MARINE MAMMAL COMMISSION

31 March 2014

Ms. Jolie Harrison, Supervisor
Incidental Take Program
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by Lamont-Doherty Earth Observatory (LDEO), in collaboration with the National Science Foundation (NSF), seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA) to take small numbers of marine mammals by harassment. The taking would be incidental to a marine geophysical survey to be conducted off New Jersey from June–July 2014. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 17 March 2014 notice announcing receipt of the application and proposing to issue the authorization, subject to certain conditions (79 Fed. Reg. 14780).

Some issues raised in previous letters regarding geophysical surveys reflect Commission concerns that apply more broadly to incidental take authorization applications beyond LDEO's proposed application. The Commission has recommended numerous times that NMFS adjust density estimates using some measure of uncertainty when available density data originate from different geographical and temporal scales and formulate policy or guidance regarding a consistent approach for how applicants should incorporate uncertainty in density estimates. NMFS has indicated that it is currently evaluating available density information and is working on guidance that would outline a consistent approach for addressing uncertainty in specific situations where certain types of data are or are not available (78 Fed. Reg. 57354). Further, the Commission has recommended that NMFS follow a consistent approach of requiring the assessment of Level B harassment takes for specific types of sound sources (e.g., sub-bottom profilers, echosounders, side-scan sonar, and fish-finding sonar) by all applicants who propose to use them. NMFS has indicated that it is evaluating the broader use of those types of sources to determine under what specific circumstances requests for incidental taking would be advisable (or not) and also is working on guidance that would outline a consistent approach for addressing potential impacts from those types of sources (78 Fed. Reg. 57354). The Commission is unsure of the status of the guidance documents but would welcome an opportunity to meet with NMFS to review the higher-level recommendations, as well as those specific to LDEO's application.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service—

- require LDEO to re-estimate the proposed exclusion and buffer zones and associated takes of marine mammals using site-specific parameters (including at least sound speed profiles, bathymetry, and sediment characteristics) for the proposed incidental harassment authorizations—NMFS should impose the same requirement for all future incidental harassment authorizations submitted by LDEO, NSF, Antarctic Support Contract (ASC), U.S. Geological Survey (USGS), Scripps Institution of Oceanography (Scripps), or any other related entity;
- require LDEO to estimate the numbers of marine mammals that could be taken based on the total ensonified area in any given day multiplied by 30 and the applicable densities; and
- consult with the funding agency (i.e., NSF) and individual applicants (e.g., LDEO, ASC, Scripps, and USGS) to develop, validate, and implement a monitoring program that provides a scientifically sound, reasonably accurate assessment of the types of marine mammal takes and the actual numbers of marine mammals taken—the assessment should account for applicable g(0) and f(0) values.

BACKGROUND

LDEO proposes to conduct a high-energy, 3D geophysical survey 25 km offshore of New Jersey from 39.3 to 39.7º N and 73.2 to 73.8º W. The purpose of the proposed survey is to collect and analyze data on the arrangement of sediments deposited during times of changing global sea level from roughly 60 million years ago to present. The survey would be conducted in waters estimated to be 30 to 75 m in depth with approximately 4,900 km of tracklines. LDEO would use the R/V *Marcus G. Langseth* to operate a four- and eight-airgun array (nominal source level of up to 253 dB re 1μPa at 1 m (peak-to-peak) with a maximum discharge volume of 700 or 1,400 in^3, respectively) at 4.5 or 6 m depth, respectively. The arrays would be used in an alternating (flip-flopping) firing sequence. The *Langseth* also would tow four hydrophone streamers, 3,000 m in length, during the survey. In addition, LDEO would operate a 10.5- to 13-kHz multibeam echosounder, a 3.5-kHz sub-bottom profiler, and a 75-kHz Acoustic Doppler Current Profiler (ADCP) continuously throughout the survey. The survey is expected to last for 30 days.

NMFS preliminarily has determined that, at most, the proposed activities would result in a temporary modification in the behavior of small numbers of up to 26 species of marine mammals and that any impact on the affected species would be negligible. NMFS does not anticipate any take of marine mammals by death or serious injury. It also believes that the potential for temporary or permanent hearing impairment will be at the least practicable level because of the proposed mitigation and monitoring measures. Those measures include monitoring exclusion and buffer zones and using power-down, shut-down, and ramp-up procedures. In addition, the Observatory would shutdown the airguns immediately if and when a North Atlantic right whale is sighted, regardless of the distance from the *Langseth*. Ramp-up procedures would not be initiated until the right whale has not been seen at any distance for 30 minutes.

Staff members from the NSF, NMFS, USGS, LDEO, and the Commission met in March 2013 to discuss some of the Commission's ongoing concerns regarding the potential effects of geophysical surveys. Although a number of concerns were discussed and several resolved, the following paragraphs highlight areas that, in the Commission's view, warrant further attention.

RATIONALE

Uncertainty in estimating exclusion and buffer zones

The Commission continues to have concerns regarding the method used to estimate exclusion and buffer zones and the numbers of takes for NSF-funded geophysical research. These concerns date back to 2010 (please refer to the Commission's 12 March, 19 April, and 24 June 2013 and 30 January 2014 letters for detailed rationale). Briefly, LDEO conducts acoustic modeling for NSF-funded geophysical research. For at least 6 years (and likely more than the last 10 years), LDEO has estimated exclusion and buffer zones (based on Level A and B harassment, respectively) using a simple ray trace–based modeling approach that assumes spherical spreading, a constant sound speed, and no bottom interactions (Diebold et al. 2010). That model does not incorporate environmental characteristics of the specific study area including sound speed profiles and refraction within the water column, bathymetry/water depth, sediment properties/bottom loss, or absorption coefficients. However, LDEO believes that its model generally is conservative when compared to in-situ sound propagation measurements of the R/V *Maurice Ewing*'s arrays (i.e., 6-, 10-, 12-, and 20-airgun arrays) and the R/V *Langseth*'s 36-airgun array from the Gulf of Mexico (Tolstoy et al. 2004, Tolstoy et al. 2009, Diebold et al. 2010[1]). LDEO also notes the model is most directly applicable to deep water (> 1,000 m). Diebold et al. (2010) noted the limited applicability of LDEO's model when sound propagation is dependent on water temperature, water depth, bathymetry, and bottom-loss parameters, all of which are of concern for a survey in water depths as shallow as 30 m. They further indicated that modeling could be improved by including realistic sound speed profiles within the water column. In addition, Tolstoy et al. (2009) acknowledged that sound propagation depends on water depth, bathymetry, and tow depth of the array and that sound propagation varies with environmental conditions and should be measured at multiple locations.

LDEO has stated that empirical data for shallow water (< 100 m) indicated that the model underestimated actual received levels. For previous applications, LDEO has applied correction factors to the distances reported by Tolstoy et al. (2009) for shallow-water depths (76 Fed. Reg. 6430, 61463). Those factors ranged from 1.7 to 5.2 times greater than the distances in deep water, which have been applied to derive appropriate shallow-water zones from the modeled radii for the *Langseth's* 18-airgun array (Tolstoy et al. 2009). Rather than adjust the modeled distances using that same method for the proposed incidental harassment authorization, LDEO applied correction factors (or a scaling approach) to empirical shallow-water zones[2] based on modeled deep-water zones for the various arrays[3]. The Commission is unsure why LDEO would assume that the ratio of modeled zones in deep water would equate to empirical zones in shallow water, as those two quantities are not comparable and LDEO itself indicated that the model underestimated received levels in shallow water. Nevertheless, the new approach effectively reduced the zones for the

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[1] Diebold et al. (2010) also presented data on the 18-airgun array from the Gulf of Mexico.

[2] LDEO used the empirical values from an 18-airgun array in shallow water and also assumed that the sound pressure level (rms; SPL_{rms}) values were 10 dB greater than sound exposure level (SEL) values. However, Tolstoy et al. (2009) indicated that the difference between SPL_{rms} and SEL values were highly dependent on water depth, specifically the difference in shallow water was approximately 8 dB. Therefore, the exclusion and buffer zones likely were underestimated because of inaccurate received levels as well as methodological deficiencies.

[3] LDEO compared the deep-water modeled values of the 4- and 8-airgun array to the 18-airgun array using accuracy out to the ten-thousandths, which is not appropriate for LDEO's simplistic model in two entirely different environments.

mitigation airgun from 150 to 21 m for the 190-dB re 1 μPa threshold, 296 to 100 m for the 180-dB re 1 μPa threshold, and 1,050 to 995 m for the 160-dB re 1 μPa threshold (see Table 2 in 77 Fed. Reg. 25966, Table 1 in 76 Fed. Reg. 41463, Table 1 in 76 Fed. Reg. 26255, and Table 1 in 76 Fed. Reg. 6430). The new approach would likely reduce the applicable zones for the other airgun arrays proposed for use as well. Tolstoy et al. (2009) verified that in shallow water, sound is expected to reverberate in the water column and upper seafloor, therefore, sound propagation in shallow water would be highly dependent on local seafloor geology[4]—not scaling factors based on modeled results in deep water. Further, although calibration experiments for both the *Ewing* and *Langseth* occurred in the Gulf of Mexico, Tolstoy et al. (2009) also indicated that data differences between the two studies at shallow-water depths may have been attributed to site-specific differences. All these shortcomings reinforce the Commission's ongoing concerns regarding the estimation of exclusion and buffer zones for NSF-funded geophysical surveys.

Those concerns are based primarily on the failure to test and verify the use of LDEO's model under the specific environmental conditions that would be encountered with each survey. For that reason, the Commission has recommended that NMFS or the relevant entity estimate exclusion and buffer zones using either empirical measurements from the particular survey site <u>or</u> a model that accounts for the conditions in the proposed survey area. The model should incorporate operational parameters (e.g., tow depth, source level, number/spacing of active airguns) and site-specific environmental parameters (e.g., sound speed profiles, refraction in the water column, bathymetry/water depth, sediment properties/bottom loss, and wind speed). In March 2013, LDEO indicated that it might be able to compare its model to hydrophone data collected during previous surveys in environmental conditions other than those in the Gulf of Mexico[5] (i.e., deep and intermediate waters in cold water environments that may have surface ducting conditions, shallow-water environments, etc.). The Commission understands that LDEO has been analyzing hydrophone data from waters off Washington to compare to the estimated exclusion and buffer zones, but LDEO does not seem to use that method for the current proposed authorization. The Commission encourages LDEO to make such comparisons using those methods to estimate its zones at various sites, not just in waters off Washington. The Commission recommended in its 24 June 2013 letter that those comparisons be made prior to the submittal of applications for geophysical surveys to be conducted in 2014. The Commission further recommended that if LDEO and NSF either do not have enough data to compare LDEO's model to other environments or do not assess the accuracy of the model, then they should re-estimate the exclusion and buffer zones and associated takes of marine mammals using site-specific parameters (including sound speed profiles, bathymetry, and bottom characteristics) for all future applications that use LDEO's model. Neither approach was used for the proposed incidental harassment authorization.

NMFS has indicated that NSF, LDEO, and other relevant entities (USGS, Scripps) are providing sufficient scientific justification for their take estimates. The Commission disagrees with this conclusion, given that the estimates are based on LDEO's model or empirical measurements in

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[4] Tolstoy et al. (2009) further indicated that empirical data confirm significantly different propagation loss rates in shallow and deep water as previously observed for the R/V *Ewing* (Tolstoy et al., 2004), with lesser propagation loss rates in shallow water.

[5] Diebold et al. (2010) supported such an approach, stating that streamer data can provide an accurate assessment of SELs at the relevant ranges for mitigation in shallow-water environments (≤ 100 m). They further indicated it seems logical and advantageous that those data be monitored in real time to fine tune a priori mitigation zones in shallow-water environments.

the Gulf of Mexico, while recent activities would occur in other areas such as the North Atlantic and the Antarctic. Environmental conditions in waters of the continental shelf off New Jersey indicate a surface duct at 50 m, in-water refraction, and bathymetry and sediment characteristics that reflect sound[6]. None of these site-specific parameters are accounted for in LDEO's model.

In a recent sound exposure modeling workshop that was attended by numerous entities (NMFS, NSF, LDEO, USGS, and the Commission), experts confirmed that sound speed profiles and bathymetry/sediment characteristics were the most important factors affecting underwater sound propagation and should be included in related modeling. While LDEO presented various aspects of its model during the workshop and indicated that the model was fast, inexpensive, and simple to use, none of those attributes support its applicability or accuracy. Further, LDEO indicated that the model is more closely related to a source model that compares airgun arrays and that it is not representative of modeling in the actual environment. Therefore, the Commission remains concerned that the LDEO model is not based on best available science and does not support its continued use. For all of these reasons, the Commission recommends that NMFS require LDEO to re-estimate the proposed exclusion and buffer zones and associated takes of marine mammals using site-specific parameters (including at least sound speed profiles, bathymetry, and sediment characteristics) for the proposed incidental harassment authorizations—NMFS should impose the same requirement for all future incidental harassment authorizations submitted by LDEO, NSF, ASC, USGS, Scripps, or any other related entity.

A few years ago, NSF and USGS modeled sound propagation under various environmental conditions in their programmatic environmental impact statement for geophysical surveys worldwide. LDEO and NSF (in cooperation with Pacific Gas and Electric Company) also used a similar modeling approach in the recent incidental harassment authorization application and associated environmental assessment for a geophysical survey of Diablo Canyon in California (77 Fed. Reg. 58256). These recent examples indicate that LDEO, NSF, and related entities are able to implement the recommended modeling approach, if required to do so by NMFS. The Commission understands the constraints imposed by the current budgetary environment, but notes that other agencies that contend with similar funding constraints incorporate modeling based on site-specific parameters. LDEO, NSF, and related entities (ASC, USGS, Scripps) should be held to that same standard.

Enumerating takes for surveys in a small area

To determine the numbers of marine mammals that could be taken incidental to the proposed geophysical survey, LDEO multiplied the total ensonified area of 2,502 km^2 (which includes a 25 percent contingency) by the applicable densities. However, LDEO would be conducting the survey, consisting of 4,900 km of tracklines (spaced 150 m apart), in an area of 12 by 50 km. The survey would occur in that small area for approximately 30 days, 24 hours per day. At the March 2013 meeting, the Commission discussed with NMFS and the other relevant entities the fact that a simple area*density method is not appropriate in such circumstances. Rather, the applicant should be determining the total ensonified area in a given day, which then should be multiplied by the number of survey days (30) and the applicable densities. Otherwise, the method

[6] NSF and USGS's programmatic environmental impact statement for geophysical surveys included environmental data from the continental shelf close to the proposed survey.

LDEO used in the current request (and has used in the past) very likely underestimated the numbers of marine mammals that could be taken. Therefore, the Commission recommends that NMFS require LDEO to estimate the numbers of marine mammals that could be taken based on the total ensonified area in any given day multiplied by 30 and the applicable densities.

Monitoring measures

In previous letters, the Commission has indicated that monitoring and reporting requirements should provide a reasonably accurate assessment of the types of taking and the numbers of animals taken by the proposed activity. Those assessments also should account for animals at the surface but not detected and for animals present but underwater and not available for sighting, which are accounted for by g(0) and f(0) values. Those adjustments are essential for making accurate estimates of the numbers of marine mammals taken during surveys. To be useful, the corrections should be based on the ability of the protected species observers to detect marine mammals rather than a hypothetical optimum derived from scientific studies (e.g., from NMFS's shipboard surveys). Therefore, the Commission again recommends that NMFS consult with the funding agency (i.e., NSF) and individual applicants (e.g., LDEO, ASC, Scripps, USGS) to develop, validate, and implement a monitoring program that provides a scientifically sound, reasonably accurate assessment of the types of marine mammal takes and the actual numbers of marine mammals taken—the assessment should account for applicable g(0) and f(0) values. NMFS indicated that it was working to develop recommendations for how applicants can correct marine mammal detections appropriately to better estimate the number of animals likely taken during specified activities, considering those that are not detected (79 Fed. Reg. 14219, 78 Fed. Reg. 57354). The Commission encourages NMFS to consult with the Commission and NMFS scientists before finalizing such recommendations.

The Commission is grateful for the opportunity to provide comments on the application submitted by LDEO. Please contact me if you have questions concerning the Commission's recommendation.

Sincerely,

Rebecca J. Lent

Rebecca J. Lent, Ph.D.
Executive Director

References

Diebold, J.B., M. Tolstoy, L. Doermann, S.L. Nooner, S.C. Webb, and T.J. Crone. 2010. R/V *Marcus G. Langseth* seismic source: Modeling and calibration. Geochemistry, Geophysics, Geosystems 11(12), Q12012, doi:10.1029/2010GC003126.

Tolstoy, M., J. Diebold, S.C. Webb, D.R. Bohenstiehl, E. Chapp, R.C. Holmes, and M. Rawson. 2004. Broadband calibration of the R/V *Ewing* seismic sources. Geophysical Research Letters 31, L14310, doi:10.1029/2004GL020234.

Tolstoy, M., J. Diebold, L. Doermann, S. Nooner, S.C. Webb, D.R. Bohenstiehl, T.J. Crone, and R.C. Holmes. 2009. Broadband calibration of R/V *Marcus G. Langseth* four-string seismic sources. Geochemistry, Geophysics, Geosystems 10, Q08011, doi:10.1029/2009GC002451.

Clean Ocean Action · Oceana · The Ocean Foundation · Natural Resources Defense Council · Center for Biological Diversity · Alaska Inter-Tribal Council · International Game Fish Association · Cetacean Society International · Whale and Dolphin Action League · Surfrider Foundation · League of Women Voters of New Jersey · American Littoral Society · Hands Across the Sand · New Jersey Sierra Club · Fisherman's Dock Cooperative · Natural Resources Protective Association · Surfers' Environmental Alliance · WATERSPIRIT · SandyHook SeaLife Foundation · Lenape Nation PA · CWA Local 1075 · Paddleout.org · reEarth · Clean Water Action · Association of NJ Environmental Commissions · Asbury Park Fishing Club · Save Barnegat Bay · Concerned citizens

March 25, 2014
Revised with additional signatures: April 2, 2014

Via electronic mail sent to ITP.Cody@noaa.gov
Ms. Jolie Harrison
Supervisor, Incidental Take Program
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910

RE: Request for a 60-day extension on the comment period for Takes of Marine Mammals Incidental to Specified Activities; Marine Geophysical Survey in the Northwest Atlantic Ocean Offshore New Jersey, May to August 2014 (RIN 0648-XD141)

Dear Ms. Harrison,

On behalf of groups listed below, we are requesting a 60-day extension to the public comment period for the National Marine Fisheries Service (NMFS) proposed Incidental Harassment Authorization for takes of marine mammals incidental to conducting a marine seismic survey in the northwest Atlantic Ocean off the New Jersey coast. We are also requesting that a public hearing be held in New Jersey prior to the conclusion of the comment period, so that those potentially affected by this activity can become better informed and given an opportunity to comment.

Any proposal to perform seismic surveys off the coasts of New Jersey and New York is a matter of significant public import. Seismic surveys may threaten significant harm to marine mammals, be they whales, dolphins, porpoises or seals. And, as NMFS is certainly aware, seismic testing is the first step towards offshore drilling. Accordingly, the public should be afforded the adequate time and opportunity to take a hard look at the proposed seismic survey.

In addition, the groups listed below require additional time to review the reports referenced in the proposed authorization, including a 2013 draft Environmental Assessment (EA) and a 2011 final Programmatic Environmental Impact Statement (PEIS), as well as to conduct background

research into all aspects of the proposal, including the study purpose, goals, and implications for scientific understanding. Given the proposed seismic survey area is located within 15.5 miles of the Jersey Shore, the groups further intend to review the potential for nearshore impacts. Therefore, we the undersigned require a 60-day extension in order to conduct such a review.

We would welcome an opportunity to discuss this matter with you or your staff at your convenience. For further discussion, please contact Cindy Zipf at Clean Ocean Action at 732.872.0111 or zipf@cleanoceanaction.org.

Thank you for your consideration of our requests and we look forward to hearing from you.

Sincerely,

Cindy Zipf
Executive Director
Clean Ocean Action

Claire Douglass
Climate Campaign Director
Oceana

Richard Charter
Coastal Coordination Program
Senior Fellow
The Ocean Foundation

Michael Jasny
Director, Marine Mammal Protection
Natural Resources Defense Council

Miyoko Sakashita
Oceans Director, Senior Attorney
Center for Biological Diversity

Delice Calcote
Executive Director
Alaska Inter-Tribal Council

Rob Kramer
President
International Game Fish Association

Taffy Williams
Director / Board Member
Cetacean Society International
Whale and Dolphin Action League

John Weber
East Coast Regional Manager
Surfrider Foundation

Toni Zimmer
President
League of Women Voters of New Jersey

Tim Dillingham
Executive Director
American Littoral Society

Dede Shelton
Director of Operations/ Executive Director
Hands Across the Sand

Jeff Tittel
Director
New Jersey Sierra Club

Captain Jim Lovgren
Director
Fisherman's Dock Cooperative, Point Pleasant Beach, NJ

James Scarcella
Trustee
Natural Resources Protective Association

Richard Lee
Executive Director
Surfers' Environmental Alliance

Sr. Suzanne Golas, csjp
Director
WATERSPIRIT

Mary M. Hamilton
Executive Director
SandyHook SeaLife Foundation

Shelley Depaul
Lenape Nation PA

Tom Fagan
Treasurer
CWA Local 1075

Scott Thompson
Paddleout.org

Sam Duncombe
Founder
reEarth

Dave Pringle
NJ Campaign Director
Clean Water Action

Sandy Batty
Executive Director
Association of NJ Environmental Commissions

Bill Feinberg
Secretary
Asbury Park Fishing Club

Britta Wenzel
Executive Director
Save Barnegat Bay

Ada Brunner
Concerned Citizen

Barbara Bennett
Concerned Citizen

Elizabeth S. Sorensen
Concerned Citizen

cc: Open letter
New Jersey Congressional Delegation
Governor Chris Christie

Princeton University Department of Geosciences
Guyot Hall, Princeton, New Jersey 08544
Telephone: Direct 609 258-4106
Fax 609 258-1274
E-mail linc@princeton.edu

ITP.Cody@noaa.gov

To: Jolie Harrison, National Marine Fisheries Service
From: Lincoln S. Hollister, Emeritus Professor and Senior Geologist, Princeton University
Subject: 0648-XD141
April 5, 2014

This is a comment on the "Draft Environmental Assessment of a Marine Geophysical Survey by the R/V Marcus G.*Langseth* in the Atlantic Ocean off New Jersey, June-July 2014."

Data from the survey will lead to understanding the effects of sea level change as recorded in sediment deposited on the continental margin of NJ. The survey will be done by a group of scientists, students, and technicians from three universities and will be supported by the National Science Foundation (NSF).

The letter from Clean Ocean Action, an environmental non government organization (eNGO), and signed by 24 other groups and individuals, asks for a 60-day extension in the public comment period in order to give the groups more time to review the science rationale and the environmental impacts of the proposed survey.

The requested delay is not warranted. The science has been reviewed by the incredibly rigorous peer review system of NSF. Furthermore, there are no scientists on the staffs of the eNGOs who have the expertise to properly evaluate the scientific basis of the proposed survey. The environmental impacts (or lack thereof) are explained in the documents, with references to the extensive bibliography. These documents have been reviewed by the national eNGOs for previous applications that planned to use the NSF-supported R/V Langseth. The national eNGOs don't need to start a new environmental review from scratch; they need to respect the data we have. As for local eNGOs, it is unreasonable to think that they can muster an independent review that can substitute for decades of study and observation on the effects of seismic surveys on marine life.

Based on the history of interaction between eNGOs and marine seismic surveys, it is clear that the purpose of the requested delay is to stop the proposed survey. This mirrors a strategy used by several of the signers of the letter. Stopping such a survey is particularly damaging, not just for basic understanding on which to build public policy, but also for academic groups. University-based science is severely set back by such delays. Students don't get the data they need to pursue their theses; professors don't get the publications needed to sustain their research programs. Most importantly, new data and ideas pertaining to the effects of sea level change will be lost.

The concern that oil and gas companies will somehow benefit from the survey and lead to oil and gas development off the NJ shore represents irresponsible paranoia, which is flamed by a couple of the signers of the letter.

I have had experience in dealing with marine seismic surveys and eNGOs. I was lead PI on a hugely successful seismic survey in the inland waterways of British Columbia. It was called ACCRETE and was done in 1994 with airguns 10 times more powerful than those to be used on the NJ project. We had observers on board and monitored the effects of the airguns on marine life. There were none. But, when we tried to do a similar project in 2005 (called Batholiths), which was based on discoveries we made in 1994, we were stopped by national eNGOs who conducted a campaign of disinformation that misled the local eNGOs. Political pressure from the local eNGOs led the Canadian federal government to deny permits for Batholiths. In getting Batholiths cancelled, the eNGOs ignored the observations from ACCRETE. They claimed we were a front for oil and gas, although there were no sediments under the ship track! They kept up their claim because they did not recognize the difference between sedimentary and igneous rocks, nor did they understand that oil and gas do not occur in igneous rocks. Nor did they accept that our data would be useless for oil and gas exploration.... no commercial use was ever made of the ACCRETE data. The small, local eNGOs were taken in by the dishonestly reported data. The loss to science because we could not get the data was immeasurable. The careers of students and young scientists were interrupted and some had to leave a career path in science.

If the proposed delay were granted it would mean the ceding of science and environmental review to organizations that do not have the science expertise to do the reviews. The result of delay would be to stop a project that will aid our efforts toward understanding the effects of sea level change.

Sincerely,

Lincoln S. Hollister
Professor Emeritus and Senior Geologist, Princeton University

dmandch@aol.com Apr 13

to ITP.Cody

I am strongly opposed to noise pollution in our oceans. I believe that new approaches to research need to be developed that will permit scientific mapping of the oceans without seismic events. Mariane animals are very sensitive to seismic noises. In fact a marine animals can lose its ability to function including mating, feeding and protecting itself without its hearing.

We have for too long taking the liberty of filling the oceans with noise. We need to change this philosophy. We should no longer provide incidental take to ocean noise activities. Marine animals, particularly those large mammals that rely so extensively on their should receive the highest level of protection.

Please deny this take permit.

Regards,
Drew Martin
500 Lake Ave. #102
Lake Worth, Fl. 33460

CORY A. BOOKER
NEW JERSEY

HART BUILDING
WASHINGTON, DC 20510-3007
(202) 224-3224

United States Senate

April 11, 2014

Dr. Kathryn D. Sullivan
Administrator
National Oceanic and Atmospheric Administration
1401 Constitution Avenue, NW, Room 5128
Washington, DC 20230

Dear Administrator Sullivan:

I write today in regards to the Lamont Doherty Earth Observatory's application for an Incidental Harassment Authorization which would allow the take of marine mammals by harassment to conduct a marine geophysical survey less than 16 miles off the coast of Long Beach Island, New Jersey.

I respectfully request a 60-day extension to the public comment period so that members of the public have sufficient time to review the proposed study and environmental assessment. In addition, I respectfully request that the National Marine Fisheries Service hold a public hearing in New Jersey so that members of the community who may be impacted by the proposed study have an opportunity to comment publically on the proposal.

I am deeply concerned that seismic surveys during the peak summer season just miles off of New Jersey's coast have the potential to cause significant harm not only to marine life and habitat, but to the coastal economy as well. Allowing for seismic surveys off the coast of New Jersey sets a dangerous precedent for future efforts to explore offshore for oil and gas, something I have strongly opposed in the Mid-Atlantic region, especially off of the New Jersey coast.

I appreciate your time and attention to this matter and look forward to your response. If you have any additional questions, please do not hesitate to contact me.

Sincerely,

Cory A. Booker
United States Senator

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P.O. BOX 511
SEASIDE PARK, NJ 08752

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Jolie Harrison, Supervisor
Incidental Take Program
Permits and Conservation Division
Office of ProtectedResources
National Marine FisheriesService 1315 East-West Highway
Silver Spring, MD 20910

May 15, 2014

Dear Jolie Harrison,
Subject 0648-XD141

At this time, we, the members of the New Jersey Beach Buggy Association oppose the use of Seismic Testing in the mapping of the under lying layers of the ocean floor off the coast of New Jersey. It is not because of the needed geological information that would be gathered, but because of the lack of planning of how this would affect the total ecological system of which the geological system is only a small part.

Even though surveys have been made off the coasts of Australia (the Northern Carnarvon Bain, Australian Northwest Shelf) and the Gulf of Mexico, no references have been given or found concerning the before and after observations on mammal, fish and plant life that can not avoid the repercussions from the impact of the sound waves.

If one refers to the *Sperm Whale Seismic Study in the Gulf of Mexico* prepared by Texas A&M University in 2008, only 17 sperm whales were studied. Even though through these 17 sperm whales some avoidance patterns were observed, no conclusive results could be established. Through statistical predictions a sampling size of n=75 should be used to establish any patterns.

One of the recommendations coming out of this report has called for a delay of the actual seismic testing for a number of years to allow for further data acquisition under controlled conditions of its affect on mammal, fish and plant life.

In a review entitled **A Review of the Impacts of Seismic Airgun Surveys on Marine Life** by Dr Lindy Weigart submitted in Feb of 2014 to the CBD Expert Workshop on Underwater Noise and its Impacts on Marine and Coastal Biodiversity,

long term detriment to fish, mammal and invertebrates were discussed. Only a reference to short term study entailing a two month study (start time to written report) of the seismic testing showed no detrimental effects on bivalve mortality rate; this did not address any long term effects.

Until further studies, known or unknown, can be provided concerning the impact on the ecological system, the New Jersey Beach Buggy Association is opposed to the afore mentioned testing using the Seismic Method. We are also requesting a public hearing to be held to answer such questions as “Who be held economically liable for the future loss of the fisheries” and “Was there ever an environmental study performed for concerning other factors other than the geological information that is to be obtained”.
Thank you for your time in this matter and in the hope that the seismic testing will be delayed until a full study and review can take place.

Respectfully,

Douglas A. Taylor
Douglas A. Taylor, Corresponding Secretary

Cc: Gov Christy, NJ Governor; Commissioner Bob Martin, NJDEP; US Senator Robert Menendez, NJ; US Senator Cory Booker, NJ

MARINE TRADES
ASSOCIATION OF NEW JERSEY

May 15, 2014

Via electronic mail set to ITP.Cody@noaa.gov
Ms. Jolie Harrison
Supervisor, Incidental Take Program
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Services
1315 East-West Highway
Silver Spring, Maryland 20910

RE: Request for a rescheduling of the Takes of Marine Mammals Incidental to Specified Activities; Marine Geophysical Survey in the Northwest Atlantic Ocean Offshore New Jersey during the winter months of January and February, and no later than March.

Dear Ms. Harrison,

We are writing to you on behalf of the Marine Trades Association of New Jersey, a non-profit trade organization, representing over 300 marine related businesses, to state our objection to the proposed marine geophysical survey off the coast of New Jersey that is scheduled to begin on June 3.

This seismic testing is scheduled to occur during the peak of the recreational fishing season in New Jersey (June and July). As you may be aware, seismic surveying can disburse, injure or kill fish and marine mammals and puts at risk endangered species, such as the North Atlantic right whale. Approximately 50% of the boating population fishes, therefore the negative impacts of the study could be far reaching and have a deleterious effect on multiple industries, many of which are still reeling from the effects of Hurricane Sandy.

For these reasons, we respectfully object to the testing and ask that the project be cancelled. In the event, however, that the Administration chooses to sanction the geophysical survey, we urge you to require an alternative time period be implemented, such as the winter months of January and February, when the migration of spawning stocks that utilize the Shelf and Canyons offshore of the proposed site has concluded, and before those species begin their migration inshore. This would, hopefully, minimize impacts to our industry, our coastal fish and migratory marine mammals. Although the survey at that time of year will still have a negative impact, it is more likely to be less significant during that time.

Thank you for your consideration.

Sincerely,

Fred Brueggemann
President

Melissa Danko
Executive Director

cc: New Jersey Congressional Delegation
Governor Chris Christie
Rutgers University President Robert Barchi
Rutgers University SEBS Dean Robert Goodman
MTA/NJ Membership

2516 Highway 35, Suite 201, Manasquan, NJ 08736 | 732-292-1051 | F. 732-292-1041 | info@mtanj.org | mtanj.org

Marcus Langseth Science Oversight Committee (MLSOC)
Dr. Dale Sawyer, Chair
Professor, Department of Earth Sciences
Rice University MS-126
6100 Main Street
Houston, TX 77005
mlsoc@mail.unols.org

Jolie Harrison, Supervisor
Incidental Take Program
Permits and Conservation Division,
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
ITP.Cody@noaa.gov

May 15, 2014

Subject: *0648-XD141- Comment on "Takes of Marine Mammals Incidental to Specified Activities; Marine Geophysical Survey in the Northwest Atlantic Ocean Offshore New Jersey, May to August 2014"*

Dear Ms. Harrison:

The members of the Marcus Langseth Science Oversight Committee (MLSOC) are pleased to submit the following comments to the National Marine Fisheries Service about the application for an Incidental Harassment Authorization for the proposed 3D seismic program on the New Jersey Shelf to study sea-level rise. This 3D program uses the *R/V Marcus G Langseth*, a unique asset of the National Academic Fleet with its specially designed capabilities to conduct the proposed seismic program. MLSOC supports the NMFS commitment to science-based decisions in its regulatory process.

The MLSOC is a committee within the University National Oceanographic Laboratories System (UNOLS) and consists of a diverse group of professionals, including geophysicists, geologists, oceanographers, and marine engineers, who provide advice on the scientific operations of *R/V Langseth.* The committee's members have extensive experience in seismic operations around the world aboard *R/V Langseth*, and other seismic vessels, as well as knowledge and experience in mitigation and monitoring identified and/or required under the National Environmental Policy Act (NEPA), the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). One role of the Committee is to advise both the National Science Foundation (NSF) and the ship operator Lamont Doherty Earth Observatory (LDEO) on safe, efficient, cost-effective, and scientifically compelling operations of *R/V Langseth*.

As a U.S. research vessel, *R/V Langseth* operates entirely within the U.S. regulatory process, and, when appropriate, international laws, required for understanding and mitigating the potential impacts of sound in the environment. NEPA requires proposed agency actions (in this case, NSF, which is proposing a seismic survey) to make the best effort to avoid adverse effects, minimize them, and mitigate them as part of assessing the environmental consequences of the project. The Environmental Assessment (EA), and the associated application for an Incidental Harassment Authorization (IHA) for this 3D seismic experiment on the NJ shelf lay out the program, its potential consequences, possible alternatives, the rationale for why the proposed action is the most efficient and safe program, and mitigation measures

that would minimize any potential adverse impacts. Among the factors considered in developing the research plan are:

a. Minimum energy source size to accomplish scientific objectives
b. Mitigation and shut down procedures specific to species
c. Protected Species Visual Observers (PSVO) observations for a standard amount of time, generally 30 minutes prior to the start of the survey to clear a specified area around the vessel, and to monitor marine animal occurrence during seismic operations.
d. Startup of the energy source includes ramp-up procedures over a standard amount of time (generally 30 mins) that serves to alert animals of the activities and allows them to vacate the area if disturbed.
e. No start-up of the seismic source during poor visibility or at night unless at least one airgun has been operating.
f. PSVOs, independent biologists, have authority to shut down the seismic source when marine mammals or sea turtles are detected in or about to enter designated exclusion zones.
g. Passive Acoustic Monitoring (PAM) and infrared sensors during day and night to complement visual monitoring.
h. Additionally, the airguns would be shut down if a North Atlantic right whale were seen at any distance from the vessel.

On the NJ shelf cruise, the proponents propose to use a modest airgun array, much smaller that industry airgun arrays. This is possible because they are using two streamers only 3 km long. Industry streamers are typically 8 to 15 km length. The NJ cruise is part of the solution to innovative cruise planning for acquiring the necessary data for the scientific program with the minimum adverse impacts.

Seismic data are an essential and irreplaceable tool for scientific research in the oceans. Seismic methods are the only tool available for peering directly into the seafloor and acquiring the data necessary to advance understanding of the impact of climate change on the ocean's margins, plate tectonics, submarine landslides, and offshore faulting. Seismic data are also used to map nearshore and coastal changes from storms such as superstorm Sandy so that managers can identify areas of greatest risk to future erosion and coastal modification from these extreme events.

The NJ shelf program fits wholly within this framework and will provide invaluable data on sea level history by imaging former coastlines, rivers, and estuaries now buried beneath the sediments of the shelf. The proposed NJ shelf program uses an airgun array that is only about 10% of the size of the array typically used by industry for oil and gas exploration. Whereas oil and gas exploration requires larger seismic sources to image deep targets, the NJ shelf program is focused on shallow sediments where no oil or gas deposits occur.

If modest seismic programs such as that proposed for the NJ shelf using *R/V Langseth* are not permitted, the future of this unique national asset and the innovative research that it enables will be lost. The U.S. will have no way to investigate and study marine geologic features of critical interest to or potential geohazards along our coastlines, such as earthquakes, tsunamis, and landslides. Further, this means government officials will not be able to make informed polices to better protect its citizen, for example from earthquake or tsunami hazards, especially along populated coastline areas. If the R/V Langseth cannot operate in its own national waters to complete programs relevant to U.S. national interests, what role will science play in policies that safeguard public safety, resilience, and stability?

NSF and LDEO have followed the appropriate IHA process and have conformed with the associated requirements. Although NSF and LDEO consented, without precedent and for no scientific basis, the proposed project has been subjected to an additional 30 day public comment period (for a total of 60 days) under the MMPA IHA process. Based on the information and analysis provided by NSF and LDEO, the proposed activities meet the criteria established for issuance of an IHA. Therefore, the MLSOC urges NMFS to approve this application for an IHA.

R/V Langseth, and its predecessor, *R/V Ewing*, completed more than a decade's worth of academic/government seismic programs with the highest standards of mitigation and monitoring and without the dire, unfounded results purported by opponents of the activities (e.g., no marine mammal mass strandings). As a consequence of past activities, academic scientists have provided significant contributions to society through results which have enhanced our understanding of the Earth, Earth processes, and geohazards. Additionally, observations made by the PSVOs aboard seismic expeditions are contributing to better understanding of the distribution and behavior of marine mammals and sea turtles. We encourage NMFS – as a science based agency – to use science to make informed decisions, perform its regulatory duties, and issue IHAs in an appropriate and timely manner.

Respectfully submitted,

Dr. Dale Sawyer, Chair MLSOC
Rice University

Members:
Paul Baker, Duke University
Nathan Bangs, University of Texas at Austin
Deborah Hutchinson, U.S. Geological Survey
William Lang, Resource Access International
David Scholl, University of Alaska
Alexander Shor, University of Hawaii
Maurice Tivey, Woods Hole Oceanographic Institution

Ex-officio:
Maya Tolstoy, Lamont-Doherty Earth Observatory
Suzanne Carbotte, Lamont-Doherty Earth Observatory

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF THE DEPUTY COMMISSIONER
Mail Code 401-07
P.O. BOX 402
Trenton, NJ 08625-0402
TEL (609) 292-2908
FAX (609) 292-7695

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

May 15, 2014

Jolie Harrison, Supervisor
Incidental Take Program
Permits and Conservation Division
Office of Protected Resources, National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

RE: Comments for Takes of Marine Mammals Incidental to Specified Activities; Marine Geophysical Survey in the Northwest Atlantic Ocean Offshore New Jersey, May to August 2014
RIN 0648-XD141

Dear Ms. Harrison:

The New Jersey Department of Environmental Protection (Department) respectfully submits the following comments for the above captioned notice, located at Federal Register, Volume 79, No. 68, April 9, 2014, which expires May 16, 2014. The Federal Notice is for an Incidental Harassment Authorization (IHA) to be issued by the National Marine Fisheries Service (NMFS).

Several species of sea turtles and four species of whale, as well as other marine mammals, frequent this region. New Jersey has numerous vessels operating marine mammal boat tours that operate predominately during the summer tourism season, which this study period overlaps. New Jersey's ecotourism is a burgeoning industry that has received positive attention from environmental advocacy groups, as well as national and local media outlets. Harassment of marine mammals and a reduction in sighting potential may have a negative impact on the economic viability of this industry. In addition, when the number of dead and dying dolphins increased in 2013 due to morbillivirus infections, the State of New Jersey via its Animal Health Diagnostic Laboratory within the Department of Agriculture began providing and funding laboratory services for pathology testing of marine mammals. This effort was conducted in coordination with the Marine Mammal Stranding Center, a not-for-profit entity that was not financially equipped to afford the increased amount of testing needed. Should the proposed seismic testing result in increased marine mammal strandings in New Jersey, the impact to state financial resources will be a burden both from on-site state response needed and from any state laboratory services provided. It is reasonably foreseeable that this project is likely to affect these species and have a direct negative impact on State resources.

The IHA notice also focuses on the study's impacts to marine mammals' habitat. The Department is mindful of potential effects to marine mammal habitat not only because of the study's impact to marine mammals' food source, but also for the potential impacts to an important resource to New Jersey's recreational and commercial fishing industry. The proposed area for seismic testing off the coast of NJ extends from Barnegat Ridge to the 35 fathom line and runs in a northwest to southeast direction

intersecting fathom curves at a general perpendicular nature along its extent. The entire reach of the survey area is utilized by commercial and recreational fishermen from New Jersey and will detrimentally impact the marine harvest and economy of the State of New Jersey.

Based on NMFS data, New Jersey's fisheries, both commercial and recreational, are some of the most productive, highest grossing and employ more people than other states in the Mid-Atlantic and along the Atlantic Coast. The proposed time frame for the work, late May to August, is the time of peak abundance and fisheries activity off New Jersey. These activities will take place offshore from some of New Jersey's important fishing ports, including Barnegat Light, Atlantic City, and Point Pleasant. Based on the response of fish to high energy sound and the distance an impact is observable, this survey work may further preclude fisheries from a substantial area during peak operations key to the financial viability of our fisheries. Thus, the proposed survey would have a foreseeable effect on public access to and utilization of offshore areas, and would likely alter commercial and recreational fishing catch rates and patterns.

Data analysis of commercial and recreational landings from 1996 – 2013 indicate that this entire area is not only used by multiple commercial fisheries including gillnetters, otter trawl vessels, scallop boats, and long liners, but also an area heavily utilized by recreational fishermen. Both sectors in combination pursue over 35 species of fish in this area including but not limited to; albacore, bluefish, big eye tuna, Bluefin tuna, bonita, black sea bass, butter fish, cobia, cod, smooth dogfish, spiny dogfish, summer flounder, Atlantic menhaden, monkfish, red hake, skate, tilefish, swordfish, yellow fin tuna, and skipjack tuna. Considering just two of the several species harvested during 2013; summer flounder and black sea bass, May through August represents 20 percent of the commercial black sea bass harvest, and 22 percent of the commercial summer flounder harvest. This represents $250,000 worth of black sea bass and $1,360,000 of potential loss of summer flounder. This period generates 21% of commercial harvest revenue for New Jersey fishermen and represents 60 to 100% of the entire recreational season for the species listed above. Recreationally, 67% of the annual black sea bass are harvested during this period while 89% for summer flounder is represented during this time frame. Local businesses including restaurants, hotels, bait and tackle shops, and other coastal related trades are dependent on this time period generating income.

A portion of the proposed survey area is a recognized productive and historical fishing area known as "The Fingers" under NJDEP's Prime Fisheries Area Mapping. Contrary to the portrayal in the Draft Environmental Assessment in support of the IHA, areas beyond State waters are also heavily utilized by New Jersey's commercial and recreational fishing industry. Marine fish and fisheries are protected under the NJCMP, and public access to and use of natural resources are major components of the CZMA and the NJCMP. Based on previous studies examining seismic surveys and fisheries disturbances, it is reasonably foreseeable that the proposed surveys will have an impact from fisheries distribution, movement, migration and spawning perspectives that will lead to direct and indirect negative consequences to NJ's fishing industries. The Svein Løkkeborg, et al. study highlighted that "reduced catches on fishing grounds exposed to seismic survey activities have been demonstrated."[1] The conclusions reached by the Løkkeborg study are further supported by other recent studies concluding that catch rates reduced in the presence of seismic studies.[2]

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[1] Løkkeborg, S.; Ona, E.; Vold, A.; & Salthaug, A., 2012. Effects of Sounds from Seismic Air Guns on Fish Behavior and Catch Rates. Advances in Experimental Medicine and Biology, 730, 415-419.

[2] Fewtrell, J.L. & McCauley R.D., 2012, Impact of Air Gun Noise on Behavior of Marine Fish and Squid. Marine Pollution Bulletin, 64, 984-993.

According to NJ coastal policies, critical wildlife and endangered or threatened wildlife habitats are areas that serve an essential role in maintaining wildlife throughout their lifecycle. New Jersey's CZM rules discourage development that would affect critical wildlife habitats. Offshore waters serve as essential habitat for numerous fish and invertebrate species during various stages of their lifecycles. Studies have concluded that "evidence that noise exposure during larval development produces body malformations in marine invertebrates. Scallop larvae exposed to playbacks of seismic pulses showed significant developmental delays and 46% developed body abnormalities. Similar effects were observed in all independent samples exposed to noise while no malformations were found in the control groups."[3] A reduction in harvestable stock would result in further impacts to our commercial fisheries.

For the reasons stated above, the Department respectfully requests NMFS not issue an IHA for the proposed study because of the likely impact to New Jersey's resources, including marine mammals and marine mammal habitat.

Sincerely,

John Gray, Acting Director
Office of the Deputy Commissioner

Cc: Michele Siekerka, Deputy Commissioner
David Fanz, Assistant Director, Land Use Regulation
Marty Rosen, Manager, New Jersey Coastal Management Program
Brandon Muffley, Manager, Bureau of Marine Fisheries

[3] de Soto, N.; Delorme, N.; Atkins, J.; Howard, S.; Williams, J. & Johnson, M. 2013. Anthropogenic noise causes body malformations and delays development in marine larvae. Scientific Reports. 3. Article No. 2831.

Clean Ocean Action · The Ocean Foundation · Center for Biological Diversity
Hands Across the Sand · Save Barnegat Bay · Clean Water Action · CWA Local 1075 ·
Paddleout.org

May 16, 2014

Via electronic mail sent to ITP.Cody@noaa.gov
Ms. Jolie Harrison
Supervisor, Incidental Take Program
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

RE: Comments on the National Marine Fisheries Service Incidental Harassment Authorization for the Takes of Marine Mammals Incidental to Specified Activities; Marine Geophysical Survey in the Northwest Atlantic Ocean Offshore New Jersey, May to August 2014 (RIN 0648-XD141)

Dear Ms. Harrison:

On behalf of the undersigned organizations, Clean Ocean Action (COA) submits the following comments in response to the National Marine Fisheries Service (NMFS) request for comments for the proposed incidental harassment authorization (IHA) for the takes of marine mammals incidental to a marine geophysical survey in the Northwest Atlantic Ocean Offshore New Jersey, May to August 2014 (RIN 0648-XD141).[1]

Lamont-Doherty Earth Observatory (L-DEO), in collaboration with the National Science Foundation, Rutgers University, and the University of Texas, proposes to conduct a seismic vessel survey off the coast of New Jersey between May and August 2014 to study changes in sea level from 60 million years ago to present ("Proposed Project"). The Proposed Project includes the use of two four- or eight-airgun subarrays operating alternately, in conjunction with a multibeam echosounder, sub-bottom profiler, and acoustic Doppler current profiler. The nominal source levels of the airgun subarrays range from 246 to 253 decibels (dB) re: 1 µPa (peak-to-peak), and airguns would fire every 5.4 seconds, 24 hours a day, for a 30 day period set to commence on June 3, 2014. The area to be surveyed is a roughly rectangular region that

[1] 79 Fed. Reg. at 14780 (Monday, March 17, 2014) (hereafter "NMFS IHA").

encompasses approximately 230 square miles and is positioned between 15.5 and 52.8 miles of the coast of New Jersey.

NMFS issued its proposed IHA for takes of 690 marine mammals by harassment under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA). The Proposed Project is subject to regulations under the National Environmental Policy Act (NEPA) and must also request a Section 7 Consultation under the Endangered Species Act (ESA)[2] and an Essential Fish Habitat assessment under the Magnuson-Stevens Fishery Conservation and Management Act.[3]

For the reasons detailed herein, the undersigned organizations request denial of the NMFS IHA on the grounds that the potential impacts to marine mammals are incompatible with the goals, mandates, and prohibitions of the MMPA. However, should NMFS determine that it will proceed with issuance of a final IHA, significant revision of the authorization and the completion of a full Environmental Impact Statement (EIS) would be necessary to remedy issues of incomplete information, inadequate assessment of impacts, and insufficient evaluation of alternatives and mitigation measures. Importantly, the Proposed Project should not be conducted during summer, which is the peak of marine mammal (and other marine species) activity off the New Jersey coast, as well as the height of tourism and fishing seasons. Moreover, NMFS would have to ensure that best available science and regulatory review are incorporated into the document, and require stronger mitigation measures and consider different times of year for the Proposed Project.

I. NMFS must ensure that its IHA complies with the MMPA.

The MMPA places a "moratorium on the taking" of marine mammals.[4] Any authorization to take marine mammals must result in the incidental take of only "small numbers of marine mammals of a species or population stock," and can have no more than a "negligible impact" on species and stocks. Furthermore, NMFS must provide for the monitoring and reporting of such takings and must prescribe methods and means of affecting the "least practicable adverse impact" on the species or stock and their habitat.[5]

A. Scientific evidence supports marine mammal harassment below the 160-dB Level B threshold

[2] Section 7 of the ESA (16 U.S.C. 1531 et seq.) outlines the procedures for Federal interagency cooperation to conserve federally-listed species and designated critical habitats.
[3] Public Law (P.L.) 94-265, as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (P.L. 109-479). EFH Guidelines at 50 CFR 600.05-600.930 outline the process to satisfy EFH consultation under Section 305(b)(2)-(4)) of the MSA.
[4] 16 U.S.C. § 1371(a).
[5] 16 U.S.C. § 1371(a)(5)(A) & (D).

The proposed IHA uses the single sound pressure level of 160 dB re 1 µPa (RMS) as a threshold for behavioral, sub-lethal take in all marine mammal species affected by the proposed survey.[6] This approach does not reflect the best available science, and the choice of threshold is not sufficiently conservative in several important respects. In fact, five of the world's leading biologists and bioacousticians working in this field recently characterized the 160-dB threshold as "overly simplified, scientifically outdated, and artificially rigid."[7] Therefore, the best available science indicates that NMFS must use a more conservative threshold.

Using a single sound pressure level of 160-dB for harassment represents a major step backward from recent programmatic authorizations. For Navy sonar activity, for example, NMFS has incorporated linear risk functions into its analysis, which endeavor to account for risk and individual variability and to reflect the potential for take at relatively low source levels.[8]

Furthermore, current scientific literature establishes that behavioral disruption can occur at substantially lower received levels for some marine mammal species, including these that will be impacted by the Proposed Project. For example, the startup of a seismic survey has been shown to cause endangered fin and humpback whales to stop vocalizing – a behavior essential to breeding and foraging.[9] Similarly, a low-frequency, high-amplitude fish shoal imaging device was recently found to silence humpback whales at a distance of up to 200 kilometers, where received levels ranged from 5 to 22 dB above ambient noise levels.[10] Groups of humpback whales in the wild have been observed to exhibit avoidance behaviors at a distance of two kilometers from a small airgun array; the received levels in these trials were 159 dB re: 1 μPa^2 peak-to-peak.[11] Blue whale behavioral changes in response to a small airgun array have also been monitored. Researchers tracked a blue whale traveling and vocalizing in the vicinity of a vessel firing a four-gun array with a source level of 215 dB re: 1 μPa^2 peak-to-peak and noted that at a distance of 10 kilometers from the vessel (where the received level was estimated to be 143 dB re: 1 μPa^2 peak-to-peak), the whale ceased vocalizations for an hour and changed

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[6] 79 Fed. Reg. at 14801.

[7] Clark, C., Mann, D., Miller, P., Nowacek, D., and Southall, B., Comments on Arctic Ocean Draft Environmental Impact Statement at 2 (Feb. 28, 2012); *see* 40 C.F.R. § 1502.22.

[8] *See, e.g.*, 74 Fed. Reg. 4844, 4844-4885 (Jan. 27, 2009).

[9] Clark, C.W., and Gagnon, G.C. 2006. Considering the temporal and spatial scales of noise exposures from seismic surveys on baleen whales. (IWC Sci. Comm. Doc. IWC/SC/58/E9); *see also* MacLeod, K., Simmonds, M.P., and Murray, E., Abundance of fin (*Balaenoptera physalus*) and sei whales (*B. Borealis*) amid oil exploration and development off northwest Scotland, *Journal of Cetacean Research and Management* 8: 247-254 (2006).

[10] Risch, D., Corkeron, P.J., Ellison, W.T., and van Parijs, S.M., Changes in humpback whale song occurrence in response to an acoustic source 200 km away, PLoS ONE 7(1): e29741. doi:10.1371/journal.pone.0029741 (2012).

[11] McCauley, R.D., Jenner, M.N., Jenner, C., McCabe, K.A., and Murdoch, J. 1998. The response of humpback whales (*Megaptera novaeangliae*) to offshore seismic survey: Preliminary results of observations above a working seismic vessel and experimental exposures. *Appea Journal*: 692-706.

course significantly.[12] The literature also shows that harbor porpoises are acutely sensitive to a range of anthropogenic sounds, including airguns. They have been observed to engage in avoidance responses 50 miles from a seismic airgun array, a result that is consistent with both captive and wild animal studies showing them abandoning habitat in response to pulsed sounds at very low received levels, well below 120 dB.[13] Cuvier's beaked whales exhibited alarming behavioral impacts when exposed to sonar at low received levels of 89-127dB re: 1 µPa.[14]

Although the proposed IHA NMFS cites many studies that show low-frequency sounds in general and seismic surveys in particular can have significant behavioral impacts to marine mammals well below 160 dB,[15] NMFS nonetheless irrationally continues to rely upon a Level B harassment threshold of 160 dB. NMFS should modify its threshold estimates, as they must be based on the best available science; this would in turn likely significantly increase the estimated number of marine mammal takes incidental to the Proposed Project.

B. NMFS's assertion of no Level A takes is not based on best available science

Although the NMFS IHA states that marine mammal harassment will be limited to Level B takes, evidence in the scientific literature has indicated that temporary threshold shifts (TTS) can occur in cetaceans at source levels lower than proposed for this survey. As NMFS itself cites, a recent study involved the exposure of a captive harbour porpoise to one airgun firing on three occasions at an average source level of 201 dB re: 1 μPa^2 peak-to-peak.[16] In addition to avoidance behavior exhibited by the animal during the trials, the researchers estimated through modeling that the onset of TTS that did not fully subside until *55 hours after exposure*.[17] Moreover, NMFS cannot rationally assume that other marine mammals will not incur injury at noise levels below those in the Proposed Project. The Lucke *et al.* study demonstrates that TTS can occur at different levels for different species of cetaceans. Moreover, controlled exposure trials in which harbor seals were exposed to small airguns firing for one hour at source levels ranging from 215 to 224 dB re: 1 μPa^2 peak-to-peak revealed

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[12] McDonald, M.A., Hildebrand, J.A., and Webb, S.C. 1995. Blue and fin whale observed on a seafloor array in the Northeast Pacific. *Journal of the Acoustical Society of America* **98**: 712-721.

[13] *See, e.g.*, Bain, D.E., and Williams, R., Long-range effects of airgun noise on marine mammals: responses as a function of received sound level and distance (2006) (IWC Sci. Comm. Doc. IWC/SC/58/E35).

[14] DeRuiter, S.L., Southall, B.L., Calambokidis, J., Zimmer, W.M.X., Sadykova, D., Falcone, E.A., Friedlaender, A.S., Joseph, J.E., Moretti, D., Schoor, G.S., Thomas, L., and Tyack, P.L. 2013. First Direct Measurements of behavioural responses by Cuvier's beaked whales to mid-frequency active sonar. *Biology Letters* **9**: 20130223 1 (2013).

[15] 79 Fed. Reg. at 14787.

[16] Lucke, Klaus, Siebert, U., Lepper, P. a, & Blanchet, M.-A. (2009). Temporary shift in masked hearing thresholds in a harbor porpoise (Phocoena phocoena) after exposure to seismic airgun stimuli. *The Journal of the Acoustical Society of America*, 125(6): 4060-70.

[17] Lucke, K., Siebert, U., Lepper, P.A., and Blanchet, M.-A. 2009. Temporary shift in masked hearing thresholds in a harbor porpoise (*Phocoena phocoena*) after exposure to seismic airgun stimuli. *Journal of the Acoustical Society of America* 125: 4060-4070. Emphasis added.

dramatic physiological and behavioral responses, including a fright response evidenced by significant drops in heart rate; decreased stomach temperatures indicating a cessation of feeding; and rapid swimming away from the noise source.[18] Thus, NMFS cannot assume that TTS and even permanent threshold shifts (PTS) would be unlikely for marine mammals in the area of this Proposed Project.

A number of other recent studies indicate that anthropogenic sound can induce PTS at lower levels than anticipated.[19] New data indicate that mid-frequency cetaceans have greater sensitivity to sounds within their best hearing range than was previously thought.[20] NMFS must also consider that even behavioral disturbance can amount to a Level A take if it interferes with essential life functions. For example, TTS can impair reproductive success and fitness that would constitute harm or Level A harassment. Beaked whales are sensitive to noise, and it is not necessarily the auditory damage that causes the injury. Sounds cause beaked whales to change their behavior, including panic response and rapid surfacing, which results in an injury similar to decompression sickness ("the bends").[21]

Given NMFS's decidedly non-conservative approach to estimating impacts thresholds for injury to marine mammals from the proposed survey, it is likely that many more marine mammals will be harmed than NMFS estimates. In light of the best available science, NMFS cannot rationally defend its conclusion that the proposed survey will not lead to any Level A impacts and will have no more than negligible impacts on these species or stocks. NMFS must take into account the best available science and set lower thresholds for level A take, which would lead to larger exclusion zones around the survey.

II. NOAA must prepare an EIS because there are significant environmental impacts from the Proposed Project

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[18] Thompson, D., Sjoberg, M., Bryant, M.E., Lovell, P., and Bjorge, A. 1998. Behavioral and physiological responses of harbour (*Phoca vitulina*) and grey (*Halichoerus grypus*) seals to seismic surveys. Report to European Commission of BROMMAD Project. MAS2 C7940098.

[19] Kastak, D., Mulsow, J., Ghoul, A., and Reichmuth, C. 2008. Noise-induced permanent threshold shift in a harbor seal [abstract], *Journal of the Acoustical Society of America* **123**: 2986; Kujawa, S.G., and Liberman, M.C. 2009. Adding insult to injury: cochlear nerve degeneration after "temporary" noise-induced hearing loss, *Journal of Neuroscience* **29**: 14077-14085.

[20] See discussion in Wood, J., Southall, B.L. and Tollit, D.J. 2012. PG&E offshore 3-D Seismic Survey Project EIR – Marine Mammal Technical Draft Report. SMRU Ltd.; Marine Mammal Commission, Marine Mammals and Noise: A Sound Approach to Research Management, Report to Congress, at 46 (March 2007).

[21] Cox, T.M., Ragen, T.J., Read, A.J., Vos, E., Baird, R.W., Balcomb, K., Barlow, J., Caldwell, J., Cranford, T., Crum, L., D'Amico, A., D'Spain, G., Fernandez, A., Finneran, J., Gentry, R., Gerth, W., Gulland, F., Hildebrand, J., Houser, D., Hullar, T., Jepson, P.D., Ketten, D., MacLeod, C.D., Miller, P., Moore, S., Mountain, D.C., Palka, D., Ponganis, P., Rommel, S., Rowles, T., Taylor, B., Tyack, P., Wartzok, D., Gisiner, R., Mead, J., and Benner, L. 2006. Understanding the impacts of anthropogenic sound on beaked whales. *Journal of Cetacean Resource Management* **7**: 177-187.

For the reasons discussed below, we strongly urge NMFS to prepare an EIS for this project, which would include complete scientific substantiation for the project, a thorough analysis of all direct, indirect, and cumulative environmental impacts, and consideration of a full range of alternatives to the project. Moreover, to meet its NEPA obligations, the NEPA document must be made available for public review and comment.[22]

A. Purpose of NEPA and EA and trigger for an EIS

NEPA's fundamental purposes are to guarantee that: (1) agencies take a hard look at the environmental consequences of their actions before these actions occur; and (2) agencies make the relevant information available to the public so that it may also play a role in both the decision-making process and the implementation of that decision.[23] To assure transparency and thoroughness, agencies also must "to the fullest extent possible...[e]ncourage and facilitate public involvement" in decision-making.[24] Despite the fact that a draft Environmental Assessment (EA) was released in December 2013, the public was not offered an opportunity to comment on the Proposed Project until the issuance of the proposed IHA on March 17, 2014, less than three months before the study was scheduled to begin.

The purpose of an EA is to assist the agency in determining whether the project may significantly affect the environment and therefore require a full EIS.[25] An agency may avoid preparing a full EIS if the agency: (1) prepares an environmental assessment identifying and analyzing the action's environmental effects; and (2) makes a finding of no significant impact, which presents the agency's reasons for concluding that the action's environmental effects are not significant.[26] NEPA requires federal agencies to prepare an EIS for all "major federal actions significantly affecting the quality of the human environment."[27] A full EIS is required if "substantial questions are raised as to whether a project...may cause significant degradation of some human environmental factor."[28] To trigger this requirement, the plaintiff "need *not show*

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[22] *See, e.g. Anderson v. Evans*, 314 F.3d 1006, 1016 (9th Cir. 2002) ("the public must be given an opportunity to comment on draft EAs and EISs").
[23] See, e.g. 40 C.F.R. § 1500.1.
[24] 40 C.F.R. §1500.2(d
[25] 42 U.S.C. §4332(2)(C); 40C.F.R. §1508.9.
[26] 40 C.F.R. §§ 150l.4(b), (e); 1508.9; 1508.1.3.
[27] 42 U.S.C. § 4332(2)(C); see also 40 C.F.R. § 1501.4. The Act defines the "human environment" as including "the natural and physical environment and the relationship of people with that environment…This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment." 40 C.F.R. § 1508.14.
[28] *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1149-50 (9th Cir. 1998).

that significant effects will *in fact* occur;" but rather, "raising substantial questions whether a project may have a significant environmental effect is sufficient."[29]

Whether an action may have "significant" impacts on the environment is determined by considering the "context" and "intensity" of the action.[30] "Context" means the significance of the project "must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality."[31] Intensity of the action is determined by considering the following ten factors: (1) impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial; (2) the degree to which the proposed action affects public health or safety; (3) unique characteristics of the geographic area such as proximity to ecologically critical areas; (4) the degree to which the effects on the quality of the human environment are likely to be highly controversial; (5) the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks; (6) the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration; (7) whether the action is related to other actions with individually insignificant but cumulatively significant impacts; (8) the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources; (9) the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the federal Endangered Species Act; (10) whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.[32] The presence of one or more significant effects can trigger the need for a full EIS.[33] Based on the nature of potential impacts to marine life from the Proposed Project and the incomplete analysis of such impacts in the EA (discussed further below), a full EIS must be prepared for this study.

B. Availability of new information subsequent to the finalization of the PEIS in 2011 precludes NMFS's reliance on this prior NEPA analysis.

It is inadequate for NMFS to rely on any prior NEPA analysis because there is significant new information about the impacts of seismic surveys on marine mammals and fish. New, relevant

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[29] *Id*. (emphases in original).
[30] 40 C.F.R. § 1508.27.
[31] Id. § 1508.27(a).
[32] 40 C.F.R. § 1508.27(b)(1)-(10).
[33] *See, e.g. Nat'l Parks & Conserv. Ass'n. v. Babbitt*, 241 F.3d 722, 731 (9th Cir. 2001) (either of two significance factors considered by the court "may be sufficient to require preparation of an EIS in appropriate circumstances"); *Anderson v. Evans*, 350 F.3d 815, 835 (9th Cir. 2003) (presence of one or more factors can necessitate preparation of a full EIS).

information on marine mammals, specifically North Atlantic right whales and bottlenose dolphins, is discussed herein in Section IV. Additionally, while tiering to a broader EIS may be useful in complying with NEPA, it does not eliminate the need to conduct a thorough analysis of the impacts of the site-specific actions.[34]

C. Cumulative actions and effects have not been adequately evaluated.

In conducting a NEPA review, federal agencies must look at cumulative actions and effects. Cumulative actions are those that "have cumulatively significant impacts and should therefore be discussed in the same impact statement."[35] Similar actions include those that have "common timing or geography."[36] Cumulative impacts are those that result when combined with past, present, and reasonably foreseeable future actions on the resources of the area.[37]

Here, there are numerous activities in the region that will harm the same marine mammals and environment that must be analyzed in a cumulative impacts analysis. The Proposed Project has made only limited consideration of the cumulative impacts of this project in conjunction with other current and/or proposed anthropogenic noise-producing activities in the region. The Draft EA used by NMFS in drafting its IHA devotes only two sentences to the proposed Geologic and Geophysical (G&G) seismic airgun and other related seabed test drilling activities being considered by the Bureau of Ocean Energy Management (BOEM) for the mid- and south-Atlantic OCS Planning areas, which is also out for public review and comment at this time. Cumulative impacts from shipping activities are only addressed in terms of increased vessel traffic, and the additive effects of more noise in the area and a greater potential for ship strikes are not considered. Marine mammal disease is also a concern, particularly for bottlenose dolphins affected in 2013 by *morbillivirus*. The Draft EA only assesses the potential for the Proposed Project to "contribute to the development or continuation of a morbillivirus outbreak"[38] in bottlenose dolphins, but fails to consider the cumulative harmful effects of the Proposed Project on the population in light of the recent morbillivirus outbreak.

Such assessments are significant components of an analysis of potential impacts to marine life from the additional set of noise sources considered in the Proposed Project, and must be assessed in the NMFS IHA.

D. Potential impacts from sound-producing sources other than seismic airguns were not evaluated.

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[34] 40 C.F.R. § 1502.20.
[35] 40 CFR § 1508.25(a)(2).
[36] Id. at § 1508.25(a)(3).
[37] 40 C.F.R. §§ 1502.16, 1508.7, 1508.8, 1508.25(a)(2).
[38] Draft Environmental Assessment (Dec. 2013, rev. April 2014) at 43.

Neither the NMFS IHA nor the EA upon which it relies have offered any meaningful evaluation of the potential impacts that other sound-producing sources used in the Proposed Project may have on marine species. Of particular concern, the NMFS IHA indicates that a high-frequency Kongsberg EM 122 multibeam echosounder will operate concurrently with airgun operations. The multibeam echosounder produces sound in the 10.5 to 13.0 kHz frequency range, which is within the optimal hearing spectrum for many odontocete and pinniped species that may occur in the study area. A 12-kHz multibeam echosounder system operated by an Exxon survey vessel off the coast of Madagascar was implicated by an independent scientific review panel (ISRP) in the mass-stranding of approximately 100 melon-headed whales (*Peponocephala electra*) in 2008.[39] The report of the ISRP stated, "all other possible factors considered were determined by the ISRP to be unlikely causes for the initial behavioral response."[40]

Furthermore, a 2002 seismic expedition in the Gulf of California, also lead by L-DEO, employed a similar multibeam sonar system with a center frequency of 15.5 kHz and source levels of 237 dB. Beaked whale strandings observed in the area of the survey in September 2002 may have been linked to the use of this technology – a federal judge responded by ordering the ship to cease operations.[41]

Based on the correlation between these previous stranding events and the use of multibeam sonar technology, it is imperative that NMFS fully assess the potential for this source to impact marine mammals both on its own and in concert with seismic airgun blasts.

E. The analysis of alternatives in the EA was incomplete.

The "heart" of the NEPA process is an agency's duty to consider "alternatives to the proposed action" and to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[42] The CEQ regulations require NMFS to "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated

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[39] Southall, B.L., Rowles, T., Gulland, F., Baird, R. W., and Jepson, P.D. 2013. Final report of the Independent Scientific Review Panel investigating potential contributing factors to a 2008 mass stranding of melon-headed whales (*Peponocephala electra*) in Antsohihy, Madagascar.

[40] Id.

[41] Cox, T.M., Ragen, T.J., Read, A.J., Vos, E., Baird, R.W., Balcomb, K., Barlow, J., Caldwell, J., Cranford, T., Crum, L., D'Amico, A., D'Spain, G., Fernandez, A., Finneran, J., Gentry, R., Gerth, W., Gulland, F., Hildebrand, J., Houser, D., Hullar, T., Jepson, P.D., Ketten, D., MacLeod, C.D., Miller, P., Moore, S., Mountain, D.C., Palka, D., Ponganis, P., Rommel, S., Rowles, T., Taylor, B., Tyack, P., Wartzok, D., Gisiner, R., Mead, J., and Benner, L. 2006. Understanding the impacts of anthropogenic sound on beaked whales. *Journal of Cetacean Resource Management* **7**: 177-187.

[42] 42 U.S.C. §§ 4332(2)(C)(iii), 4332(2)(E).

from detailed study, briefly discuss the reasons for their having been eliminated."[43] "A 'viable but unexamined alternative renders [the] environmental impact statement inadequate.'"[44]

The EA does not devote sufficient evaluation of the No Action alternative, in which researchers conducting the study would not proceed with the Proposed Project but would instead rely on core samples previously conducted in the same area to evaluate historical changes in sea level rise. We also urge NMFS to consider alternative times of year for the Proposed Project and evaluate when the potential for impact to marine life would be at its lowest. Should it be determined that the Proposed Project must continue as planned for the summer of 2014, we urge NMFS to consider alternatives with stronger mitigation measures including larger exclusion zones and lower sound thresholds, avoidance of areas that are high value habitat to marine mammals, suspension of activities in low light and night conditions, use of the fewest surveys and duplicate surveys as possible, and other methods to detect marine mammals beyond visual observation and acoustic monitoring.

III. NMFS must take best available science and the precautionary principle into account.

Several experts in marine mammal bioacoustics have underscored our extremely limited understanding of the potential auditory and behavioral impacts to marine mammals from the use of seismic airguns and other sound-producing technologies. Darlene R. Ketten, a marine biologist and neuro-anatomist at the Woods Hole Oceanographic Institution, has written, "[a]t this time we have insufficient data to accurately predetermine the underwater acoustic impact for anthropogenic sources."[45] Other published scientists have noted, "[g]iven the current state of knowledge…the risk of seismic sources causing hearing damage to marine mammals cannot be dismissed as negligible."[46] Scientists have also commented on the variability in how a seismic source could affect a marine mammal based on the orientation of the source relative to the animal, which is not considered in the Proposed Project. A 2004 review paper on the effects of seismic surveys on marine mammals stated, "[m]arine mammals will be distributed in a variety of positions relative to a seismic array and the signal they receive may have a complicated and variable nature."[47] A study of the environmental implications of marine seismic surveys conducted in Australia published in 2000 concluded, "[i]t was believed slight differences in the orientations of receivers to each array, alignments and depths of array components and of functioning air guns within each array contributed to the measured

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[43] 40 C.F.R. § 1502.14(a).
[44] *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 814 (9th Cir. 1999) (quoting *Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1057 (9th Cir. 1985)).
[45] Ketten, D.R. Marine Mammal Auditory Systems: A Summary of Audiometric and Anatomical Data and Implications for Underwater Acoustic Impacts. Polarforschung, 72. Jahrgung, Nr. 2/3, pp. 79-92.
[46] Gordon, J.C.D., Gillespie, D., Potter, J., Frantzis, A., Simmonds, M.P., Swift, R., and Thompson, D. 2004. A Review of the Effects of Seismic Survey on Marine Mammals. *Marine Technology Society Journal* **37**: 14-32.
[47] Id.

differences. Again this exemplified the difficulty of predicting the received air gun level for a specific air gun array."[48]

Because of this high degree of uncertainty in our understanding of impacts to marine mammals from airgun sources, compounded by the variability in the level of impact based on the position of the source relative to a marine mammal, NMFS should be precautionary in its assessment of incidental takes. One of the Principles in the 2010 Final Recommendations of the Interagency Ocean Policy Task Force report urges the use of best available science and the precautionary approach: "Decisions affecting the ocean…should be informed by and consistent with the best available science. Decision-making will also be guided by a precautionary approach as reflected in the Rio Declaration of 1992."[49] Responsible application of the precautionary principle to the NMFS IHA would reasonably have led to the denial of marine mammal takes incidental to the Proposed Project.

IV. Important species information was not incorporated into NMFS's analysis.

Of particular concern is that a 2013 peer-reviewed study demonstrating North Atlantic right whale presence off the New Jersey coast year-round, particularly in the spring and summer months, does not appear to have been incorporated into the NMFS IHA. Furthermore, factors that may compound the number of bottlenose dolphin takes, including the recent population debilitation by *morbillivirus* and the time and area overlaps between the Proposed Project and calving, do not appear to have been taken into account. Inclusion of this information is critical to ensuring that the NMFS IHA is based on the best available science and considers external factors in its take estimates.

A. The presence, abundance, and potential impacts to North Atlantic right whales in the survey area were not adequately evaluated.

With respect to the critically endangered North Atlantic right whale (*Eubalaena glacialis*), NMFS fails to take into account the best available science on population size, cumulative effects, or species presence in the survey area. NOAA estimates that the western population of the North Atlantic right whale contains only about 400 individuals.[50] Because of this critically low population level, NMFS has stated that "no mortality or serious injury for this stock can be

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[48] McCauley, R.D., Fewtrell, J., Duncan, A.J., Jenner, C., Jenner, M-N., Penrose, J.P., Prince, R.I.T., Adhitya, A., Murdoch, J., and McCabe, K. 2000. Marine seismic surveys – A study of environmental implications. *Appea Journal* 692-708.

[49] The White House Council on Environmental Quality. Final Recommendations Of The Interagency Ocean Policy Principle 15 of the Rio Declaration 1992 reads, "in order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall be not used as a reason for postponing cost-effective measures to prevent environmental degradation."

[50] http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/rightwhale_northatlantic.htm.

considered insignificant."[51] The NMFS IHA authorizes the Level B take of three (3) individual right whales; however, given the low population level and NMFS's own prior statements, take of even one individual would constitute more than a negligible impact and would therefore violate the MMPA.

The NMFS IHA does not cite specific research papers or information on right whales that may give the reader an indication of NMFS reached its decision on the number of authorized takes. For example, in the Behavioral Disturbance section, subsection Baleen Whales, the following whale species are mentioned: gray, bowhead, humpback, blue, sei, fin, and minke.[52] The North Atlantic right whale, arguably the most important marine mammal species in this group of 26 marine mammals authorized for takings due to its strategic status, is not even mentioned in this section. As such, the NMFS IHA provides no analysis of specific right whale impacts from the Proposed Project, other than to authorize three Level B takes. It is unclear whether the variety of other baseline stressors facing right whales in the region, including ship strikes and fishing gear entanglement, were accounted for in the calculation of takes. Nevertheless, it is essential that NMFS consider the cumulative effects of the Proposed Project in addition to these pre-existing stressors.

The peer-reviewed, Whitt *et al.* 2013 paper, "North Atlantic right whale distribution and seasonal occurrence in nearshore waters off New Jersey, USA, and implications for management," should have been considered by NMFS in its evaluation of potential right whale impacts. This study involved the use of passive acoustic monitoring at several locations off the New Jersey coast over the course of two years and found that "North Atlantic right whales are present off New Jersey throughout the year and not only during 'typical' migratory periods."[53] The numbers of up-call detections per day were highest from March through June, which indicates that right whales communicate extensively during this time of year off the New Jersey coast.[54] Furthermore, skim-feeding behavior observed off Barnegat Bay indicated that right whale feeding grounds may extend beyond the generally understood primary feeding areas further north, leading the authors to conclude that the "sightings and acoustic data from the present study also suggest that the nearshore waters of New Jersey may serve habitat functions other than migration for this species."[55] If NMFS has not included this study in its assessment of right whale takes, then the three takes authorized may be a significant underestimation.

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[51] NMFS. 2012. Marine Mammal Stock Assessment Reports (SARs) by Species/Stock; North Atlantic Right Whale (*Eubalaena glacialis*): Western Atlantic Stock. http://www.nmfs.noaa.gov/pr/pdfs/sars/ao2012whnr-w.pdf.
[52] 79 Fed. Reg. at 14787-14788.
[53] Whitt, A.D., Dudzinski, K., and Laliberte, J.R. 2013. North Atlantic right whale distribution and seasonal occurrence in nearshore waters off New Jersey, USA, and implications for management. *Endangered Species* Research 20: 59-69.
[54] Id.
[55] Id.

B. The NMFS IHA does not appear to account for external factors potentially affecting the area bottlenose dolphin population.

Common bottlenose dolphins (*Tursiops truncatus*) are commonly observed in New Jersey coastal waters during the summer months, and have been sighted as far north as Barnegat Light.[56] The Proposed Project authorizes takes of 279 pelagic bottlenose dolphins, the highest number of all the marine mammal species evaluated.[57] This high number of takes is troublesome for two reasons. Firstly, according to Robert Schoelkopf, founding director of the Marine Mammal Stranding Center in Brigantine, NJ, the calving season for bottlenose dolphins in the New Jersey coastal region typically runs from May through June.[58] The Proposed Project would subject newborn calves to intense levels of noise; these individuals are limited in their ability to flee the ensonified area due to their dependence on their mothers and small size, and are possibly also more susceptible to hearing damage than adult dolphins. The Proposed Project does not account for the overlap of the survey period with the bottlenose dolphin calving period, nor does it evaluate the potential heightened sensitivity of bottlenose dolphin calves to anthropogenic noise.

Furthermore, the MMSC recorded 151 bottlenose dolphin strandings in 2013 alone, compared to 19 strandings in 2012. This high number of strandings prompted NOAA to declare an Unusual Mortality Event for bottlenose dolphins along the Atlantic coast from early July 2013 through the present. Investigations led by NOAA have tentatively identified *morbillivirus* as the most probable cause of the strandings.[59] Mr. Schoelkopf has expressed concern about the impact that the Proposed Project could have on the local bottlenose dolphin population: "They've already taken a pretty good beating, death-rate wise. To have the testing conducted during the birthing period could be even more traumatizing to the entire population. If we're looking at a normal death rate on animals because of entanglement and fishing gear, shark bites, [and] pneumonia, then the sonic explosions could be totally devastating to anything that swims underwater."[60] The stranding data indicate that the local bottlenose dolphin population has been compromised by the *morbillivirus* outbreak of 2013, and the Proposed Project puts this population and its numbers under further, unnecessary stress.

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[56] Robert Schoelkopf, pers. comm.
[57] 79 Fed. Reg. at 14802 (Table 5).
[58] Robert Schoelkopf, pers. comm.
[59] http://www.nmfs.noaa.gov/pr/health/mmume/midatldolphins2013.html.
[60] http://thesandpaper.villagesoup.com/p/environmental-organizations-against-proposed-seismic-testing-off-barnegat-bay/1158487.

V. NMFS's determination that only "negligible" impacts to marine mammals will occur is reckless and not scientifically defensible.

The Proposed Project acknowledges the scarcity of data throughout the discussion of potential impacts to marine life, and yet irrationally characterizes impacts to marine life as "negligible." Examples from the text of the Proposed Project that are particularly noteworthy include:

- "We expect that the masking effects of pulsed sounds…on marine mammal calls and other natural sounds will be limited, although there are very few specific data on this."[61]
- "The sound criteria used to estimate how many marine mammals might be disturbed to some biologically-important degree by a seismic program are based primarily on behavioral observations of a few species…for many species there are no data on responses to marine seismic surveys."[62]
- "There is little systematic information available about reactions of toothed whales to noise pulses."[63]
- "[T]here has been no specific documentation of temporary threshold shift let alone permanent hearing damage (i.e., permanent threshold shift), in free-ranging marine mammals exposed to sequences of airgun pulses during realistic field conditions."[64]
- "The available data do not allow identification of a specific exposure level above which non-auditory effects can be expected…or any meaningful quantitative predictions of the numbers (if any) of marine mammals that might be affected in those ways."[65]

Based on the extremely limited amount of real-world data upon which to base its conclusions regarding potential impacts to marine life, how can NMFS comfortably state that the impacts to marine mammals are all expected to be "negligible" and fall within the Level B Harassment classification? As stated previously, in the absence of robust data that points to a low likelihood of impacts, the NMFS IHA should rely on a more conservative, precautionary approach.

VI. The NMFS IHA contains several references to location, project, or species information that is incorrect.

[61] 79 Fed. Reg. at 14785.
[62] 79 Fed. Reg. at 14787.
[63] 79 Fed. Reg. at 14788.
[64] 79 Fed. Reg. at 14789.
[65] 79 Fed. Reg. at 14791.

The Proposed Project contains several references to information that is incorrect, leading the reader to conclude that "cut and paste" from previously issued NMFS IHAs was employed in the drafting of this document. Examples include:

- "It is considerably less likely that PTS would occur during the proposed seismic survey in Cook Inlet."[66] Cook Inlet is in Alaska. NMFS should ensure that local conditions in the study area have been accounted for in its analysis.

- "Additionally, no beaked whale species occur in the proposed seismic survey area."[67] The Proposed Project states that six beaked whale species are listed as potentially occurring in the proposed seismic survey area; these include Blainville's beaked whale, Cuvier's beaked whale, Gervais' beaked whale, Sowerby's beaked whale, True's beaked whale, and northern bottlenose whale.[68] NMFS should ensure that assessments of potential impacts to these beaked whale species have been completed.

- "…[M]arine mammals might experience stress responses at received levels lower than those necessary to trigger onset TTS. Based on empirical studies of the time required to recover from stress responses…NMFS also assumes that stress responses could persist beyond the time interval required for animals to recover from TTS and might result in pathological and pre-pathological states that would be as significant as behavioral responses to TTS. However, as stated previously in this document, the source levels of the drillships are not loud enough to induce PTS or likely even TTS" (p. 14791). There are no drillships in this proposed study. NMFS should ensure that a complete evaluation of the potential for sources proposed for use in this study to induce TTS or PTS.

How can the assessment of impacts to marine life be accepted as comprehensive, given the apparent lack of close scrutiny that went into drafting it? We urge NMFS to remove such erroneous references from the IHA and ensure that other instances of incorrect information do not exist within the document.

VII. Conclusion

For the reasons detailed above, the undersigned organizations request denial of the NMFS IHA. The Proposed Project threatens serious harm to numerous species of marine mammals and is therefore contrary to the goals, mandates, and prohibitions of the MMPA.

However, should NMFS determine that it will proceed with issuance of a final IHA, significant revision of the authorization and the completion of a full EIS are necessary to remedy issues of

[66] 79 Fed. Reg. at 14790.
[67] 79 Fed. Reg. at 14791.
[68] 79 Fed. Reg. at 14783 (Table 1).

incomplete information, inadequate assessment of impacts, and insufficient evaluation of alternatives and mitigation measures. Importantly, the Proposed Project must not be allowed to be conducted during summer, which is the peak of marine mammal (and other marine species) activity off the New Jersey coast, as well as the height of tourism and fishing seasons. NMFS would also have to ensure that best available science and regulatory review are incorporated into the document, and require stronger mitigation measures and consider different times of year for the Proposed Project.

Sincerely,

Cindy Zipf Executive Director Clean Ocean Action	Cassandra Ornell Staff Scientist Clean Ocean Action
Richard Charter Senior Fellow Coastal Coordination Program The Ocean Foundation	Miyoko Sakashita Oceans Director, Senior Attorney Center for Biological Diversity
Dede Shelton Director of Operations Hands Across the Sand	Britta Wenzel Executive Director Save Barnegat Bay
David Pringle NJ Campaign Director Clean Water Action	Thomas Fagan Executive Board/Treasurer CWA Local 1075
Scott S. Thompson General Director paddleout.org	