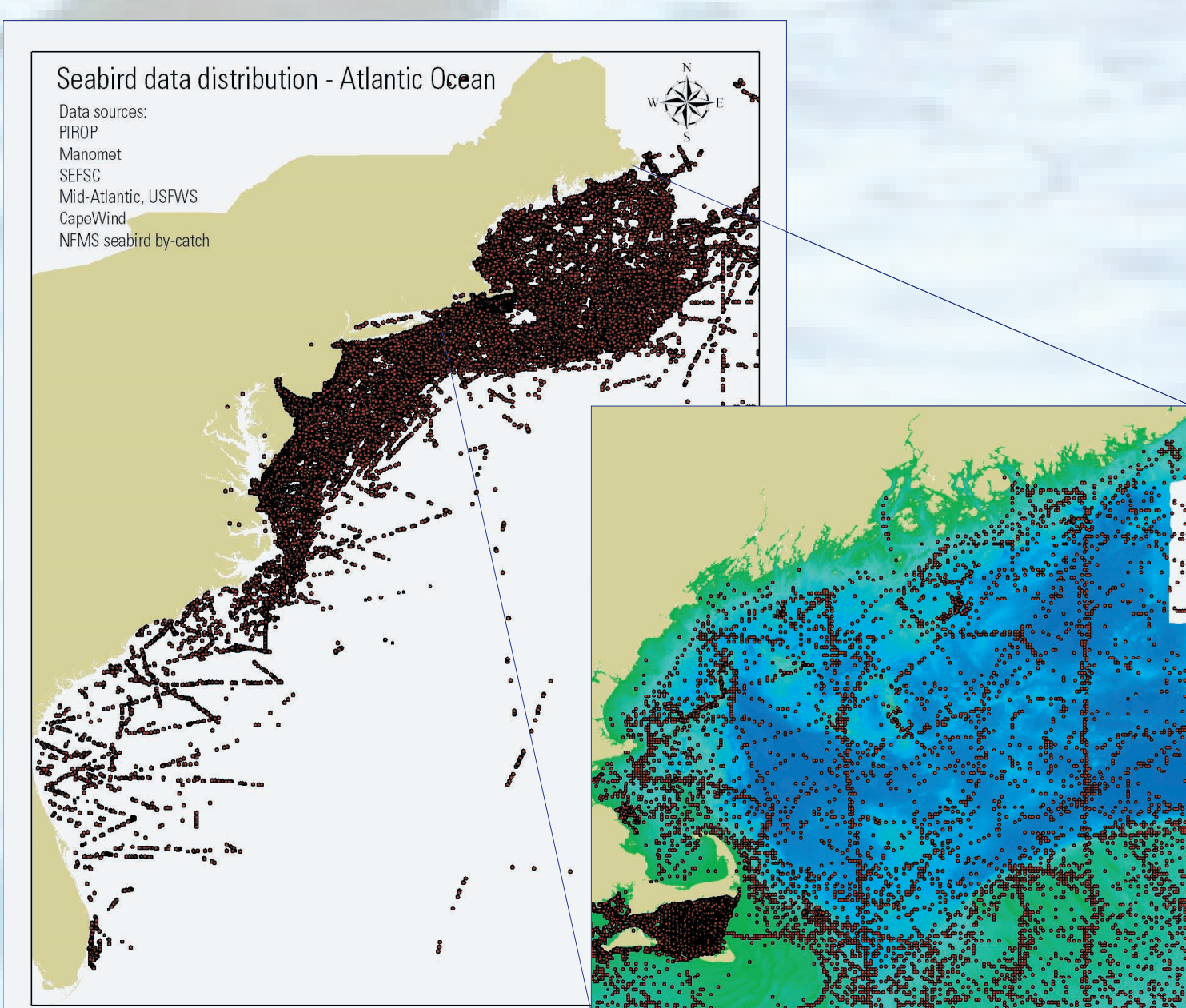


Northern Gannet.

Future Direction
Data will continue to be compiled and converted to GIS datasets. Species will be identified and modeled for their distribution. Additionally, potential windpower/offshore development-marine bird conflict areas will be mapped.

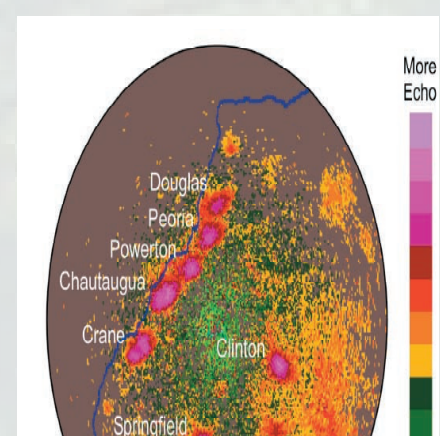
Partners
USGS Patuxent Wildlife Research Center, U. S. Fish and Wildlife Service, Sea Duck Joint Venture, Minerals Management Service, National Oceanographic and Atmospheric Administration, multiple coastal states.

Principal Investigators
Allan O'Connell, USGS
Andrew Gilbert, USGS
Scott Johnston, USFWS



Significant seabird occurrence datasets for the Atlantic Ocean.

Examples of Doppler Weather Radar detecting echo patterns.



APPALACHIANS

Project Monitoring Nocturnal Bird and Bat Migration Through the Appalachians

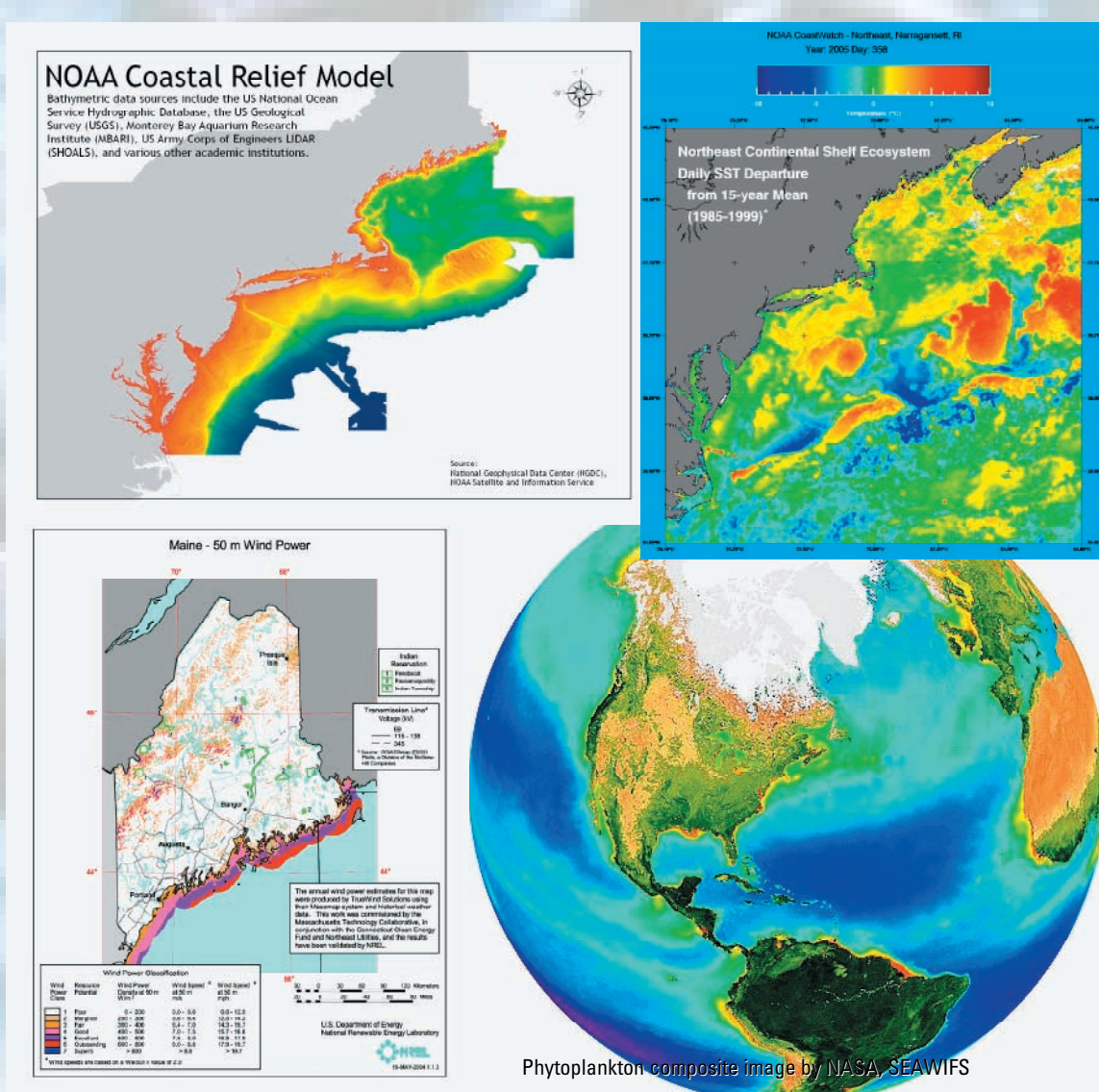
Problem
Exposed summits or ridge crests have high wind power potential. Large numbers of birds and bats are believed to follow or cross these landforms during their seasonal migrations and wind power projects could impact them. At present, we lack the knowledge to fully assess the potential impacts of wind power development in the Appalachians on migrating birds and bats.

Methods
In Fall 2005 and Spring 2006, 30 recording units were set out on knobs, ridges, or in valleys scattered through the central Appalachians, to record the flight calls made by nocturnally migrating birds to index their abundance and species composition at different locations. Also, data from National Weather Service radar stations are being examined to assess broad-scale patterns of nocturnal bird migration. Information on their density and direction of movement will be used to describe the distribution and movements of migrants as they approach and pass through the region.

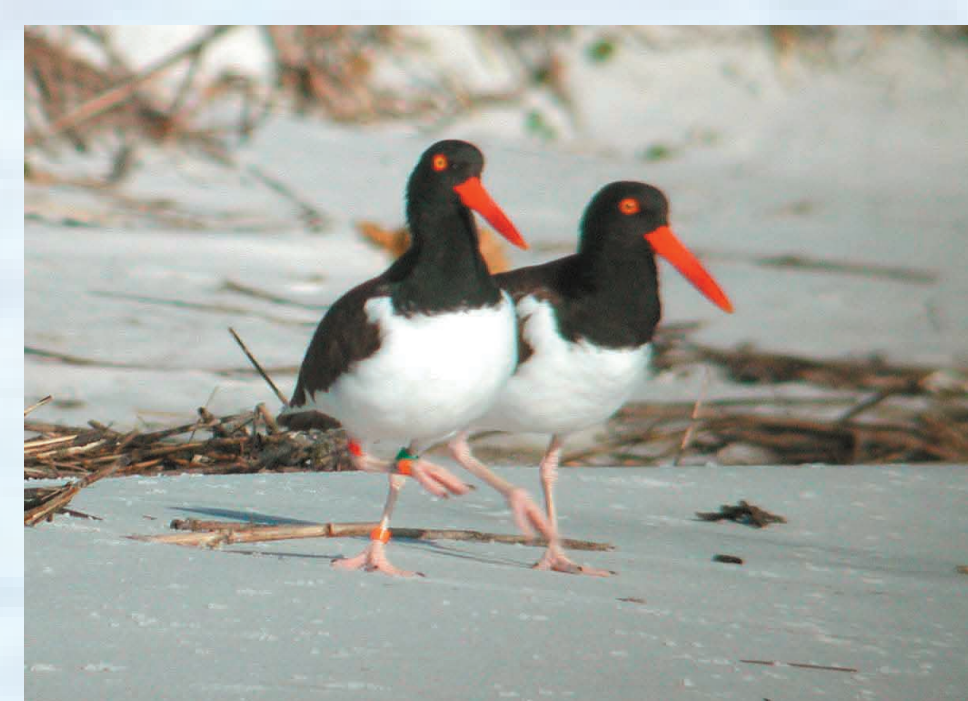
Future Direction
Data collection will continue during the spring and fall migration seasons of 2006 and 2007. Acoustic monitoring will be expanded to include bats, of high interest to federal and state wildlife managers, and supplemented with portable radar sampling to provide site-specific data on migrant flight altitudes and directions. This will provide information on the proportion and movements of migrants that pass within the altitudinal range potentially occupied by wind turbines, and how that varies through the season and with topography and weather.

Partners
USGS Patuxent Wildlife Research Center, U. S. Fish and Wildlife Service, U.S. Forest Service, and the States of Maryland, Virginia, and West Virginia.

Principal Investigators
Deanna Dawson, USGS Patuxent Wildlife Research Center,
Tim Jones, U.S. Fish and Wildlife Service
Atlantic Coast Joint Venture



From top left moving clockwise: coastal relief (bathymetry), sea surface temperature, phytoplankton, and wind power estimates - all biophysical data.



American Oystercatcher.

For more information on any of these projects contact Scott Johnston, U.S. Fish and Wildlife Service 413/253-8557 scott_johnston@fws.gov



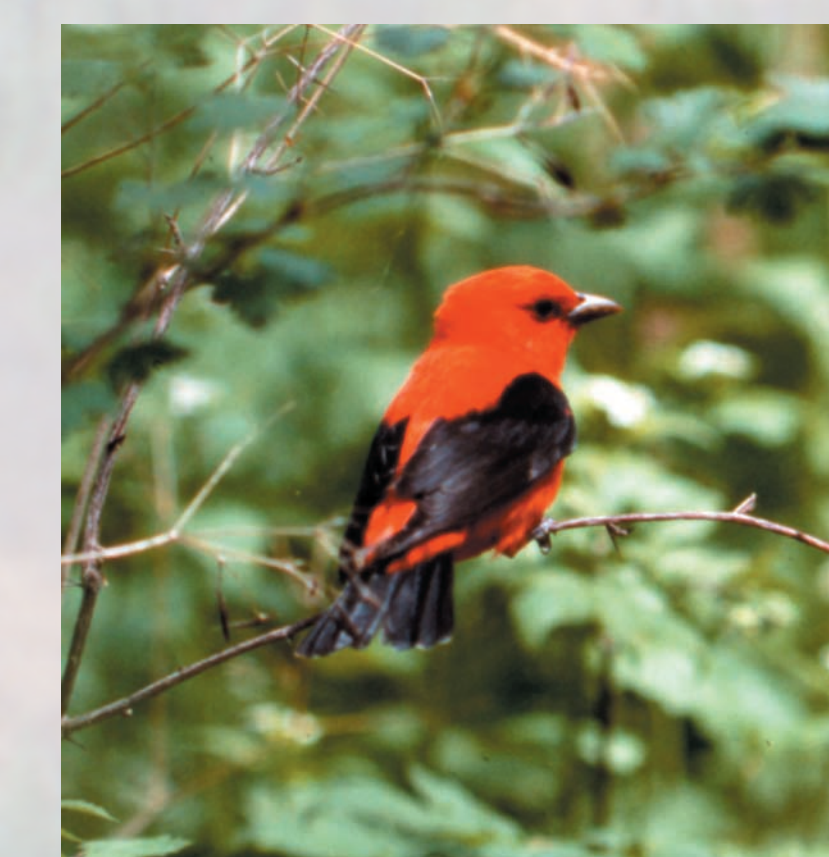
Wood Thrush.

VERMONT AND EASTERN NEW YORK

Pilot Project Predicting Bat and Bird Activity and Abundance

Problem
Little is currently known about bat migration patterns and activity levels across the landscape, thereby limiting what can be concluded about the population implications of mortality from windfarm development.

Methods
Several strategies will be used to meet the objectives above. A pilot study will initially be conducted in 2006 to compare different bird and bat detectors, detector arrays, and sampling heights in terms of feasibility in the field and probability of detection. Simulation modeling will also be conducted to assess the sample size requirements for initiating a large-scale monitoring effort.



The Scarlet Tanager.



Federally Endangered Indiana Bat.

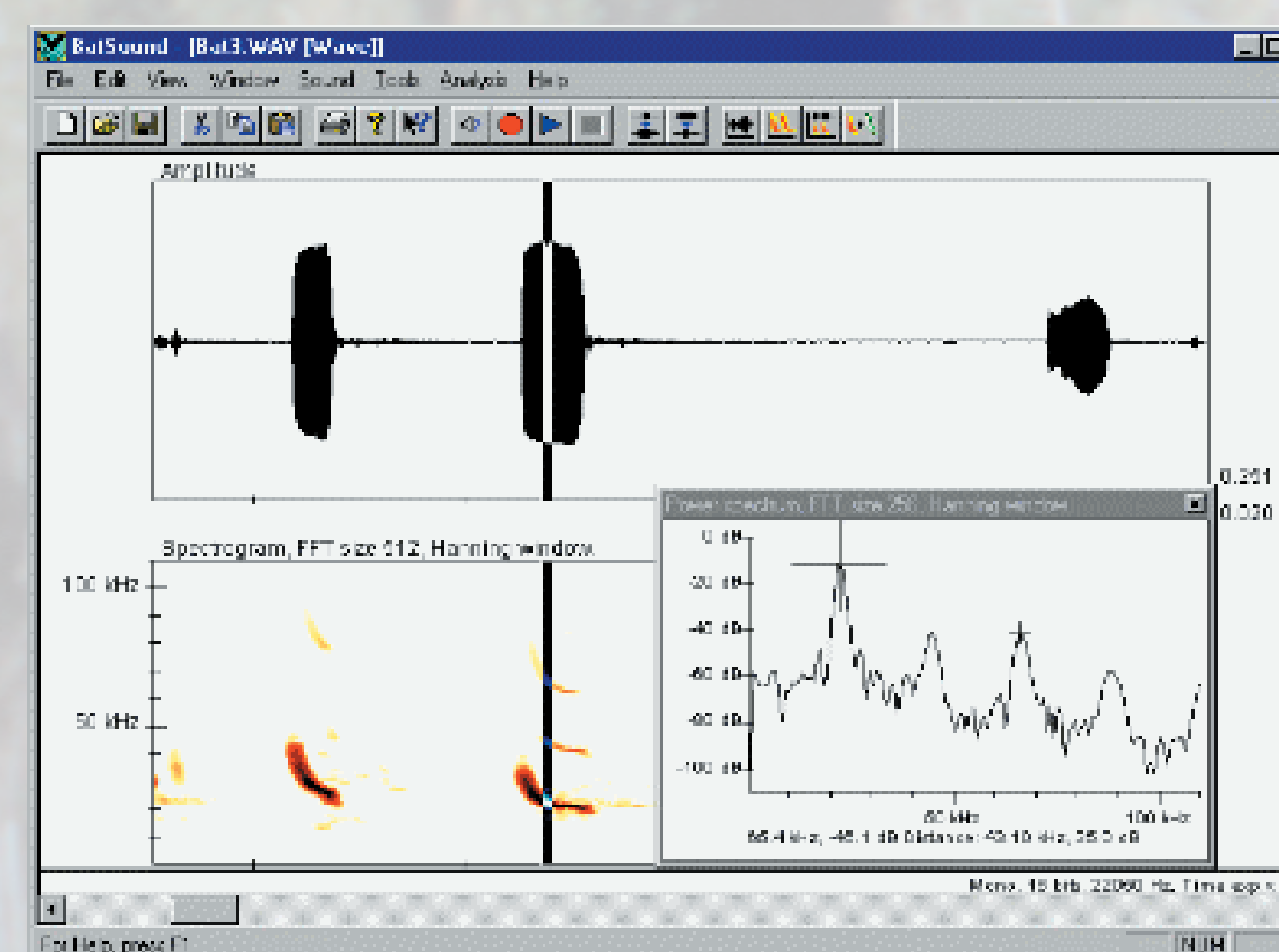
THE COMMON THREAD

All three projects seek to gain a better understanding of bird and bat migration and distribution in order to assist regulatory agencies and wind developers in siting potential projects and minimize adverse effects on wildlife.

Standardized bird and bat surveys will be implemented at 100-140 study sites across Vermont. Field data will be analyzed on a species-by-species basis and on a species-group basis (e.g., *Myotis* sp.) with two recently developed statistical analyses to generate maps showing the probability of occurrence over space and time and to determine species misidentification. And finally, researchers will evaluate the correlation between a variety of different site indicators (e.g. probability of occurrence, site abundance, indices of bat activity, total bat calls per night, etc.) and attempt to derive a single index of site suitability that can be applied unambiguously across areas.

Partners
USGS Patuxent Wildlife Research Center, U.S. Fish and Wildlife Service, St. Paul's School, Vermont Fish & Wildlife Department, New York Department of Environmental Conservation

Principal Investigators
Therese M. Donovan, USGS
Susi von Oettingen, U.S. Fish and Wildlife Service
Scott Darling, Vermont Division of Fish and Wildlife



Example of bat detection software analysis to determine different species.