



# MARINE MAMMAL COMMISSION

29 April 2020

Ms. Jolie Harrison, Chief  
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)<sup>1</sup> 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 incidental to conducting a marine geophysical survey in the northeastern Pacific Ocean in summer 2020. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 7 April 2020 notice announcing receipt of the application and proposing to issue the authorization, subject to certain conditions (85 Fed. Reg. 19580).

## Background

LDEO proposes to conduct a geophysical survey in the exclusive economic zones of Canada off British Columbia and the United States off Washington and Oregon. The purpose of the survey is to investigate the Cascadia subduction zone and the depth, geometry, and physical properties of the seismogenic portion and updip extent of the megathrust zone between the subducting Juan de Fuca plate and the overlying accretionary wedge/North America plate. The survey would be conducted along approximately 6,890 km of tracklines in waters estimated to be 60 m to 4,400 m in depth. LDEO would use the R/V *Marcus G. Langseth* (*Langseth*) to operate a 36-airgun array with a maximum discharge volume of 6,600 in<sup>3</sup> at a tow depth of 12 m. In addition, the *Langseth* would (1) tow a 15-km hydrophone streamer, (2) deploy and/or use up to 115 ocean-bottom seismometers (OBSs) and 350 ocean-bottom nodes (OBNs), and (3) operate a 12-kHz multibeam echosounder, 3.5-kHz subbottom profiler, and acoustic Doppler current profiler continuously during the surveys<sup>2</sup>. The survey would occur on 40 days, with up to 37 days for geophysical data acquisition.

NMFS preliminarily has determined that the proposed activities could cause Level A and B harassment of small numbers of numerous species or stocks of marine mammals and that any impact on the affected species or stocks would be negligible. NMFS does not anticipate any take of marine mammals by death or serious injury. It also has preliminarily determined that the proposed

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<sup>1</sup> And funded by the National Science Foundation (NSF).

<sup>2</sup> These devices would not be used during transits.

mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks. Those measures include (1) using protected species observers to monitor the Level A<sup>3</sup> and B harassment zones for 30 minutes before, during, and for 60 minutes after the survey, (2) implementing speed and course alterations, and (3) using shut-down and ramp-up procedures<sup>4</sup>. In addition, LDEO would shut down the airguns immediately if (1) a North Pacific right whale or killer whale of any ecotype, a large whale<sup>5</sup> with a calf, or an aggregation<sup>6</sup> of large whales is observed at any distance or (2) beaked whales or *Kogia* spp. are observed within 1.5 km of the *Langseth*. Ramp-up procedures would not be initiated until the animal(s) has not been seen for at least 30 minutes. LDEO would report any injured or dead marine mammal to NMFS's Office of Protected Resources and West Coast Regional Stranding Coordinator.

### General comments and information

The Commission informally noted a few issues with the *Federal Register* notice<sup>7</sup> and draft incidental harassment authorization<sup>8</sup>. For pinniped densities, NMFS used density estimates associated with the Navy's Northwest Training and Testing (NWTI) study area (Department of the Navy 2019) and adjusted them based on population growth rates and abundance estimates through 2020<sup>9</sup>. The Commission supports that approach but informally noted that it was unclear why NMFS had applied the non-pup population growth rates to the non-pup *and* pup abundance estimates for Steller sea lions. The non-pup population growth rates should have been applied to the non-pup abundance estimates and the pup population growth rates<sup>10</sup> applied to the pup abundance estimates, and then the adjusted 2020 abundance estimates added together to estimate the densities. The Commission also indicated that NMFS should have used the same method for estimating densities and calculating takes off British Columbia<sup>11</sup> rather than assuming that the Washington densities apply to areas off British Columbia. NMFS indicated that it would revise the density and take estimates accordingly, which would result in an increase in the number of Level B harassment takes from 7,281 to 11,334 in the *Federal Register* notice for final issuance and Table 1 of the final authorization. Due to the coronavirus pandemic, LDEO plans to delay its sail date from early June to July 1. As such, NMFS indicated it would revise the northern fur seal densities<sup>12</sup> and takes accordingly, which would result in a decrease in the number of Level B harassment takes from 4,604 to 4,436 in the *Federal Register* notice for final issuance and the final authorization. In addition, NMFS inadvertently included a typographical error regarding the proposed number of Level B harassment takes of elephant seals in the notice and draft authorization. NMFS plans to authorize

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<sup>3</sup> And a standard exclusion zone of 500 m.

<sup>4</sup> The Commission appreciates that NMFS has finally held LDEO to the same standard as industry regarding not allowing LDEO to implement power-down procedures or to use the mitigation airgun for the larger array, consistent with the Commission's previous recommendations.

<sup>5</sup> A sperm whale or mysticete.

<sup>6</sup> Six or more individuals.

<sup>7</sup> In addition to noting that NMFS inadvertently inserted the numbers of Level B harassment takes into the Level A harassment column and vice versa for Canadian territorial waters in Table 11 of the *Federal Register* notice.

<sup>8</sup> In addition to the omission of the various Level B harassment zones.

<sup>9</sup> Based on the growth rates from the 2017 stock assessment report (SAR) and the abundance estimates from the 2015 SAR.

<sup>10</sup> Which are much greater than the non-pup population growth rates.

<sup>11</sup> Densities off British Columbia are greater than those off Washington.

<sup>12</sup> Which were based on June rather than July abundance estimates.

2,995 rather than 1,995 Level B harassment takes of elephant seals in the notice for final issuance and the final authorization.

### **Inappropriate modeling methodology**

For nearly a decade, the Commission has raised concerns regarding LDEO's model to estimate the extent of the Level A and B harassment zones and the numbers of marine mammal takes. The Commission has provided extensive comments regarding the inappropriateness of that model and LDEO's other 'modeling' approaches<sup>13</sup>. Many of the issues were detailed in the Commission's [21 January 2020 letter](#)<sup>14</sup>, including new recommendations and notation of NMFS's failure to address previous Commission recommendations regarding LDEO's model, which are not repeated herein. The previous letter should be reviewed and considered in concert with this letter. Rather than respond to the Commission's recommendations or include a detailed explanation regarding why the Commission's recommendations were again ignored and not followed, NMFS referenced previous responses that do not address the Commission's actual recommendations and stipulated that it would engage with the Commission separately about the issues (85 Fed. Reg. 5622). It has been more than three months since NMFS provided its responses in the *Federal Register* and NMFS has yet to broach this subject with the Commission<sup>15</sup>.

Regardless of whether NMFS plans to engage with the Commission on this matter, NMFS is required under section 202(d) of the MMPA to provide a detailed explanation for not following any of the Commission's recommendations. As such, the Commission reiterates its recommendations from its [21 January 2020 letter](#) and expects detailed responses, particularly since NMFS issued the authorization more than three months ago and responded to other Commission recommendations at that time. The Commission recommends that NMFS require LDEO to either (1) re-estimate the proposed Level A and B harassment zones and associated takes of marine mammals using (a) both operational (including number/type/spacing of airguns, tow depth, source level/operating pressure, operational volume) and site-specific environmental (including sound speed profiles, bathymetry, and sediment characteristics<sup>16</sup> at a minimum) parameters, (b) a comprehensive source model (e.g., Gundalf Optimizer) and (c) an appropriate sound propagation model (e.g., BELLHOP) for the proposed incidental harassment authorization *or* (2) collect or provide the relevant acoustic data to substantiate that its modeling approach is conservative for both *deep* and *intermediate* waters<sup>17</sup> beyond the Gulf of Mexico. The Commission also again recommends that NMFS (1) explain why sound channels with downward refraction, as well as seafloor reflections, are not likely to occur during the geophysical survey, (2) specify the degree to which both of those parameters would affect the estimation (or underestimation) of Level B

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<sup>13</sup> e.g., assuming that the Level B harassment zone in intermediate water is 1.5 times the Level B harassment zone in deep water, adjusting Level B harassment zones based on simple ratios of tow depth and zone extents, using 'modified' frequency-weighted, farfield source levels (to essentially back-calculate actual source levels based on the distance to the relevant frequency-weighted Level A harassment threshold for a single shot and spherical spreading) to estimate the extents of the Level A harassment zones, etc.

<sup>14</sup> See the Commission's [15 October 2019 letter](#) for additional justification as well.

<sup>15</sup> Including during informal communications regarding LDEO's currently proposed authorization.

<sup>16</sup> Those data can be obtained from the National Geophysical Data Center, Leviticus, and the U.S. Navy Oceanographic and Atmospheric Master Library's databases including Generalized Digital Environmental Model, Digital Bathymetric Database Variable-Resolution, Surface Marine Gridded Climatology.

<sup>17</sup> To depths of 1,000 m.

harassment zones in deep and intermediate water, (3) explain why LDEO's model and other 'modeling' approaches provide more accurate, realistic, and appropriate Level A and B harassment zones than BELLHOP, particularly for deep and intermediate water, and (4) explain why, if LDEO's model and other 'modeling' approaches are considered best available science, other action proponents that conduct seismic surveys are not implementing similar methods, particularly given their simplicity.

Furthermore, in this instance, LDEO used in-situ data from Crone et al. (2014) to inform the Level B harassment zones by again using ratios of tow depth<sup>18</sup> to adjust the Level B harassment zones in shallow and intermediate water depths and its simple model to estimate Level B harassment zones in deep water. Crone et al. (2014) noted that the hydrophone streamer was only able to collect data to approximately 200 m in depth, after which the sound levels became unreliable. As such, the in-situ data are only applicable to a portion of the intermediate water depths<sup>19</sup> and to shallower tow depths in shallow and intermediate water depths. Given the Commission's aforementioned concerns, the Commission remains unconvinced that the Level B harassment zones proposed for use in the current survey are accurate and whether in fact NMFS can make both its negligible impact and small numbers determinations for the various species and stocks<sup>20</sup>. Fortunately, LDEO will be using 115 OBSs and 350 OBNs, which are better equipped than the hydrophone streamer to determine the extents of the various Level B harassment zones in intermediate and deep water. The Commission therefore recommends that NMFS require LDEO to analyze the data recorded on the OBSs and OBNs to determine the extents of the Level B harassment zones in shallow, intermediate, and deep water and specify how the in-situ zones compare to the Level B harassment zones specified in the final authorization.

### Monitoring measures

As noted in previous letters and in particular the Commission's [1 July 2019 letter](#) regarding another geophysical survey off Oregon and Washington in 2019 that should be reviewed in conjunction with this letter, LDEO has failed to comply with the reporting requirements. This is in contrast to the claim in NMFS's *Federal Register* notice that LDEO complied with all requirements (e.g., mitigation, monitoring, and reporting) of previous incidental harassment authorizations (85 Fed. Reg. 19580). Measure 6(a)viii in the previous final incidental harassment authorization for LDEO's 2019 survey required it to estimate the number of exposures, including an estimate of those that were not detected in consideration of both the characteristics and behaviors of the species of marine mammals that affect detectability, as well as the environmental factors that affect detectability<sup>21</sup>. However, LDEO's monitoring report again documented only those animals that were observed and therefore were considered taken—it did not include animals that would have

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<sup>18</sup> Crone et al. (2014) conducted measurements with the array operating at a 9-m tow depth, LDEO would be towing the array at 12 m for its proposed survey.

<sup>19</sup> Which range from 100 to 1,000 m.

<sup>20</sup> NMFS has already had to explain how it could come to a small numbers determination for southern resident killer whales, harbor porpoises, and Dall's porpoises, because the number of takes to be authorized exceeded its presumed 33-percent cut off for those stocks (85 Fed. Reg. 19632). The percentage of the stock proposed to be taken for Risso's dolphins and the California stock of northern fur seals also exceeded 30 percent (see Table 10 of the *Federal Register* notice). If the Level B harassment zones have been underestimated, the numbers of takes would have been underestimated as well, bringing NMFS's small numbers determinations into question for those five species or stocks.

<sup>21</sup> A requirement NMFS has included for multiple years.

been present within the Level B harassment zones but beyond detection range of the observers<sup>22</sup> or animals that would have been taken at night.

In NMFS's response to the Commission's ongoing recommendation for the 2019 survey that LDEO use the method the Commission developed years ago (plus accounting for nighttime takes), NMFS indicated that it agreed that reporting of the manner of taking and the numbers of animals incidentally taken should account for all animals taken, including those animals that are not detected and how well animals are detected based on the distance from the observer, to the extent practicable (84 Fed. Reg. 35076). NMFS stated that it appreciated the Commission's recommendations and *further required* that LDEO provide an estimate of take, including marine mammals that were not detected in their reporting for this survey, as it has in previous actions (84 Fed. Reg. 35076). In the absence of a new procedure, NMFS recommended that LDEO use the Commission's method for marine geophysical surveys, which was attached to the Commission's comment letter (84 Fed. Reg. 35076). It is apparent that LDEO does not intend to comply with this requirement unless it is specifically included in the final authorization. As such, the Commission recommends that NMFS include in the final authorization the requirement that LDEO use the Commission's method as described in the Addendum to its 1 May 2019 letter *and* apply relevant corrections for airgun activity in daylight vs nighttime (including dawn and dusk) to better estimate the numbers of marine mammals taken by Level A and B harassment in the incidental harassment authorization. The Commission further recommends that NMFS require LDEO to specify in the final monitoring report (1) the number of days on which the airgun array was active and (2) the percentage of time and total time the array was active during daylight vs nighttime hours (including dawn and dusk). The Commission included the latter recommendations in its 1 July 2019 letter. NMFS did not follow or even mention those recommendations in the *Federal Register* notice for authorization issuance (84 Fed. Reg. 35076). The Commission expects NMFS to address these recommendations for this authorization, since LDEO has yet provide the associated information in any of its previous monitoring reports.

This issue has been ongoing for many years and needs to be resolved. All other action proponents are required to report the total Level B harassment takes, based on observed and extrapolated takes<sup>23</sup>. LDEO and other NSF-affiliated entities should be held to the same explicit standard. If they do not comply with all of the requirements set forth in final incidental harassment authorizations, the Commission recommends that NMFS refrain from issuing any further authorizations to LDEO and NSF-affiliated entities until such time that the monitoring reports include all of the required information.

### **Unauthorized taking**

As noted for other recent authorizations<sup>24</sup>, NMFS has relaxed the reporting measures when unauthorized taking (i.e., an injury or death attributed to LDEO's activities, including by vessel strike) occurs. LDEO's authorization would require that it only report the unauthorized taking. This is in stark contrast to NMFS's approach for the recent proposed authorization for Dominion

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<sup>22</sup> Or underwater.

<sup>23</sup> Including those takes that may occur at night. See the reporting requirements in the final authorization for the City of Juneau as one example, <https://www.fisheries.noaa.gov/webdam/download/102816952>.

<sup>24</sup> See the Commission's [10 February 2020 letter](#) for a more extensive rationale regarding this matter.

Energy Virginia, in which it would require Dominion to report *and* cease activities in the event of a vessel strike<sup>25</sup>. When unauthorized taking occurs, action proponents should cease the associated activities until NMFS determines what additional measures are necessary to minimize additional injuries or deaths. To that end, the authorizations must include clear, concise, explicit measures to minimize any ambiguity of what action proponents should do in those circumstances. Furthermore, standard mitigation and reporting measures should be consistent amongst authorizations. The Commission recommends that NMFS include in all draft and final incidental harassment authorizations the explicit requirements to cease activities if a marine mammal is injured or killed during the specified activities, including by vessel strike, *until* NMFS reviews the circumstances involving any injury or death that is likely attributable to the activities *and* determines what additional measures are necessary to minimize additional injuries or deaths.

### **Proposed one-year authorization renewals**

The Commission has ongoing concerns regarding NMFS's renewal process, which are explained and can be reviewed in its [10 February 2020](#) letter. Based on those concerns, the Commission again recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated *Federal Register* notice process, which is similarly expeditious and fulfills NMFS's intent to maximize efficiencies. If NMFS continues to propose to issue renewals, the Commission recommends that it (1) stipulate that a renewal is a *one-time opportunity* (a) in all *Federal Register* notices requesting comments on the possibility of a renewal, (b) on its webpage detailing the renewal process, *and* (c) in all draft and final authorizations that include a term and condition for a renewal and (2) if NMFS declines to adopt this recommendation, explain fully its rationale for not doing so. The second set of recommendations have been included in numerous Commission letters since December 2019 but have yet to be followed. Further, NMFS has not responded to those recommendations in a detailed or accurate manner, despite the directive in section 202(d) of the MMPA that NMFS provide a detailed explanation for not following any of the Commission's recommendations.

In multiple instances, NMFS has cited its response from 2 October 2019 (84 Fed. Reg. 52464)<sup>26</sup>, which published months before the Commission actually made the recommendations and did not address any aspect of those recommendations. In two other recent responses, NMFS indicated that it did not agree with the Commission but rather than provide its rationale for not following the Commission's recommendation in the notice of issuance—as it had for other Commission recommendations and comments submitted by others—NMFS indicated that it would provide a detailed explanation to the Commission of its decision within 120 days, as required by section 202(d) of the MMPA<sup>27</sup>. NMFS has failed to meet the statutory deadline, as it has been more than 120 days since the Commission initially made these recommendations. In addition, the Commission is very concerned about NMFS's decision to defer addressing some Commission comments and recommendations until after publication of its decision document. While providing

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<sup>25</sup> See condition 6(ii) in the draft authorization (<https://www.fisheries.noaa.gov/webdam/download/104845888>). The condition specifies that activities must not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with Dominion to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Dominion may not resume its activities until notified by NMFS.

<sup>26</sup> See 85 Fed. Reg. 5622 from 31 January 2020, 85 Fed. Reg. 16063 from 20 March 2020. NMFS attempted to include the same response in 85 Fed. Reg. 14642 from 13 March 2020 but failed to note the appropriate reference therein.

<sup>27</sup> See 85 Fed. Reg. 19305 from 5 April 2020 and 85 Fed. Reg. 21201 from 16 April 2020.



a timely, detailed response separately to the Commission comports with NMFS's obligations under section 202(d) of the MMPA, failing to address the Commission's comments and recommendations in the decision document runs counter to the requirements of the Administrative Procedures Act. The agency is expected to provide a full and sufficient rationale supporting its action at the time the decision is made, which necessitates NMFS addressing *all* substantive comments, whether from the Commission or any other entity, *before* publishing a notice of issuance. That includes all recommendations from the Commission, whether or not they are addressed separately pursuant to section 202(d) of the MMPA. In its most recent response to the Commission's recommendations, NMFS stated that the current verbiage in its notices already ensures that only one renewal will be issued<sup>28</sup> and that its website was revised to clarify some of the language involving renewal authorizations<sup>29</sup>. As noted in its 10 February 2020 letter<sup>30</sup> and other previous letters, at no place in NMFS's notices does it explicitly state that renewals are a one-time opportunity nor has NMFS updated its website to include such language<sup>31</sup>.

Please contact me if you have questions concerning the Commission's recommendations.

Sincerely,



Peter O. Thomas, Ph.D.,  
Executive Director

## References

- Crone, T.J., M. Tolstoy, and H. Carton. 2014. Estimating shallow water sound power levels and mitigation radii for the R/V *Marcus G. Langseth* using an 8 km long MCS streamer. *Geochemistry, Geophysics, Geosystems* 15. <http://doi:10.1002/2014GC005420>.
- Department of the Navy. 2019. U.S. Navy Marine Species Density Database Phase III for the Northwest Training and Testing Study Area: Technical report. Naval Facilities Engineering Command Pacific, Pearl Harbor, Hawaii. 262 pages.

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<sup>28</sup> This is the same response NMFS provided in December 2019 (84 Fed. Reg. 68131) that prompted the Commission to revise its recommendation to include the portion that NMFS explain why it will not specify that a renewal is a one-time opportunity in the relevant documents and on the webpage. NMFS has come full circle in its attempts to respond to the Commission's recommendation without actually providing a detailed explanation for not following the recommendation.

<sup>29</sup> See 85 Fed. Reg. 22140 from 21 April 2020.

<sup>30</sup> And as continues to be the case with NMFS's notices.

<sup>31</sup> Webpage <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-harassment-authorization-renewals> has not been updated since 31 December 2019 and webpage <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act> has not been updated since 7 February 2020. Neither webpage includes any reference to a renewal being a one-time opportunity.