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STUDY TITLE: Information Synthesis on the Potential for Bat Interactions with Offshore Wind Facilities

REPORT TITLE: Information Synthesis on the Potential for Bat Interactions with Offshore Wind Facilities

CONTRACT NUMBER: M11PD00212

SPONSORING OCS REGION: Office of Renewable Energy Programs

APPLICABLE PLANNING AREA(S): Atlantic OCS

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PROJECT MANAGER(S): Steven Pelletier, Joy Prescott

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KEY WORDS: offshore, bats, migratory, Atlantic OCS, White-Nose Syndrome, wind facility, acoustic, statistical comparison

BACKGROUND: The current scope of scientific knowledge regarding the presence and behavior of bats in offshore environments is restricted by a variety of physical and logistical constraints. These constraints are largely associated with the general inability to directly observe activities of nocturnal species occurring over large expanses of open water; our limited understanding of individual bat species distributions and their movements over land; and a general lack of existing scientific inquiry on the subject to date. At the same time, certain bat activity patterns and incidences of mortality at terrestrial wind facilities are comparatively better understood. Concerns over population-wide impacts to bats associated with commercial wind facility mortality, habitat loss, and, in particular, the continued spread of White-Nose Syndrome have in the meantime prompted the US Fish and Wildlife Service to consider expanding the current list of federally protected bat species. Similarly, interest to increase our collective understanding of bat activities in offshore regions continues to expand among federal and state resource agencies as efforts intensify to develop offshore energy sources. Sufficient data exist to suggest bats migrate offshore and use islands, ships, and other offshore structures as opportunistic or deliberate stopover sites, yet many questions remain as to the seasonal frequency, extent, and type of use by various species, as well as how activity patterns such as foraging may differ from onshore locations.

OBJECTIVES: The purpose of the study was to synthesize existing information on bats and their potential interactions with offshore wind facilities relative to bat activity on land. Specific tasks included: 1) a literature review to compile and summarize available historic records, publications, and studies regarding bats' presence and behavior offshore, as well as potential impacts to bats associated with offshore wind projects, and to identify critical information gaps requiring further study; 2) a compilation

of offshore and terrestrial acoustic studies conducted within the northeastern and mid-Atlantic coastal states regions of the US; and 3) a statistical comparison of acoustic bat activity data gathered from inland, coastal, and offshore sites within that region.

DESCRIPTION: The literature review is organized by broad categories relating to the presence of bats offshore, behavior of bats offshore, and potential impacts to bats from offshore wind projects. Studies were categorized as offshore, island, and coastal as appropriate in order to make use of as much available literature as possible while maintaining focus on the offshore environment. Relevant literature and information gaps are summarized for each category.

Available acoustic data was gathered from numerous sites situated within interior inland areas and extending to the coast and offshore as far as 13 nautical miles beyond the US Submerged Lands Act boundary. Ultimately, distance from shore was defined in three discrete classes: inland, coastal, and offshore. The assembled database consisted of over 980,000 acoustic call files collected from 61 sites over 37,614 detector-nights between 2005 and 2012. After examining geographic, annual, and regional replication, data from 33 sites were ultimately used to examine whether acoustic activity patterns differed among location types. Bat activity was modeled in two ways: (1) bat presence indicated as recording at least one call in a night (nightly occurrence), and (2) number of calls recorded per detector night (nightly intensity).

SIGNIFICANT CONCLUSIONS: Bat activity was observed at all inland, coastal, and offshore survey sites, indicating bats were active offshore at least as far as the most remote detectors. Levels of observed offshore activity were comparable between migratory and non-migratory species, and migratory bats were about equally as likely to be recorded offshore as at coastal or inland sites. In contrast, non-migratory bats were less likely to be recorded at offshore sites relative to observed levels of activity at coastal and inland sites.

STUDY RESULTS: Results of these combined study efforts will contribute to the knowledge base necessary for public officials and offshore energy developers to pursue balanced decision-making in the management and development of renewable energy and alternate use projects on the federal waters of the Outer Continental Shelf. Recommendations for continued study are provided and include, among other items, an expanded geographic area of study to include Pacific and Gulf coast regions, coordinated use of additional observational tools and techniques to enhance our understanding of species' seasonal movements and behaviour patterns relative to structures such as offshore turbines, and the coordination of efforts with other ongoing (e.g., WNS) regional bat studies.

STUDY PRODUCT(S): S.K. Pelletier, K. Omland, K.S. Watrous, T.S. Peterson. 2013. Information Synthesis on the Potential for Bat Interactions with Offshore Wind Facilities – Final Report. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Headquarters, Herndon, VA. OCS Study BOEM 2013-01163. 119 pp.

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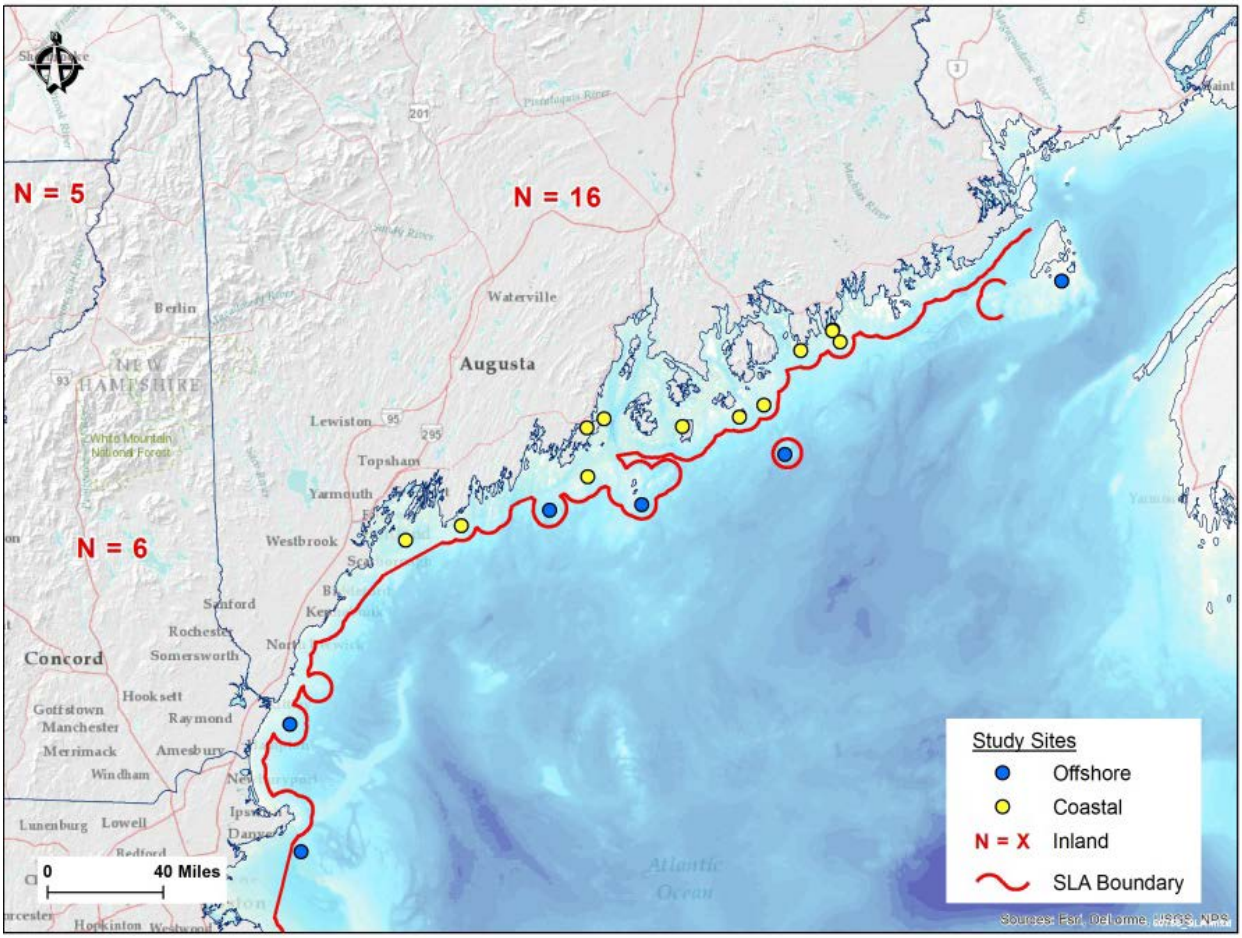
[*] P.I.'s affiliation may be different than that listed for Project Manager(s).



Coastal and offshore classifications as they relate to the SLA boundary.

Note three sites within the SLA boundary are classified as “offshore” for the purposes of this analysis. Only the most southerly ‘offshore’ location however occurs within federally regulated waters.