



MARINE MAMMAL COMMISSION

21 August 2018

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910-3226

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the National Marine Fisheries Service's (NMFS) 22 June 2018 notice (83 Fed. Reg. 29212) and the application submitted by the Bureau of Ocean Energy Management (BOEM) seeking issuance of regulations under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA). The taking would be incidental to geophysical surveys on the Outer Continental Shelf (OCS) of the Gulf of Mexico (Gulf) in support of oil and gas exploration and development. The Commission also reviewed and provided comments to BOEM on its draft programmatic environmental impact statement (DPEIS) for geological and geophysical (G&G) activities in the Gulf (see Commission's [17 November 2016 letter](#)). The regulations would allow for the issuance of letters of authorization (LOAs) to geophysical industry operators during a five-year period.

Background

BOEM's application analyzed the impacts from various types of sound sources, including (1) deep-penetration seismic surveys¹ using large airgun arrays (total volume greater than 400 in³), (2) shallow-penetration seismic surveys using a small airgun array or single airgun (total volume less than or equal to 400 in³) or a boomer, and (3) high-resolution geophysical (HRG) surveys using acoustic sources such as single or multibeam echosounders, side-scan sonars, or subbottom profilers. The application provided estimates of the amount of survey effort by survey type and location during a ten-year period; however, the regulations would be limited to five years. Actual survey dates, duration, and effort (by type and location) would be provided by geophysical industry operators in their individual LOA applications. The surveys are expected to operate day and night and would occur within BOEM's Western, Central, and Eastern OCS planning areas² in the Gulf.

NMFS preliminarily has determined that the proposed activities could cause Level A and/or B harassment of numerous species of marine mammals, but that the total taking would have a negligible impact on the affected species or stocks. NMFS does not anticipate any take of marine mammals by death or serious injury. It preliminarily determined that the potential for temporary or

¹ These may be two-dimensional (2D) or three-dimensional (3D), using a variety of survey methodologies (e.g., narrow azimuth, wide azimuth, coil, vertical seismic profile).

² Planning areas as defined by BOEM (www.boem.gov/Gulf-of-Mexico-Region-Lease-Map).

permanent hearing impairment will be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

- implementation of the following time-area restrictions:
 - coastal areas shoreward of the 20-m isobath, buffered by 13 km, to protect bottlenose dolphins during their primary reproductive period from February through May;
 - the DeSoto Canyon area between the 100- and 400-m isobaths extending from approximately Mobile Bay, Alabama, to Tampa, Florida, buffered by 6 km, to protect Bryde's whales from June through August³; and
 - the Dry Tortugas area between the 200- to 2,000-m isobaths from the northern border of BOEM's Howell Hook leasing area to the Lower Keys, Florida, buffered by 9 km, to protect beaked whales and sperm whales year-round;
- use of protected species observers (PSOs) to monitor visually the Level A and B harassment zones⁴ for 30 minutes before, during, and for 60 minutes after the surveys during daylight hours⁵ and for 30 minutes before and during night-time ramp-up⁶;
- use of passive acoustic monitoring (PAM) and acoustic PSOs to supplement visual monitoring in waters greater than 100 m for (1) deep-penetration surveys during pre-clearance and at all times during use of the active sound source and (2) shallow-penetration surveys during pre-clearance and ramp-up of airguns at night;
- implementing ramp-up⁷, delay, and shut-down procedures⁸;
- implementing shut-down procedures if a detection is made at any distance (1) visually or acoustically for Bryde's whales, beaked whales, and *Kogia* spp., (2) upon observation of a large whale⁹ with a calf and (3) acoustically for sperm whales¹⁰;
- implementing power-down procedures if a small delphinid appears within or enters the exclusion zone or is acoustically detected and localized within that zone¹¹;

³ NMFS identified four alternative proposals in the preamble to the proposed rule implementing: (1) a year-round closure, (2) a three-month seasonal closure, (3) a three-month seasonal closure with a requirement to ensure real-time detection of Bryde's whales across the area of potential impact using a moored acoustic array and real-time communication of detections to operators, and (4) no restrictions, but with a real-time detection and communication requirement. NMFS included the three-month seasonal closure with no real-time detection and communication requirement in the proposed rule.

⁴ Exclusion and buffer zones are 500 m and 1 km, respectively, for deep-penetration surveys and 200 and 400 m, respectively, for shallow-penetration and HRG surveys.

⁵ 30 minutes before sunrise through 30 minutes after sunset.

⁶ Ramp up would not be required for shallow-penetration surveys using only a single airgun or boomer or for HRG surveys.

⁷ Ramp up may occur at times of poor visibility if the area has been acoustically clear for 30 minutes.

⁸ Both visually and acoustically. Shutdowns would not be required for small delphinids (*Tursiops* spp., *Stenella* spp., *Steno* spp., and *Lagenodelphis* spp.). Delphinids are referred to also as small "delphinoids" in the preamble to the proposed rule. However, the use of two different terms to refer to the same set of species is confusing and should be discouraged.

⁹ Specifically, a sperm whale or baleen whale.

¹⁰ NMFS identified two alternative proposals in the preamble to the proposed rule: shutting down the source if the aforementioned species are detected (1) at any distance or (2) within 1 km of the sound source. NMFS included shutting down the source at any distance in the proposed rule.

¹¹ NMFS identified two alternative proposals in the preamble to the proposed rule: (1) powering down the array to the smallest element and (1) requiring no powerdowns or shutdowns. NMFS included powering down the array in the proposed rule.

- reducing survey source energy to the lowest practicable level through various methods;
- requiring operators using ocean-bottom nodes to avoid entanglements by using various measures:
- implementing vessel avoidance measures;
- reporting injured and dead marine mammals to the Office of Protected Resources and the Southeast Regional Fisheries Office Stranding Coordinator using NMFS's phased approach and suspending activities, if appropriate; and
- submitting field and technical reports and a final comprehensive report to NMFS.

Level A and B harassment takes

Complex sound propagation and animal modeling was used to estimate the numbers of potential takes from various types of geophysical surveys in the Gulf (Zeddies et al. 2015). NMFS received comments from industry operators¹² suggesting that the modeling results were overly conservative and that the take estimates were “higher than BOEM expects would actually occur in a real world environment” (83 Fed. Reg. 29259). However, the Commission has reviewed the modeling approach and parameters used to estimate takes and believes they represent the best available information regarding survey scenarios, sound sources, physical and oceanographic conditions in the Gulf, and marine mammal densities and behavior. As such, the Commission agrees with NMFS and BOEM that the resulting take estimates were conservative but reasonable (83 Fed. Reg. 29259), thereby minimizing the likelihood that actual takes would be underestimated.

The effects of aversion¹³ on the resulting take estimates were investigated by Zeddies et al. (2015). However, NMFS indicated that too little is known about the factors that lead to avoidance of sounds to quantify aversive behavior for survey activities when modeling marine mammal exposure to sound (83 Fed. Reg. 29255). NMFS further noted that “aversion is a context-dependent behavioral response affected by biological factors, including energetic and reproductive state, sociality, and health status of individual animals” (83 Fed. Reg. 29254). However, in an apparent contradiction to these assertions, NMFS applied a uniform aversion factor of 20 percent, based on Ellison et al. (2016), to the Level A harassment take estimates for high- and low-frequency (HF and LF, respectively) cetaceans. Additionally, NMFS reduced all Level A harassment take estimates to zero for mid-frequency (MF) cetaceans¹⁴ (83 Fed. Reg. 29255 and 29263). NMFS's rationale was that sufficient information existed to inform a “reasonable, conservative approximation of aversion” (83 Fed. Reg. 29262). The Commission disagrees.

First of all, Ellison et al. (2016) was a modeling exercise to investigate how various parameters, including aversion, affected exposure estimates of bowhead whales in the Beaufort Sea. The authors specified that the selection of aversion parameters for bowhead whales was intended to represent a reasonably expected behavioral response to sound exposure, not to predict response behavior explicitly. Ellison et al. (2016) further clarified that their intent was not to yield outputs that

¹² Including International Association of Geophysical Contractors, American Petroleum Institute, National Ocean Industries Association, and Offshore Operators Committee.

¹³ The avoidance of loud or annoying sounds, as indicated by movement away from a sound source.

¹⁴ NMFS assumed Level A harassment takes of MF cetaceans would not occur due to the size of the exclusion zones (18 m based on peak sound pressure level (SPL_{peak}) and 0 m based on cumulative sound exposure level (SEL_{cum}) thresholds).

fit field observations, but to develop a transferable method that could be parameterized with data on different activities, locations, and species. Moreover, Ellison et al. (2016) concluded that approximately 5 percent of individual bowhead whales in the modeled population that “could” avert¹⁵ changed their movement paths. Thus, it is unclear upon what NMFS based its assumed 20-percent aversion factor. However, given that data to support the inclusion of aversion are scant in general, let alone for species in the Gulf, the Commission recommends that NMFS refrain from applying the 20-percent aversion factor to HF and LF cetaceans, authorize the total numbers of model-estimated Level A harassment takes for those species, and use those revised take estimates to inform its small numbers and negligible impact determination analyses.

The application of an aversion factor significantly decreased the estimated numbers of Level A harassment takes of HF and LF cetaceans. If such a factor were to be applied, it stands to reason that any assumed aversion away from the Level A harassment zone would result in a corresponding increase in the estimated number of Level B harassment takes. NMFS postulated as much when it indicated that the effect of aversion can be considered as a take (i.e., Level B harassment; 83 Fed. Reg. 29255). Although NMFS provided a comparison of the estimated takes with and without the 20-percent aversion factor (Table 9 and 8, respectively), the Commission notes that application of the aversion factor to Level A harassment takes for HF and LF cetaceans did not result in a corresponding increase in Level B harassment takes. If NMFS is going to ignore species- and context-specific variations in how animals respond to levels of sound that are potentially injurious by applying an aversion factor, it must account for the resulting increase in Level B harassment takes from such aversion. Therefore, the Commission recommends that, if NMFS applies the aversion factor in the final rule, it increase its scenario-specific estimated numbers of Level B harassment takes based on the presumed corresponding reduction in Level A harassment takes.

Time-area restrictions

Bryde’s whale time-area restriction—The Bryde’s whale is the only baleen whale known to inhabit the Gulf on a regular basis. The population was estimated at 33 individuals in 2009 (Hayes et al. 2018) and is restricted primarily to an area near DeSoto Canyon along the continental shelf break in the northern Gulf of Mexico off Florida. The population was significantly impacted by the Deepwater Horizon (DWH) oil spill. Studies estimated that 48 percent of the Bryde’s whale population was exposed to oil, resulting in a maximum 22 percent reduction in population size (DWH Marine Mammal Injury Quantification Team 2015). In addition, 22 percent of females suffered from reproductive failure and 18 percent of the population suffered adverse health effects (DWH Natural Resource Damage Assessment (NRDA) Trustees 2016). Bryde’s whales (and other baleen whales) are classified by NMFS as LF cetaceans that have greatest hearing sensitivity at low frequencies from 7 Hz to 35 kHz (NMFS 2018). That range of hearing sensitivity overlaps with the frequency range at which seismic airguns emit the most energy (5 to 90 Hz; Hermannsen et al. 2015). Although few studies are available on the physiological or behavioral responses of Bryde’s whales to airguns, there are numerous studies documenting adverse effects of seismic sources on other baleen whales, as noted in the preamble to the proposed rule (83 Fed. Reg. 29235).

NMFS has appropriately defined an area that would be restricted from airgun activities as between the 100- and 400-m isobaths, from Mobile Bay, Alabama, (87.5° W) to just south of

¹⁵ Based on the model parameters.

Tampa, Florida (27.5° N), consistent with the recent Bryde's whale status review (Rosel et al. 2016). NMFS has proposed this restriction to be in place on a seasonal basis, without any requirements for real-time acoustic monitoring, from June through August. However, in its determination as to whether the proposed seismic surveys would have no more than a negligible impact on Bryde's whales, NMFS based its analysis on a year-round closure of the restricted area rather than the proposed three-month closure. A year-round closure to protect this critically small population from disturbance is more appropriate than a limited seasonal closure, as tagging and observational data indicate that Bryde's whales are resident in the Gulf and are likely to occur in the proposed restricted area year-round (LaBrecque et al. 2015, Rosel et al. 2016). A small number of baleen whale sightings have occurred in the north-central and western Gulf, with a single verified sighting by NMFS scientists in 2017 of a Bryde's whale off southern Texas¹⁶. It is not clear whether those sightings in the western Gulf indicate important habitat for Bryde's whales, a small but separate population, or just occasional movements of individual whales that are otherwise resident to the eastern Gulf. Regardless, there are no data to suggest that Bryde's whales are present in the proposed restricted area only seasonally. There also are no data on calving or reproduction in this population of Bryde's whales that would suggest increased sensitivity to seismic surveys from June to August or at any other any particular time of the year.

Imposing only a seasonal area closure, rather than a year-round area closure, would call into question NMFS's ability to make a small numbers or negligible impact determination under the MMPA. Specifically, it would increase substantially the disturbance of Bryde's whales during the remaining nine months of the year (September through May). As noted in BOEM's application, seismic survey activity levels and frequency are expected to be relatively constant throughout the year. Any closure that is less than year-round would allow considerable disturbance of a population that has already been significantly impacted by the DWH oil spill and that NMFS has proposed for listing as endangered (81 Fed. Reg. 88639). As such, the Commission recommends that NMFS impose a year-round rather than seasonal closure in the proposed Bryde's whale restricted area. A year-round closure would be consistent with the Gulf of Mexico Planning Awareness Mitigation Area proposed by the U.S. Navy to protect Bryde's whales during training and research, development, test, and evaluation activities within the Atlantic Fleet Training and Testing (AFTT) study area (83 Fed. Reg. 10993 and 11094).

NMFS has included a 6-km buffer as part of the proposed Bryde's whale time-area restriction. The 6-km buffer is intended to minimize the potential for received sound levels above 160 dB re 1 μ Pa within the restricted area. However, basing the size of the buffer zone on 160 dB re 1 μ Pa is inconsistent with NMFS's stated intent to use the best available information to inform the probabilistic response functions, as outlined in Wood et al. (2012; 83 Fed. Reg. 29248). NMFS chose to apply the general response function¹⁷ rather than the migrating mysticete function¹⁸ to Bryde's whales. Wood et al. (2012) noted the context specificity of behavioral responses, with migrating bowhead whales avoiding seismic activities at lower received levels (120–130 dB re 1 μ Pa; Richardson et al. 1999) than those evoking responses in feeding bowhead whales (160 dB re 1 μ Pa;

¹⁶ www.boem.gov/GoMMAPPS-Seabird-Trip-Report-NOAA-Cruise/

¹⁷ With probabilities of response of 90 percent at 180 dB re 1 μ Pa, 50 percent at 160 dB re 1 μ Pa, and 10 percent at 140 dB re 1 μ Pa.

¹⁸ With probabilities of response of 90 percent at 160 dB re 1 μ Pa, 50 percent at 140 dB re 1 μ Pa, and 10 percent at 120 dB re 1 μ Pa.

Koski et al. 2009). Similar patterns of context-specific responses to seismic sound have been reported for humpback whales (McCauley et al. 2000) and gray whales (Malme et al. 1988). However, the apparently greater tolerance of baleen whales to seismic sound while feeding may only reflect the higher cost of moving away from a food source as compared to altering course during migration (Richardson and Moulton 2012). Given the precarious status of Bryde's whales in the Gulf and the relatively small extent of their year-round habitat, a more conservative approach to establishing buffer zones, as reflected in the migrating mysticete function, should be taken. A conservative approach is further supported by NMFS's own admission that there is significant loss of low-frequency listening area and communication space for Bryde's whales in the areas with greater survey activity just off the shelf in the eastern Gulf, yet apparently listening area and communication space are more protected in the Bryde's whale restriction area due to the lower levels of seismic survey activity (Matthews et al. 2015; 83 Fed. Reg. 29246). Therefore, the Commission recommends that NMFS expand the buffer zone for the Bryde's whale restricted area based on a received level of 140 rather than 160 dB re 1 μ Pa.

If a year-round closure is not implemented and NMFS intends to authorize takes of Bryde's whales, the Commission recommends that NMFS (1) re-estimate the number of Level B harassment takes based on the migrating mysticete probabilistic response function rather than the general probabilistic response function provided by Wood et al. (2012) and (2) require BOEM and industry operators to use a moored acoustic array to implement real-time detection of Bryde's whales across the area of potential impact and cease activities immediately if a whale is detected.

Coastal time-area restriction—NMFS has proposed to restrict airgun activities shoreward of the 20-m isobath from 1 February to 31 May, buffered by a 13-km zone. The proposed restriction would protect common bottlenose dolphin populations that were impacted during the Deepwater Horizon oil spill and subsequent spill response efforts (DWH NRDA Trustees 2016). The timeframe for the restriction is intended to protect neonates and calves that are considered most likely to be susceptible to behavioral disturbance caused by seismic sources. The proposed timeframe of February to May was based on expert interpretation of long-term neonate stranding data. However, as noted by Vollmer and Rosel (2013), calves can be born at any time of the year, with peaks during spring and summer. Based on stranding data collected from 2010–2014¹⁹ during the Northern Gulf of Mexico Cetacean Unusual Mortality Event, the greatest number of neonate and calf strandings were reported to occur from January through May, with neonate and calf strandings also reported in August, October, and December. In the Sarasota Bay area, neonate strandings have had a bimodal distribution with peak strandings occurring in May and August (Urian et al. 1996). To provide the greatest degree of protection and recovery potential for bottlenose dolphin populations in the Gulf, the Commission recommends that NMFS expand the coastal restriction timeframe to 1 January through 31 August.

Dry Tortugas time-area restriction—The Commission concurs with the proposed year-round time-area restriction for the Dry Tortugas area, buffered by a 9-km zone. That restriction has been proposed to protect beaked and sperm whales from geophysical surveys. However, it is unclear whether the 9-km buffer is based on the 140 or 160-dB re 1 μ Pa threshold, as the threshold used was not provided by Matthews et al. (2017). The Commission believes that, consistent with Wood et

¹⁹ www.fisheries.noaa.gov/national/marine-life-distress/2010-2014-cetacean-unusual-mortality-event-northern-gulf-mexico

al. (2012), the probabilistic response function that should be used to determine the buffer zone for this area is the one based on the beaked whale response threshold of 140 dB re 1 μ Pa (Table 6 of the *Federal Register* notice). The Commission recommends that NMFS revise the Dry Tortugas buffer zone, if necessary, based on the 140 dB rather than the 160 dB re 1 μ Pa threshold.

Mitigation, monitoring, and reporting requirements

Shutdowns and powerdowns for species of concern—NMFS has proposed to require industry operators to shut down the airgun array if (1) a Bryde’s whale, a beaked whale, or a *Kogia* spp. is observed either visually or acoustically at any distance, (2) a large whale with a calf is observed at any distance, or (3) a sperm whale is detected acoustically at any distance²⁰. The Commission supports the implementation of shutdowns for detections at any distance, rather than within 1 km of the airgun array, based on the status of these species, their small population sizes, and their sensitivity to seismic sound. As noted previously, Bryde’s whales are LF cetaceans with particular sensitivity to the predominantly low-frequency energy output of airguns. Beaked whales are well-documented to react behaviorally to sound levels well below those thought to cause injury, and larger exclusion zones have been recommended for beaked whales and other deep-diving whales (such as *Kogia* spp. and sperm whales) as they are more likely to exhibit a stress response when disturbed (Wright et al. 2011).

The requirement to implement a shutdown for sperm whales would be based solely on acoustic detections, whereas for the other species both acoustic and visual detections would warrant a shutdown. NMFS indicated that acoustic detections would be indicative of feeding, while visual detections would be indicative of resting. Both are identified by NMFS as “vital functions” (83 Fed. Reg. 29239) with disruptions to those behaviors considered Level B harassment as defined under section 3(18)(A)(ii) and implemented under section 101(a)(5)(A) of the MMPA²¹. NMFS also cited Richardson et al. (1995), National Research Council (NRC 2003), and Wartzok et al. (2003) in noting that animals that are resting may show greater behavioral change in response to disturbing sound than foraging animals (83 Fed. Reg. 29237). Thus, it is clear that the MMPA intended that impacts to resting, as well as feeding, be minimized. As such, the Commission recommends that NMFS require industry operators to shut down the airgun array if sperm whales are detected either visually or acoustically at any distance.

Shutdowns and powerdowns for small delphinids—Delphinids ride the pressure waves generated by moving vessels (also known as bow-riding; Würsig 2009). Several species of delphinids have been observed to approach or bow-ride seismic vessels in the Gulf (Barkaszi et al. 2012) and elsewhere (Calambokidis 2002, Moulton and Miller 2005, Holst et al. 2006, Fernandes et al. 2007), even when those vessels are using active sound sources. Based on the observed bow-riding behavior of certain species of delphinids and their mid-frequency hearing sensitivity (150 Hz to 160 kHz; NMFS 2018), NMFS has presumed a relatively high threshold for onset of hearing loss from exposure of small delphinids to airguns and a reduced likelihood of severe adverse behavioral responses to vessels operating airguns (83 Fed. Reg. 29273). NMFS therefore proposed to exempt small delphinids from

²⁰ The requirement for implementing shut-down procedures upon acoustic detection of a sperm whale was inadvertently omitted from the proposed regulatory text.

²¹ And as defined in NMFS’s implementing regulation at 50 C.F.R. § 216.3.

the standard shut-down requirement if observed or detected acoustically and localized within the 500-m exclusion zone. This exemption from shutdowns has been a standard practice in the Gulf under protocols established by BOEM²² and for other geophysical surveys elsewhere. NMFS has proposed two alternatives: (1) powering down to the smallest single element of the array or (2) not powering down or shutting down.

The Commission agrees that animals that approach vessels voluntarily, presumably have some degree of tolerance of the sound generated by airguns. However, the Commission notes that, as stated in the preamble to the proposed rule, there is evidence that some delphinids exhibit behavioral responses indicating sensitivity to airguns. For example, some delphinids approach seismic vessels less frequently when airguns are operating at full power (Stone and Tasker 2006, Barkaszi et al. 2012, Stone et al. 2017) and the distance between animals and vessels is greater when seismic surveys are underway (Goold 1996). Animals also display more surface behaviors such as breaching and porpoising (Barkaszi et al. 2012). In another instance noted by NMFS, a pantropical spotted dolphin exhibited severe distress in close proximity to an airgun array (Gray and Van Waerebeek 2011). Although NMFS acknowledged that aversive responses could be construed as “take” under the MMPA, it did not consider them severe enough to outweigh the impact on industry operators of shutting down activities, especially if the area would need to be surveyed again because of implementing a shutdown. Repeating any survey trackline would introduce additional energy into the water, thereby potentially negating the benefits of the initial shutdown. The Commission notes that the same or a similar argument could be made for any shutdown, but nonetheless agrees with NMFS that shutting down when small delphinids enter the exclusion zone is not warranted and may result in additional survey activity.

In determining whether a powerdown should be implemented, NMFS should consider the effectiveness of powering down as a mitigation strategy and whether it can be implemented effectively and consistently. In this instance, a powerdown would avoid exposing delphinids to sound levels above the 160-dB re 1 μ Pa threshold for Level B harassment. Seismic arrays vary considerably in the number, volume, and configuration of airguns, and the directive to “power down to the smallest single element of the array” does not provide sufficient assurance that the resulting received levels would be below the Level B harassment threshold. For all these reasons, the Commission recommends that NMFS refrain from requiring industry operators to implement shut-down or power-down procedures when small delphinids enter the exclusion zone.

The shut-down exemption, and thus the power-down exemption, would apply only to small delphinids. NMFS’s rationale was based in part on the hearing sensitivity of all MF cetaceans. However, MF cetaceans include other delphinid species that are not necessarily considered “small” (i.e., Risso’s dolphins, melon-headed whales, pygmy and false killer whales, killer whales, and short-finned pilot whales). No explanation was provided regarding why these larger delphinids are not included in the shut-down exemption, even though the Level A harassment zones for MF cetaceans are 18 and 0 m based on SPL_{peak} and SEL_{cum} , respectively. Although published accounts of those larger delphinids bow-riding or approaching seismic vessels are less common, such behavior has been observed by PSOs in the Gulf (M. Barkaszi, pers. comm.). Thus, the Commission recommends

²² Notice to Lessees and Operators (NTL 2016-G02) on Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program (www.boem.gov/BOEM-NTL-2016-G02).

that NMFS provide clarification as to the basis for exempting only small delphinids from shutdowns.

Other mitigation, monitoring, and reporting measures—The Commission supports requirements for visual and acoustic monitoring before, during, and after geophysical surveys. The proposed rule would require that industry operators visually monitor the zones for 60 minutes after activities cease during the day and 30 minutes after sunset during nighttime, but no mention is made of how long acoustic monitoring would continue after survey activities cease. The Commission believes both visual and acoustic monitoring should occur concurrently, as acoustic detections can provide additional information not readily available via visual detections alone regarding changes in foraging and social behavior during survey activities and after activities cease. Thus, the Commission recommends that NMFS require industry operators to conduct both visual and acoustic monitoring for 60 minutes after survey activities cease during the day and for 30 minutes after survey activities cease during the nighttime.

The Commission supports NMFS in its prohibition of a single airgun for ‘mitigation’ purposes, as that source represents an extraneous and unnecessary introduction of sound into the marine environment. This is consistent with recent letters regarding this matter, including the Commission’s [6 July 2017 letter](#) on geophysical surveys in the Atlantic Ocean.

The Commission also supports NMFS’s provisions to prevent entanglements of marine mammals in ocean bottom nodes. In January 2014, a dead juvenile Atlantic spotted dolphin was reported entangled in a node retrieval line. The line was tangled in the dolphin’s mouth. The dolphin was brought on deck and appeared lifeless, photographs were taken, and the dolphin was returned to the water. After consultation between NMFS and the industry operator, best management practices were developed for avoiding future entanglements. Those practices are consistent with the proposed requirements for use of ocean bottom nodes, including the use of stiff line, attaching acoustic pingers directly to the tether cable, and deploying a PSO on the node retrieval vessel to document any entanglements.

In addition, the Commission supports NMFS’s proposed use of the Commission’s method for extrapolating takes to better estimate the numbers of marine mammals taken by Level A and B harassment during geophysical surveys. The Commission notes that the method can be used to extrapolate takes to unobserved times (i.e., at night), as well as to unobserved areas.

Reporting of horizontal sound propagation—As part of the June 2013 settlement agreement on the regulation of seismic surveys in the Gulf to protect marine mammals²³, BOEM enlisted an expert panel to investigate the use of lowest practicable source level (LPSL) to both acquire the necessary subsurface target data and minimize horizontal propagation of sound that may affect marine mammals. Given the complexity of seismic surveys, the panel determined that it would not be reasonable or practicable to develop such metrics. Essentially, there is no one-size-fits-all survey design.

Nonetheless, NMFS encouraged industry operators to minimize horizontal propagation of sound energy in its preamble to the proposed rule but provided no way forward for meeting such

²³ www.boem.gov/Civil-Action-No-2-10-cv-01882-Settlement-Agreement/

objectives. The Commission agrees that LPSL is not feasible but believes that minimizing horizontal energy could be achieved by determining how much acoustic energy is “wasted”—that is, how much energy radiates laterally²⁴ instead of penetrating the ocean floor. Instead of implementing a prescriptive restriction on seismic surveys through LPSL, a more reasonable regulatory approach may be to require industry operators to measure and report the horizontal leakage of the various array configurations by analyzing the ratio of the sound intensity directly below the array to the intensity at the critical angle²⁵, essentially a “waste ratio.” Basic array theory suggests that there are a variety of ways to reduce this horizontal “sidelobe” leakage below 200 Hz, which includes increasing the number of towed strings (while reducing the volume of individual airguns) and shortening the spacing between the airguns. Further, if airguns could be designed to have more reproducible signatures above 500 Hz, the horizontal leakage also might be reduced. The Commission recommends that NMFS require industry operators to measure and report the horizontal leakage of their various airgun arrays and investigate options to minimize horizontal sound leakage from those array configurations. Once sufficient data are obtained to inform a baseline distribution of the waste ratios, BOEM could set a threshold²⁶ for the operators to meet based on the median of those ratios.

Cumulative and chronic effects

In the model used to assess chronic effects on Bryde’s and sperm whales, NMFS noted that the inclusion of nearby sound sources can lead to a misleading assessment because of their higher relative contribution to SEL_{cum} . To address this, the top 10 percent of the greatest pulse exposures were removed from those analyses. The Commission noted previously in its [17 November 2016](#) letter that this assumption is not valid because those pulses would likely not be filtered out by the animal receiving them. Thus, those pulses invariably would contribute to the overall reduction in listening area and communication space. The Commission also noted that it would be helpful to be able to compare the full dataset with the reduced dataset to distinguish how much those ‘acute’ effects add to the overall chronic exposure of the animal. Therefore, the Commission recommends that NMFS require BOEM to re-estimate the various listening area and communication space parameters for Bryde’s and sperm whales based on the entire dataset rather than removing the greatest 10 percent of pulse exposures.

NMFS’s regulatory authority to minimize impacts on marine mammals from multiple large-scale seismic surveys is provided in section 101(a)(5)(A)(i)(II)(aa) of the MMPA, which directs NMFS to structure incidental take authorizations so that they prescribe “other means of effecting the least practicable adverse impact on such species or stock and its habitat....” NMFS has had some success in the past in having seismic companies collaborate with one another on seismic surveys in the Arctic. The Commission believes that NMFS should work closely with BOEM²⁷ on

²⁴ Energy that either propagates laterally or is emitted at horizontal angles less than or equal to the critical angle of the ocean floor, which then reflects back into the water column and propagates laterally—this is referred to herein as ‘horizontal leakage’.

²⁵ Which is a function of site-specific sediment composition.

²⁶ Which may differ for the various types of surveys or other factors.

²⁷ Which also has jurisdiction under the Outer Continental Shelf Lands Act to ensure activities are conducted “in a safe and environmentally sound manner so as to prevent harm or damage to, or waste of, any natural resources (including any mineral deposit in areas leased or not leased), any life (including fish and other aquatic life), property, or the marine, coastal, or human environment” (30 C.F.R. § 251.2).

similar measures to encourage companies to combine their resources and collaborate to reduce the number of LOAs and geophysical permits issued for seismic activities in the Gulf. Collaboration on seismic surveys has become increasingly common as companies seek to reduce costs and maximize efficiencies associated with large-scale 2D seismic surveys. Collaborations on seismic surveys have occurred in Greenland²⁸, the Barents Sea²⁹, Baffin Bay (Makhorin et al. 2014), and off Mexico³⁰. The Commission recommends that NMFS work with BOEM to require industry operators to minimize cumulative impacts on marine mammals by increasing collaboration on seismic surveys whenever possible.

Least practicable adverse impact standard

The Commission has written to NMFS multiple times regarding the agency's efforts to develop a policy to interpret and implement the least practicable adverse impact requirement under section 101(a)(5)(A)(i)(II)(aa) of the MMPA³¹. The Commission continues to believe that such generally applicable policies and interpretations should be developed through a separate rulemaking (e.g., in amendments to 50 C.F.R. § 216.103 or § 216.105) or policy statement rather than in individual incidental take authorizations and again recommends that NMFS pursue such a rulemaking or publish a proposed policy for public review and comment. Among other things, the Commission is concerned that some stakeholders may not be aware of or choose not to comment on the proposed interpretation in this context, because the particular authorization may not otherwise be of interest to them (e.g., because the activity is in a geographical location or concerns a type of activity not of particular interest).

In its previous letters, the Commission recommended that NMFS adopt a two-step approach when applying the least practicable adverse impact standard. First, it should identify the criteria it will use to determine whether adverse impacts on marine mammal species/stocks or their habitat are anticipated. If potential adverse impacts are identified, the second step should be to determine whether measures designed to reduce those impacts are available and practicable. NMFS has not followed this recommendation and, as a result, its analysis is not as clear as it might be and is not linked directly to the statutory language.

In this proposed rule, NMFS proposed to apply a two-step analysis, but one that differs from the approach recommended by the Commission. Rather than assessing whether the proposed activities have the potential to have adverse impacts on marine mammal species or stocks, the first factor in NMFS's analysis is "the manner in which, and the degree to which, implementation of potential [mitigation] measure(s) is expected to reduce adverse impacts to marine mammal species or stocks, their habitat, and their availability for subsistence uses (where relevant)." In applying its analysis, NMFS considers "such things as the nature of the potential adverse impact (such as likelihood, scope, and range), the likelihood that the measure will be effective if implemented, and the likelihood of successful implementation."

²⁸ www.tgs.com/uploadedFiles/CorporateWebsite/Modules/Articles_and_Papers/Articles/acquiring-seismic-data-in-the-arctic-realm.pdf

²⁹ www.equinor.com/en/news/archive/2014/10/02/02OctBarentsseismic.html

³⁰ www.slb.com/news/press_releases/2017/2017_0428_slb_pemex_campeche_pr.aspx; subseaworldnews.com/2015/07/01/pgs-spectrum-and-schlumberger-cooperate-off-mexico

³¹ For example, see the Commission's [30 May 2017](#), [16 April 2018](#), and [13 July 2018](#) letters regarding this matter.

The Commission agrees with some, but not all of NMFS's proposed steps for applying the least practicable adverse impact standard. The Commission agrees with NMFS (and the courts that have ruled on the matter) that the least practicable adverse impact standard is separate from, and in addition to, the negligible impact standard. A key determination that must be met before an incidental take authorization can be issued is whether the anticipated taking will have no more than a negligible impact on the affected marine mammal species and stocks. However, even if the impacts are considered negligible, NMFS has an obligation to prevent or reduce further any remaining adverse impacts if it is practicable to do so. The Commission also agrees that, as is the case with the negligible impact standard, the least practicable adverse impact standard is to be implemented at the level of marine mammal species and stocks. And, as NMFS recognized in the preamble to the proposed rule, population-level effects accrue through effects on individuals such that evaluation of potential impacts and mitigation measures needs to focus on individual animals as well as at the species or stock level.

Because NMFS's proposed criteria for applying the least practicable adverse impact standard coming elements related to whether impacts are adverse and whether potential mitigation measures are likely to be effective, NMFS's analysis is not as clear as it should be. For example, it is not readily apparent how the status of a species or stock is relevant to determining "the appropriateness of certain mitigation measures in the context of least practicable adverse impact." Is it because the impact is not considered adverse in some cases, or because steps to mitigate adverse impact are not considered practicable? While the Commission believes that any incidental death of a marine mammal should always be considered adverse, it agrees that the status of a stock is relevant in determining whether sub-lethal impacts (e.g., those from disturbance) are considered adverse to the affected marine mammal species or stock. That is, an impact that is unlikely to lead directly to the death of a marine mammal might be considered adverse to a depleted and declining stock but not to a healthy, thriving one. However, once a determination has been made that an impact would be adverse, the only question remaining is whether it is practicable to eliminate or reduce that impact. The Commission therefore recommends that NMFS rework its evaluation criteria for applying the least practicable adverse impact standard to separate the factors used to determine whether a potential impact on marine mammals or their habitat is adverse and whether possible mitigation measures would be effective. In this regard, it seems as though the proposed "effectiveness" criterion more appropriately fits as an element of practicability and should be addressed under that prong of the analysis the Commission has recommended. In other words, a measure not expected to be effective should not be considered a practicable means of reducing impacts.

The Commission also recommends that NMFS address the habitat component of the least practicable adverse impact provision more explicitly in the final rule. The language in the MMPA strongly suggests that Congress believed that activities that compromise the value of important habitat (e.g., rookeries, mating grounds, and areas of similar significance) would always constitute an adverse impact and should be avoided or minimized whenever practicable. However, the proposed regulations neglect to identify any important habitat or to include provisions to effect the least practicable adverse impact on that habitat. Although section 217.186 of the proposed rule states that an LOA will include "means of effecting the least practicable adverse impact (i.e., mitigation) on the species or stock and its habitat," under section 101(a)(5)(A)(i)(II)(aa), measures to protect important habitat from adverse impacts are required to be set forth in the regulations themselves, not deferred to the consideration of LOAs. Among other things, by deferring the consideration of adverse

impacts on habitat and practicable means of reducing such impacts until the LOA stage, NMFS is eliminating the opportunity for public review and comment on such measures.

Long-term monitoring

BOEM initiated planning for long-term monitoring as part of its process for developing the DPEIS for G&G activities in the Gulf. BOEM issued a request for information on the development of a monitoring plan in November 2014 (79 Fed. Reg. 66402) and held a series of stakeholder webinars in March 2015. The intent of soliciting input from the public was to address the requirements under section 101(a)(5)(A) of the MMPA and NMFS's implementing regulations at 50 C.F.R. § 216.104, which state that applicants must provide a plan for monitoring the permitted activities that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities, and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. BOEM indicated at that time that it would include a monitoring plan in its application for regulations. Although BOEM acknowledged the requirement for long-term monitoring in its application, specifics were not provided and reference was made to a forthcoming, more formal plan. NMFS outlined in the preamble a number of standard monitoring requirements during survey activities, but no reference was made to any long-term monitoring program. Instead, NMFS addressed requirements for long-term monitoring in a more limited discussion of comprehensive reporting, adaptive management, and "monitoring contribution through other research."

The Commission recognizes that BOEM has expanded its monitoring and assessment of marine mammal stocks in the Gulf through its Environmental Studies Program³². Specifically, BOEM initiated the multi-year Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS)³³ in 2015 to assess distribution and abundance of marine mammals, sea turtles, and sea birds in the northern Gulf and to develop spatially- and temporally-explicit density models. BOEM also initiated a multi-year passive acoustic monitoring program in the northern Gulf, focused on collection of data on ambient sound levels and the detection of vocalizing marine mammals, with a focus on Bryde's and sperm whales. As mentioned previously, BOEM has funded an updated analysis of mitigation and monitoring reports submitted by PSOs. Those and other studies initiated and/or funded by BOEM are expected to contribute greatly to our understanding of marine mammal abundance and distribution and the characterization of anthropogenic sound sources in the Gulf. The Commission commends BOEM for its investments in marine mammal research.

The Commission also acknowledges and commends investment in research by the oil and gas industry through the E&P Sound and Marine Life Joint Industry Program (JIP)³⁴, a multi-year, multi-million dollar research program committed to understanding the effect of oil and gas exploration and production-related sound on marine life, including marine mammals and their prey species. The JIP has funded major research on the characteristics of various sound sources and the effects of sound on marine mammal hearing and behavior. It also funded the development of

³² www.boem.gov/studies

³³ www.boem.gov/GOMMAPPS/

³⁴ www.soundandmarinelife.org

PAMGuard, an open-source software program used to identify and characterize underwater vocalizations of marine mammals detected through acoustic monitoring. Currently, the Marine Vibrator JIP is developing a non-impulsive alternative to seismic airguns that would reduce the risk of injuries associated with traditional seismic surveys.

Even with those efforts, there are still significant gaps in our understanding of how oil and gas exploration and production-related sound affects marine mammals in the Gulf. The Commission has questions about the status of BOEM's long-term monitoring plan and wonders why no reference to it was included in BOEM's application. The monitoring contributions summarized in the preamble to the proposed rule refer only to existing programs, with no new monitoring or research proposed to address ongoing data gaps. For example, some of the issues raised in this letter that would be informed by additional monitoring and research include—

- relevant aversion factors for marine mammal species that inhabit the Gulf;
- the sensitivity of both small and large delphinids (and other odontocetes) to seismic surveys;
- the effectiveness of acoustic vs. visual monitoring;
- the basis for seasonal closures rather than year-round closures for Bryde's whales; and
- options to minimize horizontal sound leakage from airgun arrays through different array configurations or other means.

An agreed-upon, coordinated, and regularly updated long-term plan that outlines NMFS's and BOEM's priority research and monitoring needs in the Gulf would provide direction to industry operators, academia, other federal agencies, and non-governmental organizations regarding the information needed to support long-term decision-making. The Commission recommends that NMFS and BOEM work together to develop a coordinated long-term monitoring and research plan that synthesizes and updates information gathered by BOEM in 2014 and 2015 to reflect ongoing studies and new information needs. To facilitate the completion of the plan, the Commission reiterates its recommendation that NMFS and BOEM establish a Gulf of Mexico scientific advisory group, composed of agency and industry representatives and independent scientists, to assist in the identification and prioritization of monitoring needs and hypothesis-driven research projects to better understand the short- and long-term effects of G&G surveys on marine mammals in the Gulf. Similar scientific advisory groups have been implemented by the U.S. Navy under its Strategic Planning Process for Marine Species Monitoring, a process outlined in numerous NMFS regulations (see 83 Fed. Reg. 11060 as an example). Such an advisory group could assist NMFS and BOEM in identifying the overall monitoring goals and objectives for marine mammals in the Gulf and in evaluating and prioritizing research projects to investigate the effects of G&G surveys on marine mammals.

Adaptive management

NMFS has proposed an annual adaptive management process that would consider new information from various sources to determine whether mitigation and monitoring measures should be modified³⁵. The adaptive management process would rely on (1) information collected and

³⁵ Presumably through a subsequent rulemaking process, if mitigation and monitoring requirements are inconsistent with those included in NMFS's final rule.

reported by PSO's in monitoring reports, (2) general marine mammal and sound-related research, and (3) any other information that may call into question the basis for NMFS's small numbers and negligible impact determinations. The Commission supports an annual adaptive management process for the issuance of LOAs in the Gulf and recommends that the Commission be included in the process along with representatives from BOEM, the Bureau of Safety and Environmental Enforcement (BSEE), and industry.

One of the foundations of the adaptive management process would be the review of comprehensive reports provided annually by LOA holders. Those reports would summarize and synthesize LOA-specific reports received through July 1 of each year and be made available to NMFS by 1 October³⁶ for review as per the process outlined herein. Currently, individual PSO reports and associated data summaries are provided to NMFS largely in hard-copy form. The Commission understands that a number of software companies offer electronic reporting platforms for expedited field entry and quality control checking of PSO data, thereby facilitating data transfer, quality control, data analysis, and automated report generation. Electronic reporting platforms have been used successfully by industry operators in other OCS areas (i.e., the Arctic) and would expedite the synthesis of data collected by multiple LOA holders, as required by the adaptive management process. It also would facilitate more timely independent reviews of PSO data. The Commission recommends that NMFS require that LOA holders implement electronic reporting systems for field-based PSO data entry and expedited reporting.

Small numbers determination

Similar to the policy interpreting the least practicable adverse impact requirement under section 101(a)(5), NMFS also used this rulemaking to propose generally applicable policies and interpretations regarding the statutory requirements pertaining to the small numbers requirement under that provision. Thus, the Commission recommends that any formal or generally applicable interpretation of the small numbers provision by NMFS be issued in a stand-alone rulemaking (e.g., in amendments to 50 C.F.R. § 216.103 or § 216.105) or in a separate policy directive, rather than in the preamble to an individual proposed rule. As noted herein, establishing such policies in individual incidental take authorizations potentially disadvantages some stakeholders who might be interested in the general issue but not a particular authorization, and compromises the integrity of the public review process

The interpretation of the small numbers requirement proposed by NMFS in many ways seeks to maximize the numbers of takes of marine mammals that may be authorized under a single rulemaking. First, NMFS proposed to assess small numbers as a proportion of population size and to set a fairly high proportion (33 percent) as the upper threshold. Second, NMFS proposed to evaluate the small numbers criterion not at the rulemaking stage, but at the point of issuing individual LOAs. By doing that, NMFS seeks to allow each applicant for an LOA to take up to the maximum allowable limit, even though collectively those LOAs may authorize taking far in excess of

³⁶ The preamble states that reports are due by 30 September.

that limit³⁷. Third, NMFS proposed to evaluate the small numbers criterion based on the anticipated annual incidental take, even though LOAs may be issued for longer periods³⁸. Fourth, NMFS proposed to assess whether its proposed small numbers threshold is met by comparing “the number of individuals estimated to be taken against the best available abundance estimate for that species or stock.”

Those proposed policy choices may stem in large part from NMFS’s belief that, unlike the negligible impact requirement, the small numbers limitation is biologically irrelevant. If this is viewed by NMFS as a needless impediment to efficient processing of a growing number of incidental take authorization applications, it is easy to advocate interpretations that seek to dilute the small numbers requirement to the point where it is virtually meaningless.

The Commission takes issue with several parts of NMFS’s analysis. First, it ignores the legislative history of section 101(a)(5) of the MMPA. When the provision was enacted in 1981, it was intended as an alternative to having to obtain a waiver of the Act’s taking moratorium under more rigorous procedures. The provision contained several criteria for when issuance of a taking authorization using less demanding, notice-and-comment rulemaking would be appropriate—e.g., when incidental, but not intentional, taking is involved, when the taking would have no more than a negligible impact, and when only small numbers of marine mammals would be taken. When viewed in this light, the small numbers requirement was meant as a filter to differentiate when so-called “small take” procedures were appropriate as opposed to instances when more thorough vetting was needed. This changed substantively when section 101(a)(5) was amended in 1986 to allow the taking of depleted marine mammals³⁹, something still precluded for waivers of the taking moratorium. However, there is no indication of any Congressional intent, either in the legislative history of the 1986 amendments or subsequent amendments to section 101(a)(5), to indicate a change in the legislative purpose behind the original small numbers requirement. Thus, the term should be interpreted within the context of its enactment in 1981.

In the preamble to the proposed rule, NMFS noted that the MMPA does not indicate whether the small numbers requirement is to be evaluated at the rulemaking stage or the LOA stage of issuing authorizations. It therefore asserted that applying the requirement to each individual LOA is “a permissible interpretation of the statute.” It is not surprising that the MMPA is silent as to when and how the small numbers requirement applies. The issuance of LOAs is solely a regulatory creation of NMFS and the Fish and Wildlife Service (FWS) and not contemplated by the underlying statute at all. That is, Congress could not have intended that some of the findings required under

³⁷ Although NMFS has provided an estimate of the number of surveys that would be conducted during the five-year period covered by the proposed rule, it does not provide an estimate of the number of LOAs that may be issued during that time period.

³⁸ The Commission notes that in the past, NMFS has considered annual numbers of takes when making small numbers determinations under section 101(a)(5). The Commission has not addressed this practice previously or suggested that it might not be consistent with the statutory requirements. However, given that this is the first time that NMFS has proposed a policy to institutionalize how it interprets the small numbers requirement, the matter of whether making small numbers determinations on an annual basis is consistent with the statutory requirements is a pertinent and legitimate point to examine.

³⁹ That amendment was intended to reconcile the incidental take provision under section 101(a)(5) with section 7(b)(4) of the Endangered Species Act, which allows incidental taking of endangered and threatened species in some instances.

section 101(a)(5) be deferred to some secondary stage if, when it enacted that provision, it did not anticipate that there would be a second stage. There is nothing in the legislative history of section 101(a)(5) to support a conclusion that some of the required findings, including that the authorization be limited only to small numbers of marine mammals of a species or stock, can be made independent of the rulemaking. It strains credulity to claim that an agency can bifurcate an authorization process envisioned to be conducted through rulemaking by Congress and thereby avoid making some of the required findings through that rulemaking or can spread findings intended to be made for a single authorization across multiple authorizations. Unlike rulemaking, the issuance of LOAs does not require public notice or comment. Thus, among other things, deferring making a small numbers determination until issuance of an LOA undermines the public's and the Commission's ability to weigh in on a small numbers determination.

NMFS's regulations implementing section 101(a)(5) provide further support for the Commission's view that small numbers determinations are appropriately made at the rulemaking stage rather than when considering the issuance of LOAs. Whereas the regulatory section governing the issuance of incidental take regulations (50 C.F.R. § 216.105) includes a reference to the small numbers requirement, the section governing LOAs (50 C.F.R. § 216.106) omits any reference to that requirement.⁴⁰

The Commission also questions whether spreading the small numbers determination across multiple authorizations as proposed by NMFS is consistent with a plain reading of section 101(a)(5). That provision allows an authorization to be issued for up to five years, through rulemaking, for the taking of marine mammals incidental to a *specified activity*. Such authorizations are limited to "taking by citizens while engaging in *that activity*...of small numbers of marine mammals..." (emphasis added) provided certain additional findings are made and requirements established. It is difficult to read the introductory clause of section 101(a)(5)(i) as meaning anything other than the small numbers requirement applies to the same activity as that subject to the rulemaking. That is, the totality of the taking anticipated to occur incidental to the specified activity, and to be covered by the rulemaking, must satisfy the small numbers requirement. This being the case, the Commission also concludes that the MMPA directs that a small numbers determination be made for the entire duration of the authorization (i.e., up to five years) and not be segmented into annual increments as NMFS is proposing.

The preamble to the proposed rule cited *Center for Biological Diversity v. Salazar* as support for its proposal to evaluate small numbers as a proportion of stock size rather than as an absolute number. In that case, the Ninth Circuit Court of Appeals determined that, when promulgating regulations under section 101(a)(5) of the MMPA, the "Service need not quantify the number of marine mammals that would be taken under the regulations, so long as the agency reasonably determines through some other means that the specified activity will result in take of only 'small numbers' of marine mammals." The court further found that the term "small numbers" in the context of section 101(a)(5) "does not have a plain meaning that unambiguously forbids use of a proportional approach." In *CBD v. Salazar* the court thought FWS's use of a proportional approach to making a small numbers determination to be reasonable in light of the conclusion in the final rule that "given the spatial distribution, habitat requirements, and observed and reported data, the

⁴⁰ Except perhaps through requiring that "[i]ssuance of a Letter of Authorization will be based on a determination that the level of taking will be consistent with the findings made for the total taking allowable under the specific regulations."

number of animals coming in contact with the industry activity will be small by an order of magnitude to the [relevant walrus and] polar bear populations.”

Although the Ninth Circuit Court of Appeals determined that a proportional approach to assessing small numbers was a permissible construction of the MMPA’s requirements, the approach proposed by NMFS is very different from that taken by FWS in that case. Whereas FWS used a proportion of about 10 percent of the estimated stock sizes, NMFS is proposing a threshold that is more than three times higher. Further, FWS made its determination through rulemaking and considered the total taking expected to occur collectively incidental to all covered activities. In addition, FWS considered factors other than the proportion of the total population sizes that could be taken, including the spatial distribution of those animals, their habitat requirements, and the likelihood of animals coming in contact with industry activities.

The analysis presented by NMFS to determine the proportional threshold for what constitutes a small number is rather simplistic. NMFS determined that numbers of takes would either be small, medium, or large, and therefore is proposing that anything in the lowest bin (≤ 33 percent) be considered small. Applying that standard to certain abundant stocks results in a number of permissible takes that does not appear on its face to be very small, or to reflect what Congress likely had in mind when it adopted the small numbers filter in 1981. For instance, the take of more than 200,000 northern fur seals from the eastern Pacific stock would be considered a small number under NMFS’s proposal. The problem is exacerbated by the proposal that small numbers determinations be made for individual LOAs based on allowable takings in a given year. Over the course of a five-year regulation, with many LOA holders, take could far exceed the total estimated abundance of a stock and still be considered a small number. For example, if five industry operators sought the maximum allowable take under the proposed small numbers approach for each of five years, the authorized take would be more than eight times the stock’s estimated total abundance. Accommodating such a possibility is not a reasonable interpretation of the statutory constraint established by the small numbers requirement.

Although it is a relatively minor issue compared to the overall problems associated with NMFS’s proposed proportional approach for assessing small numbers, the Commission would like to see further analysis of NMFS’s proposal to make small numbers determinations under its proportional approach using the best available population estimate. Specifically, the Commission recommends that NMFS evaluate the relative risk that the established threshold would be exceeded if the best available population estimate or some other metric, such as a minimum or intermediate population estimate, is used.

NMFS notes one potential problem with adopting an interpretation of small numbers that is too constraining—that it might encourage industry operators to seek individual incidental take regulations or incidental harassment authorizations (IHAs) rather than coordinating with other operators to seek a collective authorization if necessary to satisfy the small numbers requirement. This is a legitimate concern, and could increase NMFS’s workload if it had to process more applications. As section 101(a)(5) is written, applicants already have discretion to determine whether they wish to seek incidental take regulations and LOAs specific to their activities, regulations to cover their activities in conjunction those of others conducting similar activities, or a series of IHAs to cover multi-year activities not expected to result in mortality or serious injury of marine mammals. On the other hand, NMFS already needs to consider and process all applications it

receives as well as requests for individual LOAs under incidental take regulations covering multiple operators. Thus, it is unclear to what extent NMFS's workload would increase if it did not adopt its proposed policy for making small numbers determinations. In any event, workload considerations are not a valid basis to adopt an interpretation of the small numbers requirement that is at odds with the statutory scheme or the pertinent legislative history, or that stretches the meaning of the term small numbers beyond reason.

It should be noted that a similar problem might arise under NMFS's proposal to defer small numbers determinations to its consideration of individual LOAs. If an applicant is running up against the small numbers limit it could subdivide its activities and seek multiple LOAs for what otherwise might be considered under a single authorization. If this were to happen, this too could increase NMFS's workload.

In light of its analysis of the statutory requirements and the legislative intent behind the MMPA's small numbers requirement, the Commission recommends that NMFS, independent of this rulemaking, adopt a policy interpreting the small numbers requirement of section 101(a)(5) that—

- requires such determinations to be made when issuing incidental take regulations;
- makes such determinations based on the total take authorized incidental to the specified activity and for the full duration covered by those regulations;
- provides an opportunity for public notice and comment on all small numbers determinations; and
- if such determinations are made based on a proportion of a species' or stock's abundance, the policy—
 - either use a proportion more consistent with that approved by the court in *CBD v. Salazar* or provide additional justification for selecting a substantially higher proportion;
 - include a sliding scale, such that a lower proportion is allowed as stock size increases;⁴¹ and
 - reflect an analysis of the impact of the measure of population size used (e.g., best, intermediate, or minimum population estimate) on the level of assurance that selected thresholds will not be exceeded.

Negligible impact determination

NMFS's negligible impact determination relies heavily on a relativistic risk assessment framework developed by Southall et al. (2017) to interpret exposure estimates within the context of key biological and population parameters and other environmental and anthropogenic factors. Although such a framework may have merit, the details of the framework are not clear and many of the quantitative aspects have not been substantiated. Specifically, the basis for determining the relative risk thresholds, relative rating thresholds, species-specific biological risk factors, and

⁴¹ In making this recommendation, the Commission notes that this is meant to apply only to the small numbers determination. While for some small stocks the taking of most or all of the individuals in the stock may be considered a "small number," presumably the taking of such a high proportion of the stock is likely to run afoul of the negligible impact requirement.

environmental risk factors was not provided. The Commission also notes that the Southall et al. (2017) report, which is only in draft, has some apparent inconsistencies with what was specified by NMFS in the preamble to the proposed rule. For example, the high, moderate, and low values in Table 3 of the Southall et al. (2017) report do not correspond with the max, mean, and min values in Table 2 of the *Federal Register* notice for any of the zones except Zone 1. Thus, it is unclear upon what NMFS based its values. In addition, NMFS indicated that the effort projections used in the framework were provided by BOEM. However, neither NMFS nor BOEM stipulated why only certain years⁴² were selected for analysis. NMFS further acknowledged that per-zone ranges can provide a different outlook than an assessment of total year projected effort across zones (83 Fed. Reg. 29224). Although the basis for those inconsistencies may be due to a variety of factors, it is unclear why NMFS would not be basing its negligible impact determination on the total year of projected effort for all zones combined. Thus, including per-zone information seems unnecessarily confusing unless NMFS intends to limit activities within a given zone based on the overall impact of those activities across all zones.

In short, NMFS's approach for negligible impact determination is based largely on an analysis framework that is not transparent or substantiated and that appears to have inconsistencies. More importantly, the risk analysis framework and results have not been finalized. Such a framework is preferred over simple qualitative analyses but only if the framework and underlying analyses are appropriate, well-informed, and realistic. Until such time that the draft risk assessment framework and results have been finalized and are available for review, the Commission and the public cannot comment on NMFS's approach for making its negligible impact determination. Accordingly, the Commission recommends that NMFS (1) provide the final risk assessment framework, underlying results, and its interpretation of those results to the public and (2) allow for an additional 30-day comment period to review the findings sufficiently in advance of issuing the final rule.

LOAs and caps

The level of effort proposed by an industry operator would be used to develop an LOA-specific take estimate based on the results of Zeddies et al. (2015, 2017)⁴³. NMFS has proposed that the annual estimated take per zone and per species would serve as a cap on the number of authorizations that could be issued to individual LOA holders⁴⁴. No details were provided, however, on how a cap on takes would be implemented⁴⁵ or upon what the cap⁴⁶ would be based. It also is unclear why a "per-zone" cap is necessary. The total number of annual takes should be capped at the species or stock level for all relevant survey zones combined. These details are critical and would serve as the basis for ensuring that NMFS's small numbers and negligible impact determinations are not invalidated. Absent these details, neither the Commission nor the public can comment on NMFS's proposed approach. This lack of transparency undermines the public comment period

⁴² Upon further inquiry, NMFS indicated that years 1, 4, and 9 were used in the analysis.

⁴³ Applicants may choose to present additional information in an LOA application, including independent take estimates and a description of proposed mitigation and monitoring (if more stringent than the requirements in the final rule). However, such additional information would be subject to NMFS review and approval, as well as public review via a 30-day comment period prior to issuance.

⁴⁴ This requirement was not included in the proposed rule.

⁴⁵ For example, based on a first-come first-serve basis or consideration of all LOA applications submitted by a given deadline, rejection of LOAs after a given deadline or after a cap has been met, etc.

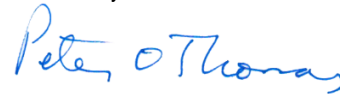
⁴⁶ For example, 33 percent of the species or stock.

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afforded under section 101(a)(5)(A) of the MMPA. The Commission recommends that NMFS (1) provide details on how it plans to implement the proposed cap and upon what the cap is based to the public and (2) allow for an additional 30-day comment period to review such details sufficiently in advance of issuing the final rule.

The Commission appreciates the work that has gone into BOEM's application and NMFS's review of it and hopes you find its letter useful. Please contact me if you have questions regarding these recommendations.

Sincerely,



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

cc: Jill Lewandowski, BOEM

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