

The University of Maine, the State of Maine, and U.S. Department of Energy have funded multiple studies/surveys to establish **5+ years of baseline physical and ecological data.**

## Preliminary Results

### Migratory Birds and Bats

The University of Maine has closely monitored bird and bat activity over the test site from 2010 to 2013, partnering with the New Jersey Audubon Society to maintain a radar trailer on Monhegan Island. Radar covered from 0-6000 feet and results indicated that **90% of birds fly at an altitude well above hub height.**

### Marine Life

Complete studies were carried out to determine the effect of floating offshore turbines on existing marine species. Further analysis considered the impact of anchoring technologies and cabling on the benthic (seafloor dwellers) communities, and concluded that these species would generally move safely away from the immediate vicinity of these components during installation and removal activities. This assessment concluded that **offshore structures serve as artificial reefs and often create an ecosystem for marine life in the area.**

### Radar Study (New Jersey Audubon)

Partnering with the New Jersey Audubon Society, the University of Maine, used radar technology, surveilling ~6,000 ft from the water surface, above the test site to track movement patterns of birds in the vicinity of Southern Monhegan Island from July 2010 to July 2011. Analysis conducted after the 361 day effort concluded that the number of nocturnal targets and movement rates are similar to other areas such as Block Island, Rhode Island and coastal New Jersey. Yet the study also determined that nocturnal targets and movement rates near Southern Monhegan Island, are less than half of those recorded in Cape May, New Jersey.

### Boat Survey (Lubird Kennedy Environmental Services)

The University of Maine has also worked alongside Lubird Kennedy Environmental Services to conduct 41 boat surveys to determine bird species and their abundance near the vicinity of the UMaine Deepwater Offshore Wind Test Site. The surveys were conducted through all seasons from 2011 to 2014. In Fall 2011, the most common bird species were Cormorant, herring gull, greater shearwater, and northern gannet. In Winter 2013-2014 the most common bird species were herring gull, unidentified alcid, common eider, and razorbill.

In Spring 2013, the most surveyed species was the herring gull, northern gannets, laughing gull, and great black-backed gull. In the Summer of 2012, Wilson's storm-petrels greater shearwaters, herring gull, and great black-backed gull were the most commonly surveyed species.

### Acoustic Bat Survey (Stantec Consulting Inc)

In a 315 night effort conducted by Stantec Consulting services, the Monhegan Island lighthouse area was surveyed to determine the bat group species present on the island from September 2009 to January 2012. It was determined that the most common bat species on the island are Eastern red bat/tri-colored bat (likely red bat) and myotis (likely little brown bat).

### Passive Acoustic Avian Monitoring (University of Maine)

For 540 hours (15 hours per night x 36 nights) in October 2011, the University of Maine surveyed and recorded flight vocalizations made primarily by late fall nocturnal landlord migrants. The areas monitored consisted of Southern Monhegan Island, Lobster Cove a single microphone/recording assembly ~82 ft above sea level. The most common observed bird species were Sparrows and Warblers.

### Avian & Bat Monitoring @ 1:8 Scale Turbine in Castine Maine (University of Maine)

Even further monitoring of wildlife was conducted at the Monhegan test site to observe how birds and bats respond to 1/8th scale floating test turbine. The 14 month long study began the summer of 2013 to obtain information about bird interactions with the University of Maine's VoltturnUS 1:8 floating offshore wind turbine with webcam and record changes in bat activity with acoustic monitoring. In order to retrieve the desired information, webcams were attached to VoltturnUS 1:8 from June 2013 to November 2014. Acoustic bat detectors were also placed at the Dice Head Lighthouse to observe bat migration patterns from Spring 2013 to Winter 2014. The results obtained showed no bird collisions occurred and that no birds perched on the turbine after the addition of anti-perching equipment. It was also observed that double-crested cormorant perched on turbine support structure and that bat assemblages did not change appreciably before and after turbine deployment. It was concluded that the number of bat calls per night were lower at the turbine than at Dice Head Lighthouse.

# ENVIRONMENTAL RESEARCH CONDUCTED NEAR TURBINE TEST SITE

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