



Summary of Marine Mammal Monitoring Activities for Cape Wind Energy Project – Geophysical Survey 2012

Horseshoe Shoals
Nantucket Sound, Massachusetts

PREPARED FOR:

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ESS Project No. E159-505.01

January 10, 2013





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1.0 INTRODUCTION

Cape Wind Associates, LLC (CWA) proposes to build, operate, and eventually decommission a wind energy facility off the coast of Massachusetts. The proposed energy project will utilize 130 Wind Turbine Generators (WTG) on the Outer Continental Shelf (OCS) to generate electricity which will feed into the electrical grid on the eastern seaboard.

In accordance with the Marine Mammal Protection Act (MMPA), CWA obtained an Incidental Harassment Authorization (IHA) for the G&G studies required under the Renewable Energy Lease Number OCS-A 0478 with BOEM (lease) on December 20, 2011. The IHA allows CWA to take small numbers of marine mammals, by Level B harassment, and includes mitigation, monitoring, and reporting requirements that CWA must follow during the G&G activities.

The IHA requires CWA to maintain a 500m exclusion zone around the geophysical survey vessel during all survey activity that must be monitored by an onboard NMFS-approved Marine Mammal Observer (MMO) in accordance with the terms of the lease and IHA. The IHA requires additional monitoring during the investigation, beyond the 500m exclusion zone. Marine Mammal Observer resumes were submitted to the NMFS office on May 30, 2012 and NMFS provided written approval on June 5, 2012 (See Appendix A).

The report provided herein is an interim summary of marine mammal monitoring activities conducted during the summer of 2012. Due to the duration of the study, CWA found it necessary to divide the survey into two seasons. The Season 1 HRG survey comprises approximately 20% of the entire HRG scope of work required under the lease.

Season 1 was completed during the summer and early fall of 2012 and Season 2 will be conducted between the Spring and Fall of 2013.

2.0 HRG SURVEY PROGRAM OVERVIEW

The Season 1 HRG survey was conducted between July 6th and August 26th, 2012. During that time, data acquisition was conducted on 26 days and weather standby was incurred on 25 days, for a total duration of 51 days. The survey was conducted from a 36-foot aluminum cat-hull survey vessel (R/V Taku) with a 3.5 foot draft. Survey activity was generally conducted when wind speeds were less than fifteen knots and waves were three feet or less.

The Season 1 HRG survey was designed with a focus on surveying through each WTG location along the columns and rows of the wind farm layout (see Figure 1). Planned tracklines were oriented in a grid-pattern that connects WTGs in a NW/SE and E/W. For each NW/SE oriented column of WTGs, five tracklines centered on the WTG location and offset by 30 meters in the E/W direction (two to the East and two to the West). During the investigation a total of 459 nautical miles of trackline data was acquired.

The survey equipment used during the investigation is presented in Table A. Cape Wind's contractor utilized surveying equipment that complied with applicable equipment noise standards of the U.S. Environmental Protection Agency and utilized equipment that had noise control devices no less effective than those provided on the original equipment.

Table A Equipment Deployed During the Season 1 HRG Survey

Type of Equipment	Manufacturer / Model	Frequency (kilohertz)
Multibeam Depth Sounder	R2 Sonic 2024	200 – 400 kHz
Side Scan Sonar	EdgeTech Model 4225	120 and 410 kHz
Shallow-Penetration Subbottom Profiler (chirper)	EdgeTech 216S	2-16 kHz
Medium-Penetration Subbottom Profiler (boomer)	Applied Acoustics (dual plate) boomer	0.3-14 kHz
Magnetometer	SeaSPY	N/A

3.0 PROTECTED SPECIES MONITORING ACTIVITIES

Three types of protected species monitoring was conducted during the survey. Once per month (including one prior to the start of survey work), a site-wide monitoring event was conducted whereby an MMO would transit the entire Project Area and document any species present and behavioral information. During the survey an MMO was posted on board the survey vessel every day to monitor the exclusions zone. Twice per week a second MMO was posted on board the survey vessel to monitor behaviors of any marine mammals in the area.

In addition to the MMO activities, the IHA required CWA to measure the sound levels associated with the survey equipment in order to verify the levels reported in the IHA application. The field measurement program was conducted by Jasco Applied Science on July 6 and 7, 2012. The field study showed that the actual sound pressure levels from the seismic sources (chirp and boomer) dissipated to below 160 dB (Level B Harassment Threshold) within 12 meters of the instrument and had source levels below 180 dB (Level A Harassment Threshold).

In accordance with the CWA Incidental Harassment Authorization (IHA) issued (12/20/11) pursuant to section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 et seq.) and the Bureau of Ocean Energy Management (BOEM) Renewable Energy Lease (OCS-A 0478); a National Marine Fisheries Service (NMFS) approved Marine Mammal Observer (MMO) was onsite throughout the duration of Season 1 of seismic survey, to monitor for any incidental taking of marine mammals. Throughout the survey MMO coverage was in place at all times, following guidelines specified in the IHA (2011) and BOEM Lease (2010) ensuring that a 500 meter exclusion zone was maintained. To effectively secure the exclusion zone and perform MMO duties marine binoculars, range finders, compasses, and GPS units were utilized.

Additionally to further increase the knowledge of marine mammals in Nantucket Sound and the potential effects due to survey activities, an additional authorized MMO sailed on the survey vessel twice every 7 survey days. The second MMO’s duties were to make species presence and behavioral observations on protected species outside the 500 meter exclusion zone.

4.0 MARINE MAMMAL OBSERVATIONS

Over the 26 days of the HRG survey zero marine mammal takes occurred and one deceased marine mammal was sighted. The IHA allows for the taking of a total of 877 marine mammals by level-B harassment, over the duration of the entire HRG program (see Table B).

Table B – Marine Mammal Expected Takes vs. Actual Takes

Species	Incidental Take Authorization (Level-B Harassment)	Number of Marine Mammals Observed within 500 meters of the Survey Vessel	Actual Incidental Takes (Level-B Harassment)
Minke Whale	11	0	0
Atlantic White-sided Dolphin	231	0	0
Harbor Porpoise	138	0	0
Gray Seal	398	0	0
Harbor Seal	99	1 ¹	0

¹: Seal was previously deceased (see below)

The marine mammal sighted during the survey was identified as a deceased harbor seal (*Phoca vitulina*) by two onboard MMOs and survey equipment was immediately shut down. The seal was estimated to be deceased for 24-48 hours based on signs of scavenger damage and bloating which suggest moderate decomposition (Pugliares et al. 2007). The two observers onboard concurred that the animal was not injured due to survey activities; however a 60 minute post watch was performed to ensure no other protected species were in the vicinity. In compliance with the BOEM Lease (2010) and IHA (2012) a full report was submitted on July 10, 2012 to the appropriate organizations within 24 hours of the sighting (Attached as Appendix B).

5.0 CONCLUSIONS

Throughout the survey 249 hours of single MMO coverage and 72.5 hours of double MMO coverage were completed across 850 linear kilometers. The HRG survey resulted in the sightings of one deceased marine mammal, and no incidental takes by level-B harassment.

6.0 REFERENCES

- Bureau of Ocean Energy, Management, Regulation and Enforcement (BOEM), 2010. Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf, No. OCS-A 0478, Herndon, Virginia. October 6, 2010.
- NMFS. 2010. National Marine Fisheries Service Endangered Species Act Section 7 Consultation Biological Opinion – Cape Wind Energy Project. Woods Hole MA: NMFS Northeast Regional Office.
- NMFS. December 20, 2011. National Marine Fisheries Service Incidental Harassment Authorization – Cape Wind Associates, LLC. Silver Spring, MD: Office of Protected Resources, National Marine Fisheries Service. Valid January 1, 2012 – December 31, 2012.
- Pugliares, Katie R., Andrea Bogomolni, Kathleen M. Touhey, Sarah M. Herzig, Charles T. Harry, and Michael J. Moore. *Marine Mammal Necropsy: An Introductory Guide for Stranding Responders and Field Biologists*. Tech. no. WHOI-2007-06. Woods Hole, MA: Woods Hole Oceanographic Institution, 2007. Print.

Figure



Appendix A

Marine Mammal Observer Approval Correspondence





MASSACHUSETTS
100 Fifth Avenue, 5th Floor
Waltham, Massachusetts 02451
781.419.7696

RHODE ISLAND
401 Wampanoag Trail, Suite 400
East Providence, Rhode Island 02915
401.434.5560

VIRGINIA
4410 E. Claiborne Square, Suite 334
Hampton, Virginia 23666
757.251.3790

May 30, 2012

Mr. Andy Krueger
Project Coordinator
Office of Renewable Energy Programs BOEM
381 Elden Street
Herndon, Virginia 20170

**Re: Marine Mammal Observers for NMFS Approval
Cape Wind Energy Project
Nantucket Sound**

Dear Mr. Krueger:

On behalf of Cape Wind Associates, LLC (CWA) and in compliance with the ESA Section 7 Biological Opinion issued by National Marine Fisheries Service (NMFS 12/30/2010) and the Incidental Harassment Authorization (IHA) issued by NMFS (12/10/2011) we are pleased to submit the following for approval as marine mammal observers for upcoming High Resolution Geophysical (HRG) Survey activities related to the Cape Wind Energy Project.

We are submitting a pool of eight qualified observers (see attached resumes), all of whom have worked with and been previously approved by NMFS in the past:

- Alison Griffin
- Arlo Hemphill
- Ellison Orcutt
- Mathew Robertson
- Crystal Shaw
- Kerrie Smith
- Lauren Smith
- Kate Sparks

Matt Robertson will serve as ESS' coordinator and will schedule and oversee others as needed. He will be responsible for all reporting and compliance related to marine mammal observations.

If you have any questions please contact me 781-419-7748 or torr@essgroup.com.

Sincerely,

ESS GROUP, INC.

Terry L. Orr
Senior Project Manager

C: Michelle Magliocca (NMFS Office of Protected Resources)
Rachel Pachter (CWA)





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

JUN - 5 2012

Terry L. Orr
ESS Group
100 Fifth Avenue, 5th Floor
Waltham, Massachusetts 02451

Dear Ms. Orr,

On behalf of Cape Wind Associates, LLC (CWA), and in accordance with our Biological Opinion issued on December 30, 2010, you have submitted nine resumes to us for review and approval. These observers will serve to monitor for the presence of marine mammals and sea turtles during the upcoming High Resolution Geophysical Survey activities related to the Cape Wind Energy Project. All of the candidates have been previously approved by us to work as Endangered Species Observers. As such, we approve: Alison Griffin, Arlo Hemphill, Ellison Orcutt, Mathew Roberston, Crystal Shaw, Kerrie Smith, Lauren Smith and Kate Sparks to serve as endangered species observer during the survey. This determination is based on the candidate's education, completion of classroom training in endangered species identification as well as their previous experience conducting environmental monitoring of various types of activities. It is our understanding that Matt Robertson will serve as Cape Wind's coordinator during the surveys.

We look forward to continuing to work you, CWA and the Bureau of Ocean Energy Management (BOEM), as this project continues. Should you have any questions regarding this correspondence, please contact Julie Crocker at (978) 282-8480 or by e-mail (Julie.Crocker@noaa.gov).

Sincerely,

Mary Colligan
fw Mary Colligan
Assistant Regional Administrator
for Protected Resources

CC: Pachter, CWA
Magliocca, F/PR
Hooker, BOEM

File Code: BOEM Cape Wind (2012 HRG Survey)



Appendix B

7/10/12 Notification of Dead Seal Encounter





MASSACHUSETTS
100 Fifth Avenue, 5th Floor
Waltham, Massachusetts 02451
p 781.419.7696

RHODE ISLAND
401 Wampanoag Trail, Suite 400
East Providence, Rhode Island 02915
p 401.434.5560

VIRGINIA
4410 E. Claiborne Square, Suite 334
Hampton, Virginia 23666
p 757.251.3790

July 11, 2012

Michael Payne
Chief of Permits and Conservation Division
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Spring, Maryland 20910

**Re: Cape Wind Energy Project Discovery of a Dead Pinniped During High Resolution Geophysical Survey Activity on July 10, 2012 within Nantucket Sound, Massachusetts and the Atlantic Outer Continental Shelf
ESS Project No. E159-504.01**

Dear Mr. Payne:

A single deceased pinniped was discovered in Nantucket Sound at 4:36pm local time on July 10, 2012 during the high resolution geophysical survey operation being conducted on behalf of the Cape Wind Energy Project. This letter and attachments are being submitted in compliance with Cape Wind's Incidental Harassment Authorization (IHA).

The on board Marine Mammal Observer (MMO) discovered one dead pinniped, drifting counter current to the vessel, 20-25m off the port side. The animal was bloated and appeared to have been dead for at least 24 hours. The crew stopped firing acoustics following instructions from the MMO. This stop coincided with the end of the work day, so surveys did not resume after this point. Following shut down, the vessel approached the seal carcass for inspection. The specimen was a small individual with numerous black spots. A positive identification was made as harbor seal, *Phoco vitulina*. The head of the specimen was detached and missing, and loose cartilage and skin around the neck and rear flippers showed signs of scavenger feeding.

Photos of the seal carcass are attached along with the MMO sighting log and a figure indicating the location of the seal carcass at the time it was discovered. In accordance with the IHA, survey activities are ongoing while NMFS reviews the circumstances of the incident.

Sincerely,

ESS GROUP, INC.

Scott Lundin
Project Scientist

Attachments

C: Rachel Pachter, Cape Wind Associates
Michelle Magliocca, NMFS
Mendy Garron, NMFS

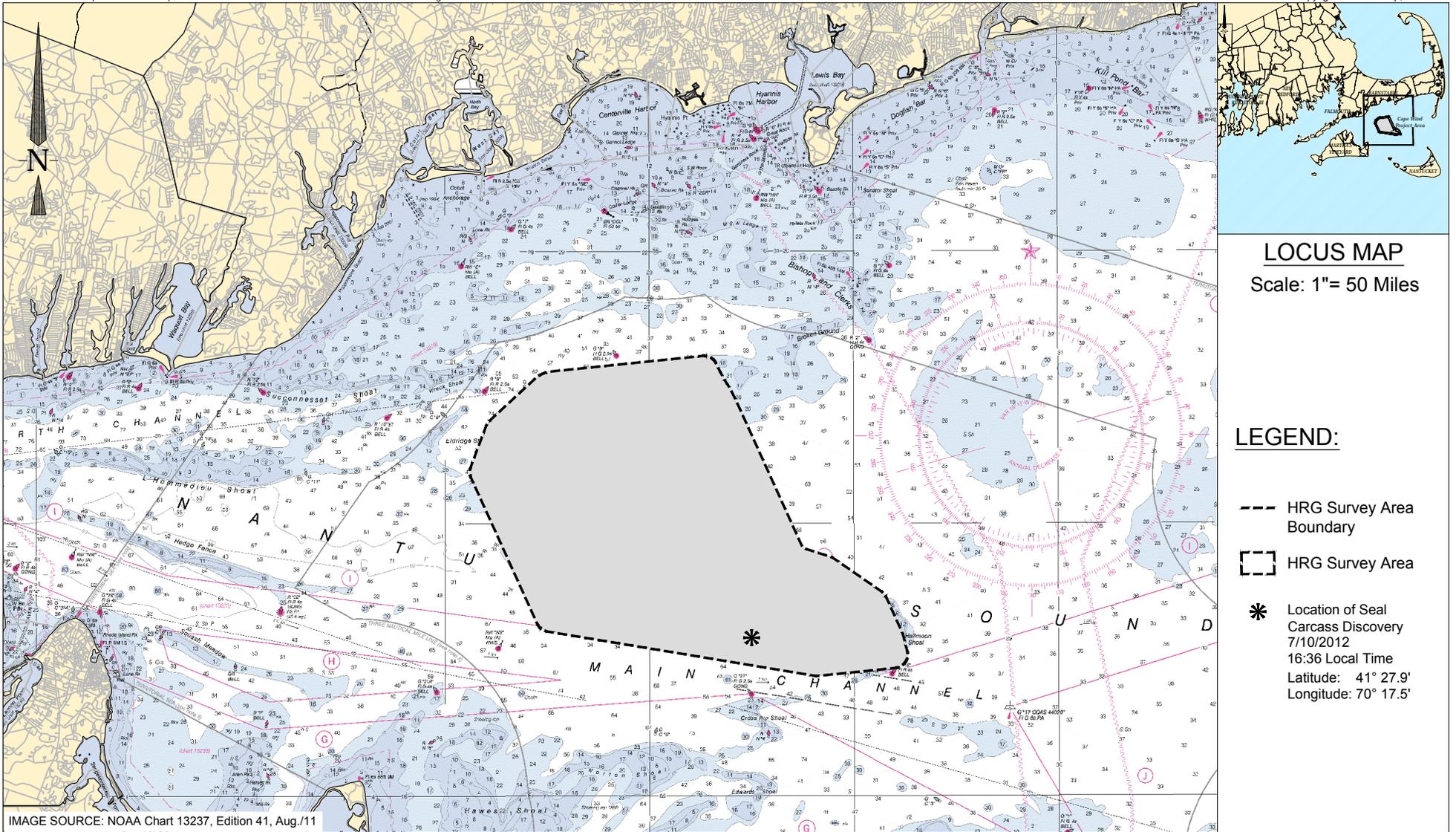


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environmental consulting & engineering services

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**Protected Species Sighting Log
Cape Wind Project**

Observer Name	Arlo Hemphill
Date (mm/dd/yyyy)	7/10/2012
Page #	1 <input type="checkbox"/> of <input type="checkbox"/>

EVENT #	TIME	LATITUDE (dd mm.m)	LONGITUDE (dd mm.m)	HEADING	SPEED (kts)	WAVE HGT (ft)	WEATHER (code)	WIND SPEED/DIRECTION	SURVEY ACTIVITY/# STOPS	SPECIES NAME	# OF SPECIES	DIST-ANCE (m)	ANIMAL BEHAVIOR/HEADING	COMMENTS: ANIMAL DESCRIPTION, INCLUDE ANIMAL CONDITION, AND REACTION TO SURVEY (additional space below)
START	603 703	41 32.31	70 18.1	S, 180	4.1	<1	clear	5 SSW	Acoustic Survey					
END	1636 1736	41 27.9	70 17.5	N, 360	3.8	1-2	clear	8 SW						
1	1636	41 27.9	70 17.5	S, 180	3.8	1-2	clear	8 SW		Phoca vitulina	1	20-25	dead, floating 120	See Below

-description of incident :

MMO observed one dead pinniped drifting counter current to the vessel, 20-25m off the port side. The animal was bloated and appeared to have been dead for at least 24 hours. The crew stopped firing acoustics following instructions from the MMO. This stop coincided with the end of the work day, so surveys did not resume after this point. Following shut down, the vessel approached the seal carcass for inspection. The specimen was a small individual with numerous black spots. A positive identification was made as harbor seal, Phoco vitulina. The head of the specimen was detached and missing, and loose cartilage and skin around the neck and rear flippers showed signs of scavenger feeding. The seal is believed to have been a younger individual, possibly having died in a fishing net, a prop strike or shark attack. MMO was instructed to file a report to ESS, who would then contact the relevant reporting bodies per the IHA.

WEATHER CODES	ADDITIONAL COMMENTS (additional space on back used Y/N _____)
Clear Drizzle Partly Cloudy Fog or thick haze Continuous layers of clouds Other. Describe in COMMENTS Thunderstorms Rain	



