Appendix G Public Comments and Responses

Gulf of Alaska Navy Training Activities

Final Supplemental Environmental Impact Statement/ Overseas Environmental Impact Statement

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Appendix G Public Comments and Responses

G.1 Public Comments and Navy Responses on the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

Comments on the Gulf of Alaska (GOA) Navy Training Activities Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (SEIS/OEIS) and GOA Supplement to the 2020 Draft SEIS/OEIS were received via mail and via the project website.

Comments covered a wide spectrum of thoughts, opinions, ideas, and concerns. Commonly addressed themes included the following: concerns about the timing of the Proposed Action; concerns regarding impacts on marine mammals, fishes, fisheries, sea turtles, and birds; concerns about ocean noise pollution; requests to include additional mitigation measures; requests for further analysis of cumulative impacts; and concerns about Native Alaska federally recognized tribes consultation, tribal resource impacts, and the environmental justice analysis.

Each row in the following tables presents the identification of the commenter, the comment, and the Navy's response to the comment. Because many commenters touched on more than one topic, in some cases the commenter's topics were separated into individual comments, assigned a number, and responded to separately. The commenter's name or organization may be abbreviated when the comment is broken into more than one topic. For example, the comment by the Marine Mammal Commission covers several topics, so these are separated into subsequent comments named MMC-02, MMC-03, and so forth.

G.1.1 Federal Agencies

Table G-1 contains comments received from federal agencies during the 2020 Draft SEIS/OEIS public comment period and the Navy's response to those comments.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials

Commenter	*Comment*	*Navy Response*
Marine Mammal Commission (MMC)		
MMC-1	The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the U.S. Navy's (the Navy) Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (DSEIS) for training activities conducted within the Temporary Maritime Activities Area (TMAA) in the Gulf of Alaska (GOA, Phase III; 84 Fed. Reg. 80076). The DSEIS addresses the impacts on marine mammals from conducting training activities in the TMAA and is associated with the letter of authorization (LOA) application that the Navy submitted to the National Marine Fisheries Service (NMFS). NMFS is a cooperating agency for the DSEIS, which would serve as its environmental planning documentation for the rulemaking process under the Marine Mammal Protection Act. The Navy previously analyzed the various impacts on marine mammals, first under the Tactical Training Theater Assessment and Planning EIS (TAP I) and second under the Phase II SEIS. The Commission recognizes and understands the effort that goes into drafting these documents and appreciates the Navy's response to and incorporation of some of the Commission's previous recommendations.	Thank you for reviewing the 2020 Draft SEIS/OEIS.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
MMC-2	**Background** The Navy proposes to conduct training activities in the waters off Kodiak, Alaska. The activities would involve the use of mid- and high-frequency sonar, weapons systems, explosive and non-explosive practice munitions and ordnance, high-explosive underwater detonations, expended materials, electromagnetic devices, high-energy lasers, vessels, and aircraft. Activities would occur from April–October. Under the No Action Alternative, the Navy would not conduct training activities[1]. Alternative 1, the Preferred Alternative, represents the status quo based on the 2016 final SEIS/OEIS and 2017 record of decision. In addition to potential time-area closures[2], mitigation measures would include visual monitoring[3] to implement delay and shut-down procedures. *Footnotes:* [1] The Commission appreciates that the Navy included this alternative for Phase III DEISs and DSEISs consistent with DEISs for the Navy's Surveillance Towed Array Sensor System Low Frequency Active (SURTASS) sonar and the Commission's previous recommendations. [2] Some of which correspond to documented biologically important areas. [3] Passive acoustic monitoring would occur only when Navy assets with passive acoustic monitoring capabilities are already participating in an activity.	Thank you for reviewing the 2020 Draft SEIS/OEIS; however, the proposed training is incorrectly characterized as being off Kodiak Island. The nearest corner of the training area is approximately 27 nautical miles (NM) offshore of Kodiak Island and outside state waters (3 NM) and the boundary of U.S. Territorial Seas (12 NM). The Navy will continue prohibiting MF1 hull-mounted mid-frequency active sonar during training from June 1 to September 30 within the North Pacific Right Whale Mitigation Area, which will separate this type of training further from Kodiak Island. To further protect marine species, the Navy newly developed the Continental Shelf and Slope Mitigation Area. As detailed in Section 5.4 (Geographic Mitigation to be Implemented), the Continental Shelf and Slope Mitigation Area extends across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The Navy will prohibit the detonation of explosives below 10,000 ft. altitude (including at the water surface) in this mitigation area during training. The mitigation area would prevent explosives from being used within 100 nautical miles of Kodiak Island. The mitigation is intended to help the Navy further avoid impacts on humpback whales, gray whales, North Pacific right whales, ESA listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA.
MMC-3	**Density Estimates** *Uncertainty in density estimates*—The Commission had recommended in previous letters regarding Navy Phase II activities	Similar to other Navy Phase III training and testing impact analyses, the Navy incorporated uncertainty in species density and group size for those species with uncertainty values available, when

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	that the Navy incorporate uncertainty and more refined data in its density estimates, including for cetaceans in regions or seasons that have not been surveyed and for pinnipeds in general. For Phase III activities in the Atlantic Fleet Training and Testing (AFTT) study area and Hawaii-Southern California Training and Testing (HSTT) study area, the Navy used more refined density estimation methods for cetaceans and accounted for uncertainty in those densities and the group size estimates[4] that seeded its animat modeling. Department of the Navy (2018) indicated that uncertainty in group size estimates for the Marianas Island Training and Testing (MITT) study area and Northwest Training and Testing (NWTT) study area was based on either Poisson or lognormal distributions, but did not indicate whether uncertainty was incorporated in the density estimates and what, if any, distribution was used[5]. Instead, Department of the Navy (2018) merely noted that a compound Poisson-gamma distribution was used for incorporating uncertainty in density estimates for AFTT and a lognormal distribution was used for densities associated with HSTT. Department of the Navy (2018) made no mention of incorporating measures of uncertainty—CVs were stipulated for numerous underlying density estimates in Department of the Navy (2020b)—in either the density or group size estimates for GOA. As such, the Commission assumes that the Navy did not incorporate uncertainty in either estimate. As noted in the Commission's 15 September 2014 letter on Phase II activities in GOA, many of the CVs associated with the underlying density estimates that were used then and that have been used again for Phase III activities were quite large. For example, the densities for killer whales were 0.005 whales/km^2 (CV=0.59) for the inshore stratum, 0.002 whales/km^2 (CV=0.72) for the offshore stratum, 0.002 whales/km^2 (CV=0.77) for the seamount stratum, and 0.020 whales/km2 (CV=0.92) for the slope stratum (Rone et al. 2017[6]). Using only the mean densities would very likely result in an underestimation of takes due to the CVs being so much greater than the mean point estimates. The abundance estimates for	distributing the animats in the Navy Acoustic Effects Model. Since 2016, the Navy Acoustics Effects Model has been refined; marine species density estimates have been updated; and NMFS has published new effects criteria, weighting functions, and thresholds for multiple species, including sea turtles, that are incorporated into the model analysis. As discussed in the technical report titled "Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing" (U.S. Department of the Navy, 2018), available at www.goaeis.com, marine mammal and sea turtle density data are provided as a 10x10 kilometer (km) grid where each cell has a mean density and standard error. In the Navy Acoustic Effects Model, species densities are distributed into simulation areas. Sixty distributions that vary based on the standard deviation of the density estimates are run per season for each species to account for statistical uncertainty in the density estimates. To address the Commission's recommendations: (1) Clarification on the incorporation of uncertainty in density estimates is provided in the Density Technical Report "U.S. Navy Marine Species Density Database Phase III for the Gulf of Alaska Temporary Maritime Activities Area, " as cited in the 2020 Draft SEIS/OEIS and available at www.goaeis.com; (2) Uncertainty in the density estimates was incorporated into the estimation of take for all species with appropriate measures of uncertainty available; (3) The Navy is not required to describe why a measure of uncertainty in a density estimate was not incorporated; however, uncertainty is incorporated into the density estimates for most species. As noted in previous comment responses in other at-sea EIS/OEIS documents to the Commission, using a mean density estimate that incorporates appropriate measures of uncertainty, as was done for the species listed in the comment, is a commonly used and scientifically valid method of estimating a value (i.e., a density in this context). There is equal probability of underestimating and

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	unidentified large whales also were prorated among blue, fin, and humpback whales within each stratum and incorporated proportionally into the blue whale density estimate that the Navy used from Rone et al. (2014). A high level of uncertainty and variability is inherent in using such prorated methods. In addition, some density estimates were based on data from Waite (2003) that included (1) a single sighting, for which the Navy noted the confidence in the density value was low and/or (2) f(0) and g(0) values derived from other surveys in the North Pacific[7] (Department of the Navy 2009). For pinnipeds, many of the abundance estimates that informed the Navy's density estimates include CVs or other measures of uncertainty (e.g., standard error (SE), 95 percent confidence intervals (CIs)) that can be incorporated as well (see NMFS's stock assessment reports (SARs) and Fritz et al. 2016). The Commission recommends that the Navy (1) clarify whether and how it incorporated uncertainty in both its density *and* group size estimates for its animat modeling specific to GOA and specify the distribution(s) used in the final SEIS and, (2) if uncertainty was not incorporated, re-estimate the numbers of marine mammal takes based on the uncertainty inherent in the density estimates provided in Department of the Navy (2020b) or the abundance estimates in the underlying references (NMFS SARs, Fritz et al. 2016, etc.). If the Navy chooses not to incorporate uncertainty in its density and group size estimates, the Commission recommends that the Navy specify why it did not do so in the final SEIS. The Commission further recommends that, when the Navy uses a single document such as Department of the Navy (2018) as the basis for its analytical methods, incorporate the relevant information regarding the analytical methods for *all* DEISs and DSEISs at the outset or revise the document accordingly to include such information as it becomes available—this would apply to upcoming Phase IV documents as well.	overestimating takes even with a large coefficient of variation (CV) associated with a mean density estimate. Therefore, using the mean density and incorporating the CV into the distribution of animats in the Navy Acoustic Effects Model is reasonable and representative of species distribution in the Study Area. Pinnipeds: The Navy continues to seek appropriate methods for incorporating uncertainty into density estimates for pinnipeds, and by extension, into the Navy's estimates of exposures. Of the six pinniped species for which the Navy calculates densities, only the northern fur seal incorporated a CV as a measure of uncertainty in the density estimate. The CV was provided in the SAR (Muto et al., 2020a) as a measure of uncertainty in the abundance of northern fur seals, and that abundance (620,660 northern fur seals) was the basis for the density calculation, making the CV directly applicable to the density estimate. Only limited data were available for calculating densities for California sea lions and ribbon seals in the GOA Study Area, as described in the Density Technical Report, and no estimate of uncertainty in either the abundance or the density was available or could be estimated. The SAR did not provide a CV or other measure of uncertainty in the abundance estimate for northern elephant seals, so none was available for use in the density calculation. The SAR provided a SE in the abundance estimates for the four harbor seal stocks (Muto et al., 2020a) as a measure of uncertainty in the abundance; however, those abundance estimates were combined as described in the Density Technical Report and used to calculate an abundance over the continental shelf—the only part of the harbor seal distribution within the GOA Study Area. The stock abundances were not direct inputs into the density calculations; therefore, the Navy determined that it would not be statistically correct to manipulate (e.g., sum or average) four standard error values representing uncertainty in the separate abundance estimates to derive a standard error and apply it to a calculated continental shelf abundance. The abundance for Steller sea lions was taken from Fritz et al. (2016) Table 1A (pups) and Table 6 (non-pups for E Gulf). The recommended formula of

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Footnotes: [4] Using means and standard deviations that varied based on either a compound Poisson-gamma or lognormal distribution for densities and Poisson, lognormal, or inverse Gaussian distribution for group sizes. [5] NMFS did clarify in the preamble to the NWTT final rule that uncertainty was incorporated into the density estimates. Specifically, a coefficient of variation (CV) was used to represent uncertainty in the species-specific density estimates, when available (85 Fed. Reg. 72325). However, NMFS did not clarify what type of distribution was used consistent with AFTT and HSTT. [6] Which includes data from Rone et al. (2014). [7] Waite (2003) did not provide survey-specific f(0) and g(0) values; therefore, those values originated from other surveys that occurred in the North Pacific. Waite (2003) data also were collected in summer (June and July) but were applied to other seasons.	pup count x 3.5 was used to estimate the C Gulf non-pup abundance (Note that Table 6 only included the abundance for RCA-9, a portion of the C Gulf abundance. No measure of uncertainty in the abundance is provided in either table (Fritz et al., 2016). The Navy intends to incorporate uncertainty in its density estimates for pinnipeds in the future, as data or statistically valid methodologies allow.
MMC-4	*Gray whale densities*—The Navy acknowledged that gray whales migrate through, as well as feed in, the Gulf of Alaska (Department of the Navy 2020b). However, it based the gray whale density estimates in the Gulf of Alaska on migrating whales, specifically the overall density of north and southbound migrating whales off the coast of San Clemente Island in California in 1998 and 1999 (Carretta et al. 2000)[8] prorated based on the occurrence of southbound migrating whales in two offshore zones (0–5 km and 5–37 km from shore) of coastal California near Granite Canyon (Sheldon and Laake 2002). The resulting densities the Navy used were 0.04857 and 0.00243 whales/km^2 for inshore and offshore densities, respectively. The Commission notes multiple issues with the assumptions and resulting densities. First, Carretta et al. (2000) provided inshore and offshore densities[9] (0.115 and 0.032 whales/km^2, respectively), so the Navy did not need to prorate the overall density based on delineations from a completely different area in California. Second, the Navy assumed, both for migrating and feeding gray whales, that the density delineations for NWTT were 0–10 km for inshore and 10–	Carretta et al. (2000) provide density calculations from 1998 and 1999 aerial surveys around San Clemente Island. Although the density estimates are over two decades old, they are still the best available because more current studies provide either total stock abundance estimates (e.g., Durban et al. (2017)), or spatially explicit monthly density estimates for whales migrating along the U.S. West Coast that do not include the GOA (DeAngelis et al., 2011). While the Carretta et al. (2000) density estimate can be used as a starting point to derive estimates for the GOA, the inshore and offshore areas defined by Carretta et al. (2000) are not appropriate to use for the GOA because they reflect distribution patterns of migrating whales around an island in the Southern California Bight, where migration distribution patterns are quite different than coastal areas, since many whales cut across the Bight on their way south to the breeding areas along Baja California (Jones & Swartz, 2002). Shelden and Laake (2002) estimated gray whale coastal distribution patterns based on 6 years of aerial survey data collected off Granite Canyon, a well-monitored shore-based observation site located along the coast of California. They found that 95.24% of gray whales were within 2.24 NM of the coast during migration and 4.76% were

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	47 km for offshore based on DeAngelis et al. 2011 (Department of the Navy 2020c). Third, the Navy's GOA densities do not consider gray whales feeding farther offshore than 37 km, which is known to occur in the TMAA within the Kodiak Island biologically important area (BIA; Ferguson et al. 2015). Ferguson et al. (2015) specified that gray whales have been observed year-round off the east coast of Kodiak Island, with greatest densities from June through August. The Navy confirmed that gray whale calls have been recorded from July through October within the TMAA, primarily on the continental shelf (Department of the Navy 2020b). Based on the densities the Navy used for gray whales, it estimated zero takes of any type. Given that there are no density estimates available for gray whales in the TMAA but they could occur there within the timeframe that the Navy's activities are proposed to occur, the Navy should request a small number of gray whale takes, regardless of whether its model estimated zero takes. If the Navy considers the density data from Carretta et al. (2000) to be the best available for gray whales in GOA, the Commission recommends that the Navy (1) use the inshore density of 0.115 whales/km^2 for 0–5.5 km from shore and the offshore density of 0.032 whales/km^2 for 5.5–45 km from shore provided in Carretta et al. (2000) and re-estimate the numbers of gray whale takes accordingly and (2), if zero takes are estimated, request a small number of Level B harassment behavior takes of gray whales in its LOA application that it submits to NMFS. *Footnotes:* [8] 0.051 whales/km^2. [9] Inshore densities extended out to 5.5 km and to approximately 45 km for offshore densities.	between 2.25 and 20 NM from the coast, and this distribution pattern did not change significantly among survey years. The basic map of global distribution for the gray whale in Jefferson et al. (2008) suggests a similar coastal zone could be made all the way up the coast of Canada and around the GOA. Therefore, the overall density of 0.051 from Carretta et al. (2000) were split into the Shelden and Laake "nearshore" and "offshore" areas using these percentages. As noted above, the DeAngelis et al. (2011) gray whale density estimates were derived specifically for the migration periods and numbers of whales observed off the U.S. West Coast. They provide spatially explicit density estimates by month for waters off California, Oregon, and Washington and are thus not appropriate to use for the GOA. Regarding the BIA feeding area off Kodiak Island identified by Ferguson et al. (2015), the Navy's GOA Study Area does not overlap this BIA, and there is no evidence to suggest that gray whales would be feeding farther offshore within the GOA Study Area. As noted in the Density Technical Report, out of a total of 10 gray whale sightings during systematic surveys in 2009, 2013, and 2015, only one of these sightings was made within the GOA Study Area and it was in the inshore stratum (Rone et al., 2017). The Navy estimated the distribution and density of gray whales based on the best available data to support the Navy's analysis of potential effects from sonar and explosives. No exposures to gray whales were predicted; it would not be appropriate to disregard those results and request takes that are not expected to occur. ***References cited*** Carretta, J. V., M. S. Lowry, et al. (2000). Distribution and abundance of marine mammals at San Clemente Island and surrounding offshore waters: results from aerial and ground surveys in 1998 and 1999**:** 43.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
		DeAngelis, M., L. Saez, J. MacNeil, B. Mate, T. Moore, D. Weller, and W. Perryman. (2011). Spatiotemporal Modeling of the Eastern Pacific Gray Whale's (*Eschrichtius robustus*) Migration Through California, Oregon, and Washington. La Jolla, CA: Southwest Fisheries Science Center. Durban, J., D.W. Weller, and W.L. Perryman. 2017. Gray whale abundance estimates from shore-based counts off California in 2014/2015 and 2015/2016. Paper SC/A17/GW/06 presented to the International Whaling Commission. Jefferson, T. A., M. A. Webber, et al. (2008). Marine Mammals of the World; A Comprehensive Guide to their Identification. Amsterdam, Elsevier. Jones, M. L. and S. L. Swartz (2002). Gray whale, *Eschrichtius robustus*. Encyclopedia of Marine Mammals. W. F. Perrin, B. Würsig and J. G. M. Thewissen. San Diego, Academic Press**:** 524-536. Rone, B. K., A. N. Zerbini, A. B. Douglas, D. W. Weller, and P. J. Clapham. (2017). Abundance and distribution of cetaceans in the Gulf of Alaska. Marine Biology, 164(23), 1–23. Rugh, D. J., R. C. Hobbs, et al. (2005). "Estimates of abundance of the eastern North Pacific stock of gray whales (Eschrichtius robustus) 1997-2002." Journal of Cetacean Research and Management **7**(1): 1-12. Shelden, K. E. W. and J. L. Laake (2002). "Comparison of the offshore distribution of southbound migrating gray whales from aerial survey data collected off Granite Canyon, California, 1976-96." Journal of Cetacean Research and Management 4(1): 53-56.
MMC-5	*Beaked whale densities*—Baird's, Stejneger's, and Cuvier's beaked whales have been detected using various passive acoustic monitoring devices in the TMAA, while only Baird's and Cuvier's beaked whales have been observed visually. For the 2013 survey in the TMAA, Rone et al. (2014) documented six on-effort sightings of 49 Baird's beaked whales[10] and one sighting of a	The Navy developed a hierarchical system, described in each of the density technical reports, for identifying and selecting the best available density data. As described in Section 2.2.2 of the Density Technical Report for the GOA, the density value of a surrogate species can be used as a proxy value when species-specific density data are not available. A density estimate for Baird's beaked whale

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	single Cuvier's beaked whale. The researchers also documented 47 acoustic encounters of Cuvier's beaked whales, 32 acoustic encounters of Baird's beaked whales, and six encounters of Stejneger's beaked whales (Rone et al. 2014). Yack et al. (2015) were able to derive stratum-specific[11] density estimates for Cuvier's beaked whales but were unable to do so for the other two species due to insufficient sample sizes. The Navy assumed that the pooled density estimate of 0.0021 whales/km^2 from Yack et al. (2015) should be applied to the three depth strata for Stejneger's beaked whales (Department of the Navy 2020b). That approach is reasonable. However, rather than applying the same approach for Baird's beaked whales, the Navy used a presumed density of 0.0005 whales/km^2 from Waite (2003) based on a single sighting of four Baird's beaked whales. That density estimate is of little value based on the Commission's critique of data that originated from Waite (2003) in a previous section herein. In addition, the Navy itself specified that six visual sightings and numerous acoustic detections of Baird's beaked whales occurred during the 2013 survey in the TMAA (Department of the Navy 2020b). Rone et al. (2014) also noted that Baird's beaked whales often travel in large groups. The Navy further specified average group size as 8.08 for Baird's beaked whales, 2.04 for Cuvier's beaked whales, and 6 for Stejneger's beaked whales (see Table 26 in Department of the Navy 2020a). As such, the density from Waite (2003) is a vast underestimate. Further, Rone et al. (2014) documented the first fine-scale habitat use of a tagged Baird's beaked whales in the region. The tagged individual demonstrated the importance of seamount habitat, remaining approximately nine days, presumably foraging, within a relatively small geographic range inside the GOA TMAA, with approximately six of those days spent in the vicinity of a single seamount (Rone et al. 2014). The greatest density of Cuvier's beaked whales also was attributed to the seamount stratum	is available based on sighting data collected within the GOA; therefore, the use of density estimates for a surrogate species would not be consistent with the established hierarchy. The Navy is hopeful that density estimates for Baird's beaked whale can be updated in the future based on more recent survey data.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	based on Yack et al. (2015). At a minimum, the stratum-specific densities for Cuvier's beaked whales should have been used as surrogates for Baird's beaked whales, with the understanding that the Cuvier's beaked whale densities may still be an underestimate based on the larger group size of Baird's beaked whales. The Commission recommends that the Navy use the three stratum-specific densities of Cuvier's beaked whales as surrogates for Baird's beaked whales and re-estimate the numbers of takes accordingly. *Footnotes:* [10] Ranging from 2–16 whales in each group. [11] For 0.002 whales/km^2 for the offshore stratum, 0.003 whales/km^2 for the seamount stratum, and 0.008 whales/km^2 for the slope stratum.	
MMC-6	*Harbor porpoise densities*—The Navy indicated that it used data derived from Hobbs and Waite (2010) to characterize harbor porpoise density in various strata based on published depth distributions (Department of Navy 2020b). The Navy did not stipulate where those depth strata delineations originated or what density from Hobbs and Waite (2010) was used. Hobbs and Waite (2010) provided an uncorrected density of 0.062 porpoises/km^2 for the Gulf of Alaska and a corrected abundance of 31,046 porpoises[12] for the 158,733 km^2 area surveyed (see Table 2), which would result in a corrected density of 0.198 porpoises/km^2. Both densities are greater than the 0.0473 porpoises/km^2 that Navy used for GOA[13] (Department of the Navy 2020b). If the Navy considers the data in Hobbs and Waite (2010) to be the best available science, the Commission recommends that the Navy use the corrected density of 0.198 porpoises/km^2 from Hobbs and Waite (2010) for the 100- to 200-m isobath stratum and re-estimate the numbers of takes accordingly for harbor porpoises.	Hobbs and Waite (2010) estimated the abundance of the GOA harbor porpoise stock based on aerial surveys conducted in the summer of 1998. The surveys were conducted along transect lines that ran from shore (including inlets, straits, and sounds) out to the 1,000 meter (m) depth contour, and were concentrated in nearshore areas where harbor porpoise are known to occur. Once corrected for perception and availability bias, Hobbs and Waite (2010) estimated a total of 31,046 harbor porpoise in the GOA stock (i.e., a density estimate of 0.1956 animal/km^2 based on a study region of 158,733 km^2). Hobbs and Waite (2010) note that, despite the ranges of depth surveyed in the GOA, harbor porpoise were present primarily in waters less than 100 m in depth, which is consistent with aerial surveys off the U.S. West Coast where porpoise are mainly found in 20–60 m depth (Carretta et al., 2001). Based on these data, it was assumed 90% of the harbor porpoise are found in waters up to 100 m depth, 10 percent in waters from 100 from 200 m depth, and few in waters from 200 to 1,000 m depth. Given their nearshore distribution, it would not be appropriate to use an overall harbor porpoise density estimate of 0.1956

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Footnotes: 12 Based on both perception and availability biases.	animal/km^2 across the GOA Study Area; density estimates need to be derived specific to the depth ranges where they are known to occur. To derive density estimates, depth strata were identified consistent with Hobbs and Waite (2010) and are shown below for waters within the GOA Study Area (to be consistent with the survey coverage of Hobbs and Waite (2010), the areas included nearshore regions within inlets, straits, and sound). The total area within the 1,000 m depth contour = 101,588.64 km^2. GOA Study Area depth distribution: < 100 m = 39,332.23 km^2 100–200 m = 42,020.44 km^2 200–1,000 m = 20,235.97 km^2 TOTAL = 101,588.64 km^2 Based on the Hobbs & Waite (2010) density estimate of 0.1956 animal/km^2, approximately 19,871 harbor porpoise could occur within these waters. Based on these values, the following density estimates were calculated using the estimate of 19,871 harbor porpoises, the percentages noted above, and the area of each depth strata in the GOA Study Area. GOA Study Area harbor porpoise density estimates: < 100 m = 0.4547 animals/km^2 100–200 m = 0.0473 animals/km^2 200–1,000 m = 0.00001 animals/km^2 ***References cited*** Carretta, J. V., B. L. Taylor, and S. J. Chivers. 2001. Abundance and depth distribution of harbor porpoise (*Phocoena phocoena*) in northern California determined from a 1995 ship survey. Fish. Bull. 99:29–39.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
		Hobbs, R. C., and J. M. Waite. (2010). Abundance of harbor porpoise (*Phocoena phocoena*) in three Alaskan regions, corrected for observer errors due to perception bias and species misidentification, and corrected for animals submerged from view. Fishery Bulletin, 108(3), 251–267.
MMC-7	*Pinniped densities*—In previous Commission letters regarding Phase II activities, the Commission recommended that the Navy incorporate telemetry data, appropriate age and sex assumptions, and relevant haul-out correction factors appropriately[14] to better refine its density estimates. The Navy did so for Phase III activities at NWTT but to a much lesser degree for GOA. As was the case for Phase II activities for GOA, the Navy again used abundance estimates divided by given areas to estimate densities and the areas again were inconsistent among species. For example, the Navy used— • the GOA Large Marine Ecosystem (LME) area for northern fur seals, • the critical habitat designated areas for the Eastern and Central Gulf of Alaska for western Steller sea lions (western distinct population segment (wDPS)), • an approximation of the area of the eastern distinct population segment (eDPS) for eastern Steller sea lions, • U.S. Geological Survey's (USGS) definition of the Gulf of Alaska for northern elephant seals, and • the continental shelf area extending to the 500-m isobath for harbor seals (Department of the Navy 2020b). Those areas may be appropriate for some species or stocks but not for others. Specifically, it is unclear why the Navy did not use the GOA LME area for elephant seals, as both density estimates incorporated telemetry data over given areas.	The Navy adopted new methodologies and densities based on best available science and in collaboration with NMFS to improve the Navy's pinniped density estimates in the GOA and NWTT Study Areas. The same approach taken for the pinniped density estimates in the NWTT Study Area was applied to density estimates in the GOA Study Area, including the use of haulout factors, telemetry data, and age and sex class distinctions (as data permitted). One difference was the application of a growth rate used to calculate abundances for some pinniped species in the NWTT Study Area. Applying an annual growth rate for pinniped species in the GOA was determined to be unnecessary or inappropriate based on discussions with pinniped subject matter experts at the Alaska Fisheries Science Center's Marine Mammal Lab. As was done in the NWTT Study Area, the Navy estimated seasonal in-water abundances for each species and divided those abundances by an area representing the distribution of each pinniped species. It would have been inappropriate and less accurate to assume all pinniped species were distributed equally over the same area (e.g., the GOA LME). For example, it would not have been representative of species occurrence to distribute harbor seals over the GOA LME to calculate density; however, the GOA LME was representative of the northern fur seal distribution. The telemetry data from Peterson et al. (2015) and Robinson et al. (2012) show that female elephant seals are primarily distributed throughout the eastern North Pacific following their post-breeding and post-molting migrations, whereas, the GOA LME is more representative of the distribution of northern fur seals that migrate eastward following the breeding season in the Bering Sea, Pribilof Islands (St. Paul, St. George), and Bogoslof Island (Call et al., 2008;

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	For northern fur seals, the information the Navy provided in the text for delineating juveniles by sex does not match the information in Table 10-2 (Department of the Navy 2020b). The abundances for juvenile males and females in each of the five months that are provided in Table 10-3 cannot be recreated by using either the information in the text or the information in Table 10-2 of Department of the Navy (2020b). More importantly, the Navy assumed that juveniles would not occur in the Gulf of Alaska after August. However, some juveniles could be migrating south in October (Zeppelin et al. 2019). As such, the Navy potentially underestimated the numbers of juvenile fur seals that could be taken during September and October by assuming none would be taken. The Commission recommends that the Navy (1) ensure that the information in the text and in Table 10-2 in Department of the Navy (2020b) is consistent regarding the assumed delineations of juvenile northern fur seals by sex and that the abundances provided in Table 10-3 are correct for those assumptions, (2) apply to September and October the same assumptions that were made regarding juveniles of both sexes for August, and (3) re-estimate the numbers of takes of northern fur seals accordingly. Similar to previous Commission comments on the Navy's pinniped densities, it is unclear why the Navy did not forward-project the abundance estimates of wDPS and eDPS Steller sea lions to at least 2021, as trend data are available in NMFS's 2019 stock assessment reports. It also is unclear why the Navy used Fritz et al. (2016) for the abundance estimates for western and eastern Steller sea lions. Those abundances were from surveys conducted in 2015 and have been updated by Sweeney et al. (2017 and 2018) as referenced in NMFS's 2019 stock assessment reports. In addition, the Navy indicated that it derived densities for eDPS Steller sea lions, which would result in 0.376 sea lions/km^2 for the strata out to the 500-m isobath following the method described in Department of the Navy (2020b). However,	Muto et al., 2020a; Towell et al., 2006; Zeppelin & Ream, 2006). The GOA LME did not adequately represent the distribution of northern elephant seals, where the highest densities of elephant seals are located south of the GOA LME and centered near the boundary between the sub-Arctic and sub-tropical gyres (Robinson et al., 2012), and another density distribution area was needed to focus the analysis on northern elephant seals occurring in the GOA Study Area. The USGS definition of the Gulf Alaska fully encompassed the GOA Study Area and captured the relevant telemetry data. Furthermore, this definition was established by a credible, independent institution and is accessible to the public. The percentages of northern fur seals occurring in the GOA LME presented in Table 10-2 are consistent with the information presented in the text of the Density Technical Report on Page 66 (item number 3 in the list) (U.S. Department of the Navy, 2020). The percentages presented in the text (28.75 and 16.25) were rounded in Table 10-3 to 29 and 16, respectively (for May and June). The percentages for January through March were not shown in Table 10-2 because the Navy only presented densities for the period relevant to the Proposed Action (April through October). To assist the Commission in verifying those calculations, the percentages for January through March (equivalent to the data in Table 10-2) are provided in the table below.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	the Navy indicated that the densities were zero for eDPS Steller sea lions in Table 10-6. This makes no sense if, as the Navy stated, it derived a density for a small portion of the range that would overlap with the eDPS to determine quantitatively whether Navy activities would impact eastern Steller sea lions. The number of takes may in fact be zero, but the density out to the 500-m isobath would not. The Commission recommends that the Navy (1) re- estimate Steller sea lion densities for the wDPS and eDPS based on abundance data from Sweeney et al. (2017 and 2018) rather than Fritz et al. (2016) and forward-project the abundance estimates into 2021 using the trend data provided in NMFS's 2019 stock assessment report, (2) revise Table 10-6 in Department of the Navy (2020b) to include the actual eDPS density out to the 500-m isobath, and (3) revise the numbers of Steller sea lion takes for both the wDPS and eDPS accordingly. *Footnotes:* [13] From 100- to 200-m isobaths. [14] Thus, the percentage of time at sea.	<table><tr><th rowspan="2">Month</th><th colspan="6">Eastern Pacific Stock</th><th>California Stock</th></tr><tr><th>Adult females</th><th>Adult Males</th><th>Juvenile Females (2 & 3-year-olds)</th><th>Juvenile Males (2 & 3-year-olds)</th><th>Yearlings*</th><th>Pups</th><th>Pups</th></tr><tr><td>Jan.</td><td>20%</td><td>25%</td><td>35%</td><td>25%</td><td>10%</td><td>10%</td><td>50%</td></tr><tr><td>Feb.</td><td>20%</td><td>20%</td><td>20%</td><td>20%</td><td>10%</td><td>10%</td><td>50%</td></tr><tr><td>Mar.</td><td>25%</td><td>25%</td><td>25%</td><td>10%</td><td>15%</td><td>15%</td><td>50%</td></tr><tr><td>Apr.</td><td>15%</td><td>15%</td><td>35%</td><td>10%</td><td>15%</td><td>15%</td><td>50%</td></tr></table> *Assumes yearlings, which are not included in Zeppelin et al. (2019) and pups in the Eastern Pacific stock have the same monthly percentages through June. As described in the text, the average percentage from January through April is 29 percent for juvenile females and 16 percent for juvenile males. Those averages were used for May and June for females and males, respectively. The process for estimating juvenile abundances, as presented in Table 10-2, is described in the text of the Density Technical Report. For example, the abundance of juvenile females is calculated as: Abundance = 620,660 x 0.085 x 0.35 = 18,456 juvenile female fur seals; where 8.5 percent is the class percentage of the stock (Table 10-1, see footnote 2) and 35 percent is the portion of the class occurring in the Study Area in April (Table 10-2). The estimates of monthly abundances, including for juveniles, were validated by pinniped scientists at the Alaska Fisheries Science Center's Marine Mammal Lab, several of whom are co-authors on the paper by Zeppelin et al. (2019). The paper does not provide occurrence data for September, and, as shown in Figure 4 of the

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
		paper, the abundance of juveniles in the GOA in October is at or near zero. Therefore, it is not necessary to re-estimate northern fur seal takes or to amend the Density Technical Report. In the NWTT Study Area, the Navy used an annual growth rate to estimate densities for some pinniped species to account for abundance estimates reported in the SARs that were based on older survey data or when abundance estimates were no longer supported by the SAR. The intent of applying a growth rate was to estimate an abundance to the present time (i.e., at the time densities were being calculated). Growth rates were not used to "forward project" abundance estimates into the future, but to bring estimates up to the present if a reliable growth rate was available and appropriate to use for the species and location. A similar process was considered for estimating densities in the GOA Study Area; however, the Navy, following discussions with pinniped scientists at the Alaska Fisheries Science Center's Marine Mammal Lab, determined that applying a growth rate would not be appropriate for pinniped species occurring in the GOA, because available abundance estimates were considered accurate and representative. There is no substantial difference in the relevant abundance data reported by Sweeney et al. (2017; 2018) and Fritz et al. (2016). Sweeney et al. (2018) states that, "there were no—or limited—new data collected for the GOA regions in 2018." Table 1 in Sweeney et al. (2018) shows that there were only two sites in the C Gulf that were surveyed (and they were surveyed on a single day) and no sites in the E Gulf that were surveyed. Figure 8 (pups) shows that the realized pup count is approximately the same as the pup count reported by Fritz et al. (2016) in Table 1. In both cases, the totals reported by Fritz et al. (2016) are higher. Given a lack of new data and that abundance estimates from both sources are similar, Sweeney et al. (2018) should not be considered a superior source of abundance data for Steller sea lions in the E Gulf and C Gulf regions. Sweeney et al. (2017) reports more extensive survey data for the E

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
		Gulf and C Gulf than Sweeney et al. (2018); however, Figure 7 of the 2017 paper shows that realized pup counts are similar to those reported by Sweeney et al. (2018) and lower than those provided by Fritz et al. (2016). Lastly, the data, analysis, and discussion presented by Fritz et al. (2016) are more comprehensive than the abbreviated information presented by Sweeney et al. (2017, 2018) and include information specific to each sub-region (e.g., C Gulf and E Gulf) within the Western DPS. Given the similarity in abundances estimates, with the abundances in Fritz et al. (2016) more conservative for the Navy's analysis, no meaningful change in the density of Western DPS Steller sea lions would result from recalculating densities based on Sweeney et al. (2017, 2018). A small area east of the 144°W longitude line, which defines the DPS boundary for Steller sea lions, overlapped with a conservatively sized area used by the Navy to delineate where species' densities were needed for modeling. The "density area" extended well beyond the TMAA and the Navy's area of potential effects; however, only densities inside the TMAA were reported in the Density Technical Report. The Navy estimated two seasonal densities for the Eastern DPS of Steller sea lions in the portion of the density area defined by the 144°W longitude line and the 500 m isobath (see table below).

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	Comment	Navy Response
		<table><tr><th>DPS Area Name</th><th>Abundance</th><th>May-Aug % in-water (haulout factor)</th><th>Apr, Sep-Oct % in-water (haulout factor)</th><th>May-Aug In-water Abundance</th><th>Apr, Sep-Oct In-water Abundance</th><th>Area (km²)</th><th>May-Aug Density (animals/km²)</th><th>Apr, Sep-Oct Density (animals/km²)</th></tr><tr><td>Eastern DPS</td><td>34,196</td><td>63 %</td><td>75 %</td><td>21,543</td><td>25,647</td><td>90,796</td><td>0.2373</td><td>0.2825</td></tr></table> The portion of the Eastern DPS that overlaps with the density area and is in waters less than 500 m is approximately 100 km north of the TMAA. The portion of the Eastern DPS (east of the 144°W longitude line) that overlaps with the TMAA is farther offshore and considerably deeper than 500 m and therefore has a zero density. Table 10-6 in the Density Technical Report specifically indicates densities are only provided inside the TMAA. Therefore, only a zero density for the Eastern DPS is reported in Table 10-6 for areas inside the TMAA. Additional text has been added to the Density Technical Report to explain this in greater detail. Prior to Navy analysis, NMFS reviews and concurs with all densities used in the Density Technical Report.
MMC-8	In addition to the Navy's use of an inconsistent geographical area for elephant seals, the Commission notes that the Navy did not forward-project the abundance estimate. The abundance estimate the Navy used for elephant seals is from 10 years ago and should have been forward- projected into 2021 based on the	It is not clear what the Commission means by "inconsistent geographic areas for elephant seals." However, a response to the comment on the use of different geographic areas for different species is provided above. The Navy does not "forward project" abundances for any species. A growth rate was applied to project an

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	growth rate included in NMFS's 2019 SARs. The abundance that the Navy used is underestimated by more than 100,000 seals or by 56 percent, which is not insignificant. The Commission recommends that the Navy (1) specify why it chose to use the USGS GOA area rather than the GOA LME area, (2) re-estimate the density of elephant seals based on abundance data forward-projected into 2021 using the trend data provided in NMFS's 2019 stock assessment report, and (3) re-estimate the number of elephant seal takes accordingly. Lastly for harbor seals, the Navy indicated that it derived the proportion of the total population estimates in Table 10-11 from data provided by model A in Table 2 of Hastings et al. (2012). While Hastings et al. (2012) provided survival estimates of various age classes for seals on Tugidak Island in Table 2, they did not provide relative age-class proportions for the population. The Navy also used abundance estimates from 2015–2018 for the four stocks[15]. As for other pinniped species, those estimates should have been forward-projected into 2021 based on the trend data available in NMFS's 2019 SARs. In addition, the Navy did not provide any references regarding its assumption that harbor seals would be in the water for 50 percent of the time from June through September and for 60 percent of the time in April, May, and October. Boveng et al. (2012) indicated that the proportion of seals hauled out in Cook Inlet peaked at 43 percent in June compared to 32 percent in October. Those haul-out proportions would equate to 57 percent of seals in the water in June and 68 percent of the seals in the water in October—both of which are greater than the Navy's assumptions. For simplicity, the Navy could have used 60 and 70 percent rather than 50 and 60 percent. The Commission recommends that the Navy (1) re-estimate the densities of harbor seals based on the abundance data forward-projected into 2021 using the trend data provided in NMFS's 2019 stock assessment report and based on 60 percent of seals being in the water from June through September and 70 percent of the seals being in the	abundance to the present time (i.e., at the time densities were being calculated) for selected species in the NWTT Study Area. A similar process was considered for species in the GOA Study Area; however, the Navy, following discussions with pinniped scientists at the Alaska Fisheries Science Center's Marine Mammal Lab, determined that applying a growth rate would not be appropriate for pinniped species occurring in the GOA Study Area because available abundance estimates were considered accurate and representative. Elephant seal researchers at the University of California Santa Cruz reviewed the Navy's elephant seal density estimates and confirmed the estimates as reasonable. The Navy is aware that the elephant seal abundance estimate in the SAR is older, and the Navy has and will continue to seek updated information on elephant seal abundance. The Navy respectfully requests that the Commission provides the source indicating that the abundance for elephant seals is underestimated by 100,000 seals. Prior to Navy analysis, NMFS reviews and concurs with all densities used in the Density Technical Report; therefore, a re-estimation of takes is not appropriate. Relative age class proportions for harbor seal were calculated using survival rates and assuming an annual increase of 1,234 harbor seals per year for the South Kodiak stock. The annual increase was based on the 8-year trend estimate from the SAR (Muto et al., 2019). Projections were made out to 35 years, and age class proportions were calculated based on the relative abundances in this hypothetical population after 35 years. This part of the process was not explained in detail in the Density Technical Report, but the approach was reviewed by pinniped scientists at the Alaska Fisheries Science Center's Marine Mammal Lab and deemed a reasonable approach for determining relative proportions of each age class represented in the four relevant harbor seal stocks. Additional text was added to the Final Density Technical Report to outline this process in more detail. The abundances for the four stocks used in the density calculations are the abundances in the 2019 Final SAR (Muto et al., 2020b) and

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	water in April, May, and October as denoted in Boveng et al. (2012) and (2) re-estimate the number of harbor seal takes accordingly. *Footnotes:* 15 North Kodiak and South Kodiak stocks have increased, while Prince William Sound and Cook Inlet/Shelikof Strait stocks have decreased. However, there would be a net increase in the overall abundance.	were the most recent abundances available. The abundance estimates were provided to the Navy by the Alaska Fisheries Science Center's Marine Mammal Lab in advance of being updated in the SAR. As discussed in separate responses, the Navy, following discussions with pinniped scientists at the Alaska Fisheries Science Center's Marine Mammal Lab, determined that applying a growth rate would not be appropriate for pinniped species occurring in the GOA Study Area because available abundance estimates were considered accurate and representative, and particularly in the case of harbor seals, very recent. Again, prior to Navy analysis, NMFS reviews and concurs with all densities used in the Density Technical Report; therefore, a re-estimation of takes is not appropriate. The haulout factors used to estimate the number of harbor seals in the water were adapted from Withrow and Loughlin (1995), who estimated that harbor seals were hauled out 58 percent of the time (42 percent in water) during molting season (August–September) on Grand Island in southeast Alaska; Pitcher and McAllister (1981), who estimated seals were in the water 50 percent of the time during pupping season and 59 percent during molting season on Kodiak Island; and Withrow et al. (1999) in Withrow et al. (1999) who reported seals were hauled out 52 percent of the time (48 percent in water) at Pedersen and Aialik glaciers on the Kenai Peninsula. These references report haulout data from the GOA region and are consistent in their estimates. After reviewing Boveng et al. (2012), it appears that the haulout correction factor for October may be 20 percent not 32 percent, as noted in the comment and the abstract (see Table 4 in Boveng et al. (2012)). While similar haulout percentages have been reported for harbor seals elsewhere for late fall or winter (Withrow & Loughlin, 1995; Yochem et al., 1987), this proportion (i.e., 20 percent hauled out and 80 percent in the water) appears to be somewhat of an anomaly for the region based on the other studies cited above. Note that the Navy's proposed training activities would occur between April and October (not in late fall or winter) and have historically occurred in late spring or summer. For August, a

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
		timeframe more relevant to the Proposed Action, Boveng et al. (2012) qualify their results by noting that the number of seals hauled out in August (i.e., 35 percent) was expected to be higher, consistent with other survey results, and that the lower percentage was likely due to tags falling off during the molt in August, limiting available data and leading the authors to use mathematical functions to interpolate the August data and correct their abundance estimate (i.e., effectively discounting their tag-based haulout data). They conceded that the approach outlined in the paper likely underestimates the proportion of seals hauled out in August (see page 31 of Boveng et al. (2012)) and that the proportion of seals hauled out during molting season is often higher than during pupping season. Taking this reasoning into consideration, estimating that 50 percent instead of 57 percent of seals would be in the water for June through September (pupping and molting seasons) is a reasonable approximation and is consistent with the references cited above (Pitcher & McAllister, 1981). Lastly, J. London, one of the co-authors of Boveng et al. (2012) reviewed the Navy's density calculations for harbor seals in the GOA and concurred that the density estimates were appropriate for the Navy's model. The Navy has updated the Density Technical Report to better explain the sources for the haulout factors that were used in the analysis. Again, prior to Navy analysis, NMFS reviews and concurs with all densities used in the Density Technical Report; therefore, a re-estimation of takes is not appropriate or necessary.
MMC-9	**Criteria and Thresholds** *Thresholds in general*—As stated in letters related to "NMFS's Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing: Underwater acoustic thresholds for onset of permanent and temporary threshold shifts" (PTS and TTS, respectively; NMFS 2018), the Commission has supported the weighting functions and associated thresholds used for Navy Phase III activities (Department of the Navy 2017).	**Thresholds in general:** The Navy is committed to producing high-quality documents using the best available science and most current analysis methods. All of the behavioral audiograms cited by the Commission were addressed in Section 3.8.2.1.4 (Hearing and Vocalization) of Section 3.8 (Marine Mammals) of the 2020 Draft SEIS/OEIS. All of the TTS studies cited by the Commission were addressed in Section 3.8.3.1.1.2 (Hearing Loss) of Section 3.8 (Marine Mammals) of the

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Numerous more recent studies provide additional information on behavioral audiograms (e.g., Branstetter et al. 2017, Cunningham and Reichmuth 2015, Kastelein et al. 2017b and 2019b) and TTS (e.g., Kastelein et al. 2017a and c, Popov et al. 2017, Kastelein et al. 2018a and b, 2019c, d, and e, and 2020a, b, and c). The Navy discussed some of these references in its DSEIS and indicated that either the composite audiograms were consistent with the recently-reported behavioral audiograms or the criteria, presumably the TTS (and thus PTS) thresholds, were still considered conservative as compared to the recently-reported TTS data. However, the Navy did not include Kastelein et al. (2020c) in the DSEIS or discuss how a few of those researchers' other recent studies compared to the TTS thresholds the Navy used for harbor porpoises and harbor seals. The Commission recommends that the Navy specify in the final SEIS whether TTS data from Kastelein et al. (2019c and e and 2020 a, b, and c) support the continued use of the current weighting functions and PTS and TTS thresholds. *Behavior thresholds for non-impulsive sources*—To further define its behavior thresholds for non-impulsive sources[16], the Navy developed multiple[17] Bayesian biphasic dose response functions[18] (Bayesian BRFs) for Phase III activities. The Bayesian BRFs were a generalization of the monophasic functions previously developed[19] and applied to behavioral response data[20] (see Department of the Navy 2017 for specifics). The biphasic portions of the functions are intended to describe both level- and context-based responses as proposed in Ellison et al. (2011). At higher amplitudes, a level-based response relates the received sound level to the probability of a behavioral response; whereas, at lower amplitudes, sound can cue the presence, proximity, and approach of a sound source and stimulate a context-based response based on factors other than received sound level[21]. The Commission	2020 Draft SEIS/OEIS, except Kastelein et al. (2018b in the comment), which is not a TTS study, and Kastelein et al. (2020c), which has been added to the analysis in this Final SEIS/OEIS. For the five Kastelein et al., publications specifically highlighted by the Commission, the Navy criteria either accurately estimate effects or over-estimate effects, as follows (note: the bold citation matches the Commission's letter, and the corresponding citation in this EIS/OEIS is in parentheses): **2019c:** Use of Navy criteria would have over-estimated effects (i.e., predicted PTS) (Kastelein et al., 2019a). **2019e:** These results are consistent with Navy Phase III criteria and thresholds (Kastelein et al., 2019b). **2020a:** Use of Navy criteria would have over-estimated effects (Kastelein et al., 2020a). **2020b:** Use of Navy criteria would have over-estimated effects (i.e., predicted PTS) (Kastelein et al., 2020b). **2020c:** These results are consistent with Navy Phase III criteria and thresholds (Kastelein et al., 2020c). The Navy has continued to review and consider emergent science to determine if new information would require a revision of the findings presented previously. The Navy and NMFS thoroughly reviewed new information available since the development of the Phase III weighting functions. Other new research on threshold shift published since the release of the Draft SEIS/OEIS is summarized in Section 3.8.3.1.1.2 (Hearing Loss) of Chapter 3.8 (Marine Mammals). Notably, emergent research with sea lions (Kastelein et al., 2021c; Kastelein et al., 2022) suggests that sea lions, and hence otariids, may be significantly more susceptible to auditory effects than assumed in this analysis. The Navy and NMFS are currently assessing how this and all other auditory research published since the development of the Phase III auditory criteria should inform updates to auditory criteria and thresholds. Development of new criteria is an iterative process which validates and incorporates new data along with results of previous investigations and studies.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	agrees that the Bayesian BRFs are reasonable and a much-needed improvement on the two dose response functions (BRFs)[22] that the Navy had used for both TAP I and Phase II activities. The Commission, however, remains concerned that following the development of the BRFs, the Navy then implemented various cut-off distances beyond which it considered the potential for significant behavioral responses to be unlikely (Table C.4 in Department of the Navy 2017). The Navy indicated it was likely that the context of the exposure is more important than the amplitude at large distances[23] (Department of the Navy 2017)—that is, the context-based response dominates the level-based response. The Commission agrees with that notion but notes that the Bayesian BRFs specifically incorporate those factors. Thus, including additional cut-off distances *contradicts* the data underlying the Bayesian BRFs, *negates* the intent of the functions themselves, and *underestimates* the numbers of takes. The actual cut-off distances used by the Navy also appear to be unsubstantiated. For example, the Navy indicated that data were not available regarding the response distances of harbor porpoises to sonar or other transducers, so it based the cut-off distances on harbor porpoise responses to pile-driving activities. The Commission disagrees with that choice, given that pile driving is an impulsive rather than non-impulsive source and unrelated to the Bayesian BRFs. For pinnipeds, the Navy indicated there are limited data on pinniped behavioral responses in general, and a total lack of data beyond 3 km from the source. However, the Navy arbitrarily set the cut-off distance at 5 and 10 km depending on the source. In response to the Commission's comments regarding those cut-off distances, the Navy indicated that pinnipeds do not exhibit strong reactions to sound pressure levels up to 140 dB re 1 µPa based on Southall et al. (2007; 83 Fed. Reg. 65230). The Commission notes, as did the Navy, that data from Southall et al. (2007) were limited, based on sources that did not have	Behavior thresholds for non-impulsive sources: The Navy appreciates that you agree that the Bayesian BRFs are a reasonable and much-needed improvement on the two dose response functions (BRFs). The consideration of proximity (cut-off distances) was part of the criteria developed in consultation with NMFS and was applied within the Navy Acoustic Effects Model. Cut-off distances were used to better reflect the take potential for military readiness activities as defined in the Marine Mammal Protection Act (MMPA). As stated in 2020 Draft SEIS/OEIS Section 3.0.1.1.2 (Navy's Quantitative Analysis to Determine Impacts to Sea Turtles and Marine Mammals), the derivation of the behavioral response functions and associated cut-off distances is provided in the technical report titled "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)," available at www.goaeis.com. Much of the data used to derive the behavioral response functions was from nearby, scaled sources, thereby potentially confounding results since it is difficult to tell whether the focal marine mammal is reacting to the sound level, the proximity of the source or vessel, or other potentially confounding contextual factors that are unlike actual Navy events for which the BRF's are being derived. To account for these non-applicable contextual factors, all available data on marine mammal reactions to Navy activities and sound sources (or to large-scale activities, such as seismic surveys, when information on proximity to sonar sources is not available for a given species group, e.g., harbor porpoises) were reviewed to find the farthest distance to which significant behavioral reactions were observed. These distances were rounded up to the nearest 5 or 10 km interval, and for moderate to large-scale activities using multiple or louder sonar sources, these distances were greatly increased—doubled in most cases. Thus, the Commission's assertion that takes were "eliminated" is incorrect, as consideration of distance is an integral part of the application of the Phase III criteria and

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	characteristics similar to mid-frequency active (MFA) sonar[24], and did not include exposures at higher received levels. Data on pinniped behavioral responses now exist for both sound sources similar to MFA sonar and at higher received levels. Those data ultimately were used by the Navy to develop the Bayesian BRF for pinnipeds (see Table 3-2 in Department of the Navy 2017 for specifics), while none of the data cited in Southall et al. (2007) were used. Some of the pinnipeds did in fact exhibit 'strong' reactions based on the Southall et al. (2007) severity scale[25] to received levels less than and equal to 140 dB re 1 µPa, and those data were used to inform the context portion of the Bayesian BRF. For cetaceans other than harbor porpoises, the Navy based the cut-off distances on scant acoustic data from a single species each for beaked whales and mysticetes and tag data from Risso's dolphins. Interestingly, Risso's dolphins tens of kilometers from the source exhibited similar responses to those that were within hundreds of meters of the source (Southall et al. 2014). That is, the dolphins did not exhibit any clear, overt behavioral response to either the real MFA source or the scaled MF source at either distance, and the scaled MF source had to be shut down from full power when the dolphins entered the 200-m shut-down zone. Accordingly, the Commission remains unconvinced of the appropriateness of the Navy's proposed cut-off distances. Moreover, depending on the activity and species, the cut-off distances could effectively eliminate a large portion of the estimated numbers of takes. For sonar bin MF1 (the most powerful MFA sonars), the estimated numbers of takes would be reduced to zero beginning where the probability of response is between 40 and 58 percent for odontocetes and 45 and 66 percent for beaked whales (Table 3.8-8 in the DSEIS). For mysticetes, takes would be eliminated for MF1 sources at a received level of 154 to 160 dB re 1 µPa equating to a probability	thresholds, which does not contradict the data underlying the Bayesian BRFs nor result in underestimation of takes due to military readiness activities. The criteria applied in this analysis are not arbitrary; rather, they are substantiated by the observations documented in the Phase III Criteria and Thresholds technical report. In that document, data from multiple species were considered in determining the cut-off distances for each behavioral group, including data used to develop the BRFs and other data sources that did not meet the data standard to be included in the development of the BRFs. Specific concerns raised by the Commission in regard to the cut-off distances are addressed below. • Harbor porpoises: In developing the Phase III criteria and thresholds for behavioral response, the Navy acknowledged that information related to the distances harbor porpoises may exhibit a response is limited for non-impulsive sources. This limited research is described in Section 3.8.3.1.1.5 (Behavioral Reactions – Behavioral Reactions to Sonar and Other Transducers – Odontocetes) of Section 3.8 (Marine Mammals) of this SEIS/OEIS. Thus, the Navy conservatively considered information about harbor porpoise responses to impulsive sources and non-impulsive sources, to estimate reasonably foreseeable impacts in this SEIS/OEIS. • Pinnipeds: The data used to develop the pinniped BRF were from controlled exposure studies; therefore, they could not be used to estimate cut-off distances. The data cited in Southall et al. (2007) did not meet the criteria to be included in development of the BRFs per the process described in the Criteria and Thresholds technical report. Data on non-captive pinniped

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	of response of approximately 18 percent. While that percentage may seem inconsequential, the received level is in fact greater than the level at which actual context-based behavioral responses were observed for feeding blue whales (see Figure 3 in Goldbogen et al. 2013[26]). The Navy attempted to assuage the Commission's concerns[27] in its response to comments regarding the AFTT DEIS[28] by asserting that the use of the Bayesian BRFs in conjunction with the cut-off distances is currently the best-known method for providing the public and regulators with a more realistic (but still conservative where some uncertainties exist) estimate of impacts and potential takes. The Commission disagrees. Use of the cut-off distances is neither conservative nor realistic and effectively discounts the underlying data, including Goldbogen et al. (2013), upon which the BRFs are based. Tyack and Thomas (2019) compared results between setting a threshold where 50 percent of the animals respond and using the actual Bayesian BRF—setting the threshold at a 50-percent response led to an underestimation of effect by greater than two orders of magnitude[29]. Although the arbitrary cut-off distance in the Navy's example occurred where up to 45 percent of the animals respond, the behavioral impacts and takes of the various species have been underestimated as well. As noted by Tyack and Thomas (2019), given the shape of the dose-response function and how efficiently sound propagates in the ocean, the number of animals that are predicted to have a low probability of response may in fact represent the dominant impact from a given sound source. Given that Dr. Thomas developed the Bayesian BRFs for the Navy and has highlighted the shortcomings associated with assuming only a portion of the animals respond[30] rather than using the Bayesian BRFs as intended, it would be prudent for the Navy to heed the results provided in Tyack and Thomas (2019). For all	responses are limited, so the Navy extrapolated beyond the available data to establish the cut-off distance. • Risso's dolphins: The Commission refers to observations of Risso's dolphins during behavioral response studies in Southern California. In the 2013 study, researchers observed no clearly evident changes in behavior of Risso's dolphins exposed to actual or simulated Navy sonar at various distances. These observations suggest that the cut-off distances may be very conservative for some species and contexts. • Mysticetes: As the Commission notes, the Goldbogen et al. (2013) data on blue whale responses to sonar were used to develop the mysticete BRF. The mysticete cut-off distance does not discount this underlying data, as the cut-off distance is longer than the distances at which responses were observed. The Commission points to Tyack and Thomas (2019), which discussed how to develop a step function (i.e., a single value acoustic threshold for response) given a response function. The Navy, however, did not establish a step function for behavioral response for most marine mammal groups because the increasing body of marine mammal behavioral response data allowed for the development and application of the Phase III biphasic BRFs. The example monophasic response function for killer whales in Tyack and Thomas (2019) was taken from Miller et al. (2014). That response function is based on acoustic dose and does not consider distance as a contextual factor. The Navy relied on Miller et al.,'s killer whale response data when developing the Phase III BRF for odontocetes. As discussed above, the cut-off distances, applied in conjunction with the Phase III BRFs as described in the Navy's Phase III Criteria and Thresholds technical report, allow for the consideration of distance from a source, which is a relevant contextual factor for

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	these reasons, the Commission strongly recommends that the Navy refrain from using cut-off distances in conjunction with the Bayesian BRFs and re-estimate the numbers of marine mammal takes based solely on the Bayesian BRFs. Use of cut-off distances is continuing to be perceived by the public as an attempt to reduce the numbers of takes (85 Fed. Reg. 72326), which is discussed in a subsequent section of this letter. Furthermore, the Commission contends that alternatives to the Navy's cut-off distances need not be provided, as their use is unnecessary. *Footnotes:* [16] Acoustic sources (i.e., sonars and other transducers). [17] For odontocetes, mysticetes, beaked whales, and pinnipeds. The Navy used the 120-dB re 1 µPa unweighted, step- function threshold for harbor porpoises as it had done for Phase II activities. [18] Comprising two truncated cumulative normal distribution functions with separate mean and standard deviation values, as well as upper and lower bounds. The model was fitted to data using the Markov Chain Monte Carlo algorithm. [19] By Antunes et al. (2014) and Miller et al. (2014). [20] From both wild and captive animals. [21] e.g., the animal's previous experience, separation distance between sound source and animal, and behavioral state including feeding, traveling, etc. [22] One for odontocetes and pinnipeds and one for mysticetes. [23] For example, the Navy indicated that the range to the basement level of 120 dB re 1 µPa for the BRFs from TAP I and Phase II sometimes extended to more than 150 km during activities involving the most powerful sonar sources (e.g., AN/SQS-53). [24] Some sources emitted sound at much lower frequencies (the acoustic thermometry of the ocean climate (ATOC) sound source emitted signals at a center frequency of 75 Hz) and at a greater	assessing risk of response. As the science related to marine mammal behavior advances, the Navy will continue to work with NMFS to refine consideration of contextual factors, such as distance, in its assessment of behavioral responses. Currently, the Navy's Phase III BRFs applied within these distances provide the public and regulators with a more realistic (but still conservative where uncertainties exist) estimate of impacts and potential takes under military readiness for the Proposed Action within this SEIS/OEIS. Because the Navy's estimations were realistic and conservative where uncertainties exist, it is not necessary for the Navy to re-estimate marine mammal takes. Lastly, the Navy appreciates the insights and assistance provided by non-Navy researchers, including Dr. Thomas, during the Navy's development of the Phase III BRFs.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	repetition rate than MFA sonar (Costa et al. 2003). Other sources emitted sound at higher frequencies (the Airmar™ acoustic harassment device (AHD) emitted signals at 10 kHz or higher and acoustic communication signals were emitted at 12 kHz with higher frequency harmonics) and at a greater repetition rate with shorter pulse durations (specifically the AHD) than MFA sonar (Jacobs and Terhune 2002, Kastelein et al. 2006). [25] Equating to significant behavioral responses as specified by the Navy. [26] Data that also were used to derive the Bayesian BRFs. Southall et al. (2019) showed similar results. [27] See its 2 August 2017 letter on AFTT. [28] Similar responses were provided for HSTT, NWTT, and MITT final EIS/SEISs. [29] By a factor of 280. [30] Which corresponds to using various arbitrary cut-off distances.	
MMC-10	*Behavior thresholds for explosives*—The Navy assumed a behavior threshold 5 dB lower than the TTS threshold for each functional hearing group for explosives. As noted in Department of the Navy (2017), that value was derived from observed *onset* behavioral responses of captive bottlenose dolphins during non-impulsive TTS testing[31] (Schlundt et al. 2000). Basing an impulsive threshold on responses of dolphins to a non-impulsive source is questionable, but more concerning is that the Navy continues to claim that marine mammals do not exhibit behavioral responses to single detonations (Department of the Navy 2017)[32]. The Navy has asserted that the most likely behavioral response would be a brief alerting or orienting response and significant behavioral reactions would not be expected to occur if no further detonations followed. Although there are no data to substantiate that assertion, the Navy notes that the same reasoning was used in previous ship shock trial final rules in 1998, 2001, and 2008. Without such data, there is no reason to continue to ascribe	Sailors must train in a variety of high-stress environments, including scenarios that involve the use of and exposure to explosive ordnance, to be ready to respond to emergencies and national security threats. The Navy is committed to producing high-quality documents using the best available science and most current analysis methods. The Navy consistently reviews for best available science to incorporate or contend with current behavioral response criteria and thresholds. The Commission's assumption is that an animal cannot behaviorally avoid a single detonation (given the lack of any previous cue) but will avoid the location where multiple subsequent detonations occur, which is consistent with the behavioral response thresholds. There continues to be no recent evidence to support the assertion that animals have significant behavioral responses (rising to the level of "harassment" under the MMPA definition for military readiness activities) to temporally and spatially isolated explosions. Rather than claiming animals have no behavioral response to explosives in water, the Navy's analysis conservatively

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	validity to assumptions made 10 to 20 years ago. Larger single detonations (such as bombing exercises[33]) would be expected to elicit 'significant behavioral responses'[34]. The Navy provided no evidence regarding why an animal would exhibit a significant behavioral response to two 5-lb charges detonated within a few minutes of each other but would not exhibit a similar response for a single detonation of 100 lbs., let alone detonations of up to 1,000 lbs. In response to the Commission's comments on the AFTT and HSTT DEISs[35], the Navy indicated that there is no evidence to support that animals have significant behavioral reactions to temporally and spatially isolated explosions and that it has been monitoring detonations since the 1990s and has not observed those types of reactions. Due to human safety concerns, the Navy has never, as far as the Commission is aware, stationed personnel at the target site to monitor marine mammal responses during large single detonations. In other instances (i.e., bombs dropped from aircraft), the lookout is tasked primarily with clearing the mitigation zone and realistically only observes for animals in the central portion of that zone immediately prior to the activity commencing. Lookouts are not responsible for documenting an animal's behavioral response to the activity, but rather are responsible for minimizing serious injury to and mortality of any observed animal. Additionally, the Navy was not required to conduct post-activity monitoring for any of its activities under the Phase II final rules (e.g., 50 C.F.R. § 218.144) and post-activity monitoring is conducted primarily to document injured and dead marine mammals, not behavioral responses. In response to the Commission's comments on the NWTT proposed rule, NMFS acknowledged that individuals exposed *above* the TTS threshold also may be harassed by behavioral disruption, that those potential impacts are considered in the	assumes that any modeled instance of temporally or spatially separated detonations occurring in a single 24-hour period would result in harassment under the MMPA for military readiness activities. Further, the criteria do not preclude the consideration of animals being behaviorally disturbed during single explosions if they are exposed above the TTS threshold, which is only 5 decibels (dB) higher than the behavioral harassment threshold for multiple detonations. The range to effect for TTS would be correlated to the size of the explosive. The duration of noise due to isolated explosive events is very brief and differs from the examples provided by the Commission (icebreaking and geophysical mapping). To correct the Commission's statement, sonic booms and launch activities are *not* explosive events. The subsonic (i.e., no sonic booms) non-impulsive missile launch activities at San Nicolas Island (84 FR 28462) relied on behavioral response criteria that are based on observations of hauled out pinnipeds exposed to launches, not explosives. Importantly, missile launches near hauled out pinnipeds are not part of the Proposed Action in this SEIS/OEIS. Thus, the Navy's analysis of explosive activities in this SEIS/OEIS is *not* inconsistent with the Navy's analyses of impacts on hauled out pinnipeds due to in-air noise caused missile launches. The Commission's description of how mitigation is conducted during explosive bombing exercises (i.e., that Lookouts realistically only observe for animals in the central portion of the mitigation zone immediately prior to the activity commencing) is not accurate. It is important to the Navy to avoid or minimize impacts on the marine environment from at-sea training activities. The Navy follows strict guidelines and employs measures that reduce potential effects on marine species while training. The Navy's mitigation procedures for explosive bombs are clearly described in Section 5.3.3.2 (Explosive Bombs) of the 2020 Draft SEIS/OEIS. Mitigation includes observation of the mitigation zone prior to the initial start of the activity (e.g., when arriving on station) and during the activity (e.g., during target

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	negligible impact determination, and that neither NMFS nor the Navy is aware of evidence to support the assertion that animals will have significant behavioral responses (i.e., those that would rise to the level of a take) to temporally or spatially isolated explosions at received levels below the TTS threshold (85 Fed. Reg. 72325). Delineation of behavior takes occurring above the TTS threshold is irrelevant to those that occur below the TTS threshold[36]. Furthermore, a lack of evidence, particularly when concerted monitoring is not occurring for any portion of the Level B harassment zones for behavior during detonations, does not equate to behavior takes not potentially occurring. Behavior takes from numerous types of activities have not been documented, but are presumed to occur, including for low-level activities such as those involving high-resolution geophysical and other mapping devices and ice breaking. Moreover, the Navy routinely requests and NMFS routinely authorizes behavior takes of marine mammals associated with exposure to *single* in-air explosive events (e.g., missile launch noise and sonic booms; 84 Fed. Reg. 28462). In fact, NMFS has based its take estimates on the numbers of animals that have responded behaviorally to single launch events (84 Fed. Reg. 28470). Continuing to dismiss the fact that a single explosive event, including that of a 1,000-lb bomb, has the potential to cause behavior takes to marine mammals underwater is bordering on the absurd, given that an animal exposed to such an event is expected to exhibit the factors the Navy differentiated as a behavioral response in Department of the Navy (2017b) *and* behavior takes are routinely authorized for such events when exposed in air. The Commission continues to maintain that the Navy, and in turn NMFS, has not provided adequate justification for dismissing the possibility that single underwater detonations can cause a behavioral response and therefore again recommends that the Navy estimate and ultimately request	approach). Additionally, the Navy developed new mitigation for the Proposed Action requiring Lookouts to observe the mitigation zone after completion of explosive activities, when practical. Another new mitigation developed for the Proposed Action requires additional platforms supporting explosive activities (e.g., providing range clearance) to support observing the mitigation zone for applicable biological resources while performing their regular duties, and to assist in the post-event visual observation of the area where detonations occurred. The Navy has always and will continue to follow incident reporting procedures, as outlined in Section 5.1.2.2.3 (Incident Reports) of this SEIS/OEIS, if an incident is detected at any time during an event, including during the post-activity observations. Bombing exercises involve an aircraft deploying munitions at a surface target located beneath the firing platform. During target approach, aircraft maintain a relatively steady altitude of approximately 1,500 feet (ft.). Lookouts, by necessity for safety and mission success, primarily focus their attention on the water surface surrounding the intended detonation location. For explosive bombing activities, this area correlates to the full extent of the mitigation zone size. Being positioned in an aircraft gives the Lookout a good vantage point for observing marine mammals and sea turtles throughout the whole mitigation zone. During explosive bombing events, there are typically additional observation aircraft, multiple aircraft firing munitions, or other safety aircraft in the vicinity. Having these additional personnel support observations of the mitigation zone increases the likelihood of detecting biological resources throughout the full extent of the mitigation zone.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	behavior takes of marine mammals during *all* explosive activities, including those that involve single detonations consistent with in-air explosive events. *Footnotes:* [31] Based on 1-sec tones. [32] Including certain gunnery exercises that involve several detonations of small munitions within a few seconds. [33] With net explosive weights of 251–600 lbs for bin E10 and 651–1,000 lbs for bin E12. [34] Including the animals (1) altering their migration path, speed and heading, or diving behavior; (2) stopping or altering feeding, breeding, nursing, resting, or vocalization behavior; (3) avoiding the area near the source; or (4) displaying aggression or annoyance (e.g., tail slapping). These factors were described in Department of the Navy (2017) and used by the Navy to differentiate behavioral response severity. [35] See its 13 November 2017 letter on the HSTT DEIS. [36] That is, animals are expected to respond behaviorally to stressors that also can cause auditory impairment and other types of injuries. In those instances, it is the more adverse impact that is considered.	
MMC-11	*Mortality and injury thresholds for explosives*—The Commission notes that the constants and exponents[37] associated with the impulse metrics for both onset mortality and onset slight lung injury have been amended from those used in TAP I and Phase II activities. The Navy did not explain why the constants and exponents have changed when the underlying data[38] have remained the same. The modifications yield smaller zones[39] in some instances and larger zones in other instances[40]. These results are counterintuitive since the Navy presumably amended the impulse metrics to account for lung compression with depth,	As stated in Section 3.8.3.2.2.1 (Methods for Analyzing Impacts from Explosives) of the 2020 Draft SEIS/OEIS, the derivation of the explosive injury equations is provided in the technical report titled "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)," available at www.goaeis.com. The Navy respectfully points the Commission to this technical report for an explanation as to why the constants and exponents for onset mortality and onset slight lung injury thresholds for Phase III have been amended, as well as any additional assumptions that were made.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	thus the zones would be expected to be smaller rather than larger the deeper the animal dives. The Commission provided similar comments in its letters regarding the other Phase III DEIS/DSEISs. However, the Navy did not provide an explanation regarding the constants and exponents or specify the assumptions made in either final EIS. The Navy merely directed the Commission to Department of the Navy (2017)—the document from which the Commission's comments originated. NMFS, however, did provide a response in the preamble to the NWTT final rule. It stated that the numerical coefficients are slightly larger in Phase III than in Phase II, resulting in a slightly greater threshold near the surface and the rate of increase for the Phase II thresholds with depth is greater than the rate of increase for Phase III thresholds with depth because the Phase III equations take into account the corresponding reduction in lung size with depth (making an animal more vulnerable to injury per the Goertner model; 85 Fed. Reg. 72327). NMFS's response does not explain why *lower* absolute thresholds prevail below 8 m in depth and why, if lung compression is accounted for in Phase III, the rate of *increase* of the Phase II thresholds with depth would be greater when lung compression was not accounted for. The Commission again recommends that the Navy explain why the constants and exponents for onset mortality and onset slight lung injury thresholds[41] for Phase III that consider lung compression with depth result in lower rather than higher absolute thresholds when animals occur at depths greater than 8 m. The Navy again used the onset[42] mortality and onset slight lung injury criteria to determine only the range to effects[43], while it used the 50 percent mortality and 50 percent slight lung injury criteria to estimate the numbers of marine mammal takes[44]. That approach is inconsistent with the manner	The Commission compares impulse thresholds from Phase II to Phase III in its comment. The impulse mortality and injury equations are depth dependent, with thresholds increasing with depth due to increasing hydrostatic pressure in both Phase II and III. The Commission correctly observes that above 8 m, the Phase II threshold is lower than the Phase III threshold, and below 8 m, the Phase II threshold is greater than the Phase III threshold. The differences in injury and mortality thresholds are due to taking into account the complete Goertner (1994) model in the Phase III criteria, as the Navy has shown in the technical report "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)." The underlying experimental data remain the same. Two aspects of the Phase III revisions explain the above relationships: 1. The numeric coefficients in the equations are computed by inserting the Richmond et al. (1973) experimental data into the model equations. Because the Phase III model equation accounts for lung compression, plugging the experimental exposure values into this revised model results in different coefficients. The numeric coefficients are slightly larger in Phase III versus Phase II, resulting in a slightly greater threshold near the surface. 2. The rate of increase for the Phase II thresholds with depth is greater than the rate of increase for Phase III thresholds with depth because the Phase III equations take into account the corresponding reduction in lung size with depth (making an animal more vulnerable to injury per the Goertner model), as the Commission notes, although this also affects impulse integration time. Ranges to effect are based on these injury thresholds, in addition to geometry of exposure (location of an animal relative to the explosive charge, horizontally and vertically), propagation

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	in which the Navy estimated the numbers of takes for PTS, TTS[45], and behavior[46] for explosive activities. All of those takes have been and continue to be based on onset, not 50-percent values. Although the effectiveness of the Navy's mitigation measures[47] has yet to be determined, the circumstances of the deaths of multiple common dolphins during one of the Navy's underwater detonation events in March 2011 (Danil and St. Leger 2011) indicate that the Navy's mitigation measures are not fully effective, especially for explosive activities. It would be more prudent for the Navy to estimate injuries and mortalities based on onset rather than a 50-percent incidence of occurrence. The Navy indicated that it is reasonable to assume for its impact analysis—thus its take estimation process—that extensive lung hemorrhage[48] is a level of injury that would result in mortality for a wild animal (Department of the Navy 2017). Thus, it is unclear why the Navy did not estimate the numbers of takes based on onset rather than the 50-percent criterion. What is clear is that the 50-percent rather than onset criteria underestimate both predicted mortalities and injuries. The Navy's response in the Phase III final EIS/SEISs, and NMFS's responses in the corresponding preamble to the final rules, that overpredicting impacts by using onset values would not afford extra protection to any animal[49] is irrelevant from an impact analysis standpoint. The intent of an impact analysis is to estimate and evaluate impacts (i.e., takes) from the proposed activities accurately. There is no logical reason for basing the estimated impacts on onset of PTS, TTS, and behavioral response for sublethal effects; while for lethal and injurious effects, the impacts are based on a 50-percent criterion. NMFS's additional response in the preamble to the NWTT final rule that estimating takes based on the onset values would overpredict effects because many of those exposures would not happen because of effective mitigation (85 Fed.	environment, and the impulse integration duration. The Navy used test data for the lowest exposures that resulted in any effect in the experimental data in Richmond et al. (1973) to conservatively inform the development of mitigation zones for explosives. In all cases, the mitigation zones for explosives extend beyond the range of any non-auditory injury risk, even for a small animal (representative mass = 5 kilograms [kg]). Some measure of central tendency (whether median or mean) is used in almost all other cases (e.g., onset TTS) to derive thresholds for predicting the number of animals that could be impacted. Thus, the approach used to predict the number of non-auditory impacts due to explosives for marine mammals is not inconsistent with approaches used to assess risk for other potential impacts. The Commission argues that the non-auditory injury thresholds be set to over-estimate potential impacts; however, the Navy's thresholds and analysis predict injuries that have a significant potential to occur. The Navy has made no assumption that slight lung and GI tract injuries are more or less severe than PTS, as stated by the Commission, since the magnitude of each of these injuries may vary depending on exposure. As described in Section 3.8.3.2 (Explosive Stressors), the only known occurrence of marine mammal mortality or injury due to a Navy training event involving explosives occurred in March 2011 in nearshore waters off San Diego, California, at the Silver Strand Training Complex. This area had been used for underwater demolitions training for at least three decades without prior known incident. On this occasion, however, a group of long-beaked common dolphins entered the mitigation zone after the Navy initiated a time-delayed firing device. The Lookouts correctly applied the required mitigation, including ensuring the mitigation zone was clear of marine mammals prior to initiating the time-delayed firing device. Immediately after the incident, the Navy followed the appropriate incident reporting procedures, recovered the four affected animals, and transferred them to the local stranding network for necropsy. Upon necropsy, all four animals

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Reg.72328) is unsubstantiated. The Navy has not determined the effectiveness of any of its mitigation measures, and explosive activities for which mitigation measures were implemented still resulted in the deaths of multiple common dolphins. Potential mortalities and injuries must be fully accounted for rather than erroneously discounted in any impact analysis. The Commission again recommends that the Navy use onset mortality, onset slight lung injury, and onset GI tract injury thresholds rather than the 50-percent thresholds to estimate both the numbers of marine mammal takes *and* the respective ranges to effect. If the Navy does not implement the Commission's recommendation, the Commission further recommends that the Navy (1) specify why it is inconsistently basing its explosive thresholds for Level A harassment on onset PTS and Level B harassment on onset TTS and onset behavioral response, while the explosive thresholds for mortality and Level A harassment are based on the 50-percent criteria for mortality, slight lung injury, and GI tract injury, (2) provide scientific justification supporting the assumption that slight lung and GI tract injuries are less severe than PTS and thus the 50-percent rather than onset criteria are more appropriate for estimating Level A harassment for those types of injuries, and (3) justify why the number of estimated mortalities should be predicated on at least 50 percent rather than 1 percent of the animals dying. As noted in the following section, many of the mitigation zones are not sufficient to protect the various functional hearing groups. Further complicating this issue is the fact that the effectiveness of the various mitigation measures has yet to be proven. Thus, continuing to espouse the presumed effectiveness of those measures is unfounded. *Footnotes:* [37] The constants have increased and the exponents have decreased from 1/2 to 1/6.	were found to have sustained typical mammalian primary blast injuries (Danil & St Leger, 2011). In response to that incident, the Navy worked with NMFS through the adaptive management process to revise mitigation measures specific to the use of time-delayed firing devices to reduce the potential for reoccurrence. There have been no known subsequent events in the last 9-year period in any location where the Navy uses explosives of any kind for training or testing. Furthermore, there has never been a known occurrence of mortality or injury to marine mammals due to Navy training events involving explosives in the TMAA, and time-delayed firing devices would not be used under the Proposed Action. Navy Lookouts are trained with NMFS-approved Marine Species Awareness Training, which educates on animal identification and observation techniques. The Navy Lookouts meet NMFS' requirements under the MMPA take authorization.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	[38] Based on Richmond et al. (1973), Yelverton et al. (1973), Yelverton and Richmond (1981), and Goertner (1982). [39] When animals occur at depths between the surface and 8 m, yielding higher absolute thresholds. [40] When animals occur at depths greater than 8 m, yielding lower absolute thresholds. [41] Equations 11 and 12 in Department of the Navy (2017). [42] Defined as the 1-percent risk in the HSTT FEIS. [43] To inform the mitigation zones. [44] A similar approach was taken for gastrointestinal (GI) tract injuries. [45] In the preamble to the NWTT final rule, NMFS appeared to conflate onset values with the amount of a threshold shift necessary to be deemed TTS, which is 6 dB (85 Fed. Reg. 72328). [46] Contrary to NMFS's assertion that the behavior thresholds are not based on onset values in the preamble to the NWTT final rule, the Navy specified that the behavior thresholds for explosives were derived from observed *onset* behavioral responses of captive bottlenose dolphins during non-impulsive TTS testing based on Schlundt et al. (2000; see Department of the Navy 2017). [47] Which is discussed further herein. [48] i.e., onset mortality; see Table 4-1 in Department of the Navy (2017). [49] And yet the mitigation zones are based on the onset values, so the animals would in fact be afforded 'extra protection'.	
MMC-12	**Mitigation Measures** The Navy's proposed mitigation zones are similar to the zones[50] previously used during Phase II activities and are intended, based on the Phase III DSEIS, to avoid the potential for marine mammals to be exposed to levels of sound that could result in injury (i.e., PTS). However, the Phase III proposed mitigation zones would not protect several functional hearing groups[51] from PTS.	The Navy implements mitigation measures to avoid or reduce potential impacts on marine species and the environment from training activities. As described in Section 5.3.3 (Explosive Stressors), the mitigation zones for explosive activities are based on the largest areas practical to implement mitigation. The Navy has always and will continue to verify that mitigation zones are visually clear of applicable marine resources prior to conducting explosive activities.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	For example, the mitigation zone for an explosive bomb[52] is 2,286 m (Table 5.3-5 in the DSEIS), but the mean PTS zone is 4,327 m for HF cetaceans[53]. The appropriateness of such zones is further complicated by aircraft deploying bombs at surface targets directly beneath the aircraft, minimizing the ability to observe the entire extent of the zone(s). In addition, explosive projectiles (both medium-sized and large projectiles) are fired from vessels at targets 3.7 and 11.1 km away from the firing platform, respectively. Ships do not clear the target area before launching the various projectiles. In either case, marine mammals could be present in the target area at the time of the launch unbeknownst to the Navy. In addition, the Navy indicated in the DSEIS that lookouts would not be 100 percent effective at detecting all species of marine mammals for every activity because of the inherent limitations of observing marine species and because the likelihood of sighting individual animals is largely dependent on observation conditions (e.g., time of day, sea state, mitigation zone size, observation platform) and animal behavior (e.g., the amount of time an animal spends at the surface of the water). The Commission agrees and has made repeated recommendations to the Navy regarding the effectiveness of visual monitoring. Since 2010, the Navy has been collaborating with researchers at the University of St. Andrews to study Navy lookout effectiveness. The Navy does not appear to have mentioned that study in its DSEIS for Phase III. For its Phase II DEISs, the Navy noted that the data that had been collected could not be analyzed in a statistically significant manner[54]. The Navy has been conducting those studies for more than a decade but on a scale and in a manner that apparently has been insufficient to provide useful results. The most recent lookout effectiveness report posted on the Navy's monitoring website is from four years ago (Department of the Navy 2016). According to the Navy's monitoring website it has allocated only $40K to $60K to the effort for the period from 2010 to 2019, while other projects range from 100s of thousands to	As described in Section 5.3.3.2 (Explosive Bombs), bombing exercises involve an aircraft deploying munitions at a surface target located beneath the firing platform. Lookouts, by necessity for safety and mission success, primarily focus their attention on the water surface surrounding the intended detonation location (i.e., the mitigation zone). Being positioned in an aircraft gives the Lookout a good vantage point for observing marine mammals and sea turtles throughout the mitigation zone. For this SEIS/OEIS, the Navy added a requirement that platforms already participating in explosive activities will support the Lookout(s) in observing the mitigation zone before, during, and after an explosive activity, while performing their regular duties. For example, during an explosive bombing exercise, there typically are additional observation aircraft or safety aircraft in the vicinity. Having these additional personnel support observations of the mitigation zone will help increase the likelihood of detecting biological resources. As noted in the comment, the Navy has been conducting a Lookout Effectiveness Study in association with the University of St. Andrews for several years to assess the ability of shipboard Lookouts to observe marine mammals while conducting hull-mounted sonar training activities at sea. The University of St. Andrews' report was provided to NMFS on April 1, 2022 as required by existing ESA authorizations. Following a review and discussion period with NMFS, the study was publicly posted on the U.S. Navy's Marine Species Monitoring Program website in July 2022 (https://www.navymarinespeciesmonitoring.us). Overall, the report provides the Navy with valuable contextual information, but does require some level of interpretation with regard to the numerical results. For instance, the study's statistical model assumed that Navy ships moved in a straight line at a set speed for the duration of the field trials, and that animals could not move in a direction perpendicular to a ship. Violation of this model assumption would underestimate Lookout effectiveness for some data points. The

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	$1.4M over shorter timeframes[55]. Moreover, many of the lookout effectiveness cruises have occurred in areas where few marine mammals are present, which has delayed statistically-meaningful data analyses. In response to previous recommendations from the Commission regarding the lookout effectiveness study, NMFS included a term and condition in the incidental take statements issued under the Endangered Species Act (ESA) for MITT and NWTT requiring the Navy to provide a final report 90 days after 31 December 2021 that includes a statistical assessment of the data available to date characterizing the effectiveness of Navy lookouts relative to trained marine mammal observers for the purposes of implementing the mitigation measures (85 Fed. Reg. 72350). The Commission appreciates that NMFS's section 7 ESA biologists believed it prudent to elicit some response from the Navy on this long-standing project. However, the Navy should allocate the necessary resources to ensure that sufficient data have been collected to conduct a statistically meaningful analysis. If sufficient data are not yet in hand, then the Navy should reallocate resources and effort in areas where marine mammals are known to occur. To ensure that it has sufficient data to be analyzed in a statistically meaningful manner, the Commission recommends that the Navy (1) consult with the University of St. Andrews to determine what additional data are necessary to allow for statistically meaningful analyses, (2) develop a plan to maximize the number of sightings (e.g., conducting cruises in Southern California rather than Hawaii), and (3) allocate additional resources or reallocate available resources to the lookout effectiveness study to ensure sufficient sample sizes are available and adequate analyses can be conducted before the final lookout effectiveness report is submitted to NMFS in 2022.	Navy and NMFS determined that the Lookout Effectiveness Study results would not alter the acoustic effects quantitative analysis of potential impacts on marine mammals due to the Proposed Action. It was concluded that the acoustic effects quantitative analyses included in this Final SEIS/OEIS and in the regulatory consultation documents did not underestimate the number or extent of marine mammal takes due to the conservative approach already taken by the Navy in its quantitative analysis process. The Navy is currently working with NMFS to determine how and to what extent the study's results should be incorporated into future environmental analyses. The Navy is also working internally and with NMFS through the adaptive management process to determine if there are additional measures that would be practical to implement that would improve effectiveness of Lookouts, such as through enhanced personnel training. Chapter 5 (Mitigation) of the Final SEIS/OEIS has been updated to reflect this information. In terms of funding allocations, as described in Section 5.1.2.2.1.2 (Integrated Comprehensive Monitoring Program), the Navy developed the Integrated Comprehensive Monitoring Program to serve as the overarching framework for coordinating its marine species monitoring efforts and as a planning tool to focus its monitoring priorities pursuant to ESA and MMPA requirements. This process includes conducting an annual adaptive management review meeting where the Navy and NMFS jointly consider the prior year's goals, project results, and related scientific advances to determine if monitoring plan modifications are warranted to address program goals more effectively. The Strategic Planning Process of the Integrated Comprehensive Monitoring Program serves to guide the investment of resources to most efficiently address Integrated Comprehensive Monitoring Program objectives and intermediate scientific objectives. Research and funding priorities are determined through this program, in coordination with NMFS. The Navy currently uses and will continue to use passive acoustic devices (e.g., remote acoustic sensors, expendable sonobuoys, passive acoustic sensors on submarines) to complement visual

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	The Commission continues to assert that a precautionary approach should be taken until such time that sufficient data are available and that the Navy should supplement its visual monitoring measures with other monitoring measures rather than simply reducing the size of the zones it plans to monitor. The Navy did not propose to supplement visual monitoring with passive acoustic monitoring during any of its acoustic or explosive activities. Rather, it indicated that passive acoustic monitoring would occur only when Navy assets with passive acoustic monitoring capabilities are already participating in any such activity. The Navy uses visual, passive acoustic, and active acoustic monitoring (via HF/M3)[56] during SURTASS LFA sonar activities to augment its mitigation efforts over large areas. The Navy indicated in its Phase III DSEIS that it is not able to use HF/M3 during training and testing activities due to impacts on speed and maneuverability that can affect safety and mission requirements based on costs associated with designing, building, installing, maintaining, and manning the equipment. The Navy also stated that it did not have sufficient resources to construct and maintain additional passive acoustic monitoring systems or platforms for each training and testing activity. The Commission again points out that sonobuoys, which are deployed and used during many of the Navy's activities, could be deployed and used without having to construct or maintain additional systems. For example, multiple sonobuoys could be deployed with the target prior to an activity to better determine whether the target area is clear and remains clear until the munition is launched. The Navy went on to state that passive acoustic detections would not provide range or bearing to detected animals and therefore cannot be used to determine an animal's location or confirm its presence in a mitigation zone. The Commission does not agree, as Directional Frequency Analysis and Recording (DIFAR)	observations for marine mammals when passive acoustic assets are already participating in an activity, as discussed in Section 5.2.1.1 (Lookouts). As discussed in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices), there are significant manpower and logistical constraints that make constructing and maintaining additional passive acoustic monitoring systems or platforms for each training and testing activity impractical. The Navy's existing passive acoustic monitoring devices (e.g., sonobuoys) are designed, maintained, and allocated to specific training units or testing programs for specific mission-essential purposes. Reallocating these assets to different training units or testing programs for the purpose of monitoring for marine mammals would prevent the Navy from using its equipment for its intended mission-essential purpose. Diverting platforms that have integrated passive acoustic monitoring capabilities would impact their ability to meet their Title 10 requirements and reduce the service life of those systems. Furthermore, adding a passive acoustic monitoring capability to additional explosive activities (either by adding a passive acoustic monitoring device to a platform already participating in the activity, or by adding an additional platform to the activity) for mitigation is not practical. For example, all platforms participating in an explosive bombing exercise (e.g., firing aircraft, safety aircraft) must focus on situational awareness of the activity area and continuous coordination between multiple training components for safety and mission success. Therefore, it is impractical for participating platforms to divert their attention to non-mission essential tasks, such as deploying sonobuoys and monitoring for acoustic detections during the event (e.g., setting up a computer station). The Navy does not have available manpower or resources to allocate additional aircraft for the purpose of deploying, monitoring, and retrieving passive acoustic monitoring equipment during a bombing exercise. As stated in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2020 Draft SEIS/OEIS, to develop an estimated position for an individual marine mammal, the animal's

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	sonobuoys[57] perform both functions and are routinely used by the Navy. The Navy itself has drawn attention to the success of using sonobuoys to detect bottlenose dolphins in real-time during mine exercises and provides sonobuoys to researchers for the same purpose of detecting and localizing marine mammals.[58] Contrary to NMFS's assertion in the preamble to the NWTT final rule that sonobuoys have a narrow band that does not overlap with the vocalizations of all marine mammals (85 Fed. Reg. 72349), the Navy has highlighted numerous instances of sonobuoys being used to detect and locate baleen whales, delphinids, and beaked whales[58]. All instances represent detection of a broadband, rather than narrow band, repertoire of frequencies. NMFS also indicated that bearing or distance of detections cannot be provided based on the number and type of devices typically used (85 Fed. Reg. 72349). This too is incorrect[58]. The Commission further notes that personnel who monitor the hydrophones and sonobuoys used by the Navy on the operational side also have the ability to monitor for marine mammals[59]. Department of the Navy (2013) confirmed that ability exists—four independent sightings were made not by the Navy lookouts but by the passive acoustic technicians. Similarly, Department of the Navy (2014) reported that echolocation clicks of short-finned pilot whales were reported to the bridge by the sonar technician prior to mitigation being implemented. And, although aircraft may not have passive or active acoustic capabilities, aircraft carriers or other vessels from which the aircraft originated very likely do have such capabilities. The Commission has supported for quite some time the use of the instrumented ranges[60], operational hydrophones and active	vocalizations must be detected on at least three hydrophones. As stated in Section 5.2.1 (Procedural Mitigation Development), "Based on the number and type of passive acoustic devices that are typically used, passive acoustic detections do not provide range or bearing to a detected animal in order to determine its location or confirm its presence in a mitigation zone." The commenter took this sentence out of context to imply that the Navy indicated passive acoustic detections do not provide range or bearing to marine mammals in general. The Navy re-emphasizes that the passive acoustic monitoring devices typically used during its training and testing activities do not provide range or bearing to marine mammals, based on the number (e.g., one or two) and type of assets used. As discussed in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices), although the Navy is continuing to improve its capabilities to use range instrumentation to aid in the passive acoustic detection of marine mammals, at this time it would not be effective or practical for the Navy to monitor instrumented ranges for real-time mitigation or to construct additional instrumented ranges as a tool to aid in the implementation of mitigation.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	acoustic sources[61], and sonobuoys[62] to fulfill mitigation implementation and contends that localizing certain species (or genera) acoustically provides more effective mitigation than localizing none at all. Given that the effectiveness of Navy lookouts conducting visual monitoring has yet to be determined, the Commission contends that passive[62] or active acoustic[61] monitoring should be used to supplement visual monitoring, especially for activities that could injure or kill marine mammals. Therefore, the Commission again recommends that the Navy use passive (i.e., DIFAR and other types of sonobuoys) and active acoustic (i.e., tactical sonars that are in use during the actual activity or other sources similar to fish-finding sonars) monitoring, whenever practicable, to supplement visual monitoring during the implementation of its mitigation measures for all activities that could cause injury or mortality—at the very least, sonobuoys deployed and active sources and hydrophones used during an activity should be monitored for marine mammals. *Footnotes:* [50] The Commission appreciates that the Navy has provided the estimated mean, minimum, and maximum distances for all impact criteria (i.e., behavior, TTS, PTS, onset slight lung injury, onset slight gastrointestinal injury, and onset mortality) for the various proposed activity types and for all functional hearing groups of marine mammals. That approach is consistent with the Commission's recommendations on Phase II activities. [51] This routinely occurs for high-frequency (HF) cetaceans within GOA and can occur for low-frequency cetaceans and phocids in other Navy study areas. [52] Bin E12 in DSEIS.	

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	[53] The maximum range extends to 7,275 m for HF cetaceans (Table 3.8-31 in the DSEIS). [54] That is, sufficient data had not yet been collected to allow for a meaningful statistical analysis. [55] The funding amount was only reported for Hawaii. It has not been reported for Southern California, where very few lookout cruises have occurred (https://www.navymarinespeciesmonitoring.us/regions/). [56] Similar to a fish-finding sonar as described by the Navy. [57] As well as likely other types. [58] Including DIFAR sonobuoys. http://navysustainability.dodlive.mil/files/2014/05/Spr14_Sonobuoys_Research_Monitoring.pdf [59] For example, the engineer monitoring the hydrophones during a U.S. Air Force (USAF) activity at PMRF also listened for any signs of marine mammal life post (aerial clearance) survey and leading up to weapon impact (USAF 2016). [60] Which are not an option for GOA. [61] Including tactical sonars that are already used during the actual activity and other sources similar to fish-finding sonars. [62] Including DIFAR and other types of sonobuoys.	
MMC-13	**Level A harassment and mortality takes** The Navy used various post-model analyses to estimate the numbers of marine mammal takes during acoustic and explosive activities that are similar to methods used in its Phase II DEISs. Those analyses effectively reduced the model-estimated numbers of Level A harassment (i.e., PTS) and mortality takes. The analyses were based on (1) animal avoidance, (2) mitigation effectiveness, and (3) cut-off distances. The Commission has discussed the first two aspects at length in letters regarding Phase II activities. That information is not repeated herein but should be reviewed in conjunction with this letter (see the Commission's 15	Minimizing impacts on the marine environment is important to the Navy. As stated in 2020 Draft SEIS/OEIS Section 3.8.3.1.2.1 (Methods for Analyzing Impacts from Sonar and Other Transducers) and in Section 3.8.3.2.2.1 (Methods for Analyzing Impacts from Explosives), the consideration of marine mammal avoidance and mitigation effectiveness is integral to the Navy's overall analysis of potential impacts. As described in the 2018 technical report titled "Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing," available at www.goaeis.com, animats in the Navy Acoustic Effects

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	September 2014 letter). The Commission has a few additional comments on those analyses. For avoidance, the Navy assumed that animals present beyond the range to onset PTS for the first three to four pings would avoid any additional exposures at levels that could cause PTS (Department of the Navy 2018). That equated to approximately 5 percent of the total pings or 5 percent of the overall time active; therefore, 95 percent of marine mammals predicted to experience PTS due to sonar and other transducers were instead assumed to experience TTS (Department of the Navy 2018). The Navy should have been able to query the dosimeters of the animats to verify whether its 5-percent assumption was valid[63], but on its face that assumption has no scientific basis. Given that sound sources are moving, it may not be until later in an exercise that the animal is close enough to experience PTS and it is those few close pings that contribute to the potential to experience PTS. Since both sources and animals are moving during an exercise, whether an animal is initially beyond the PTS zone has no bearing on whether it will later come within close range. Behavioral response studies (BRS) have shown this as well. For example, Southall et al. (2014) indicated that Risso's dolphins and California sea lions approached the 200-m shut-down zone when a source[64] was operating at full power, resulting in having to shut down the source. Both instances occurred well after the first three or four pings. Department of the Navy (2010 and 2012) also noted multiple instances in which dolphins were observed 27 to 460 m from a vessel emitting mid- frequency active sonar, in some instances several hours after the source was active. Those dolphins did not receive only the first three or four pings emitted, nor did they avoid the source. Avoidance aside, Navy vessels may move faster than animals are capable of moving to evacuate the area, exposing such animals to pings after the first three or four as well.	Model do not move horizontally or "react" to sound in any way. The current best available science based on a growing body of behavioral response research, however, shows that animals avoid the immediate area around sound sources to a distance of a few hundred meters or more depending upon the species. Avoidance to this distance greatly reduces the likelihood of impacts on hearing, such as TTS and PTS. Specifically, the ranges to PTS for most marine mammal groups are within a few tens of meters, and the ranges for the most sensitive group, the high frequency (HF) cetaceans, average about 200 m, to a maximum of 270 m in limited cases. HF cetaceans such as harbor porpoises, however, have been observed reacting to anthropogenic sound at greater distances than other species and are likely to avoid their zones of hearing impacts (TTS and PTS) as well. Section 3.8.3.1.1.5 (Behavioral Reactions – Behavioral Reactions to Sonar and Other Transducers) in Section 3.8 (Marine Mammals) of this SEIS/OEIS documents multiple studies in which marine mammals responded to sonar exposure with avoidance at exposures below which PTS would occur. The avoidance speed used in this quantitative analysis (1.5 meters/second) is a very conservative swim speed assumption for avoidance of an injurious sound exposure, and the analysis assumes that not all animals could avoid PTS. Additionally, most sonar sources are not used omni-directionally, which would affect exposure level at different angles and depths relative to the sound source, and thus potential physiological and behavioral responses (e.g., the dolphins in the Lookout studies, DoN 2010 and 2012). Additionally, the experimental sound source used in Southern California behavioral response studies (Southall et al., 2011–2015) had a significantly lower source level than hull-mounted anti-submarine warfare sonars, with minimal risk of auditory injury. The Navy Acoustic Effects Model also does not consider procedural mitigation (e.g., powering down or shutting down sonar, or ceasing explosive detonations when animals are detected in specified mitigation zones around a sound source or detonation location),

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Regarding mitigation effectiveness, the Commission notes that the specific mitigation effectiveness scores for the various activities were provided for Phase II but not for Phase III activities. For Phase III, the Navy included more detail regarding how the scores were determined (including species sightability, observation area extent, visibility factors, and whether sound sources were under positive control) but did not specify what the actual scores were for those four factors or as a whole. The Navy also did not include model-estimated numbers of takes. The lack of information makes it difficult for the Commission and the public to assess the appropriateness of the mitigation scores or their effect on the overall numbers of marine mammal takes. And, although the Navy did not reduce the numbers of injury (slight lung and GI tract) and PTS takes for explosive activities as it had for Phase II analyses, it still assumed its model-estimated mortality takes would not occur, zeroed out those takes, and enumerated them as injury takes. Since the Navy has yet to determine the effectiveness of its mitigation measures, it is premature to include *any* related assumptions to reduce the numbers of marine mammal takes. The Commission further points out inconsistencies in NMFS's most recent response regarding the Navy's post-model analysis. In the preamble to the NWTT final rule, NMFS indicated that it disagreed with suggestions that there was not enough information by which to evaluate the Navy's post-modeling calculations or that the methods were arbitrary or non-conservative. NMFS then went on to say that the Navy's report described how the factors were considered but that it wasn't necessary to view the many tables of numbers generated in the assessment to evaluate the method (85 Fed. Reg. 72333). If the *numbers or scores* associated with the Navy's post-model analysis were not provided, then clearly the necessary information was not made available to the public for evaluating the *calculations*. NMFS also indicated that the information is not readily available in a	which necessitates consideration of mitigation in the Navy's overall acoustic analysis process. Credit taken for mitigation effectiveness for sonar was extremely conservative. The Commission asserted that the Navy "zeroed" out model-estimated explosive takes; however, as detailed in Section 3.8.3.2.2.1 (Methods for Analyzing Impacts from Explosives), the Navy Acoustic Effects Model estimated zero mortality takes for all marine mammal species in the TMAA. Therefore, mitigation for explosives is discussed qualitatively but was not factored into the quantitative analysis for marine mammals under Alternative 1 (i.e., mitigation effectiveness scores were not calculated, or used to reduce mortality exposures for, explosives). NMFS has concurred with the analytical approach used by the Navy. The Navy refined the Phase III analysis by considering mitigation effectiveness at the scenario level, rather than at the activity level as in Phase II. Many scenario details are classified, thus the level of detail requested by the Commission cannot be provided in an unclassified document. The results of the quantitative analysis represent the best estimate of the maximum number of instances that marine mammals may be impacted under this Proposed Action.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	format that could be shared and it would take extensive work to provide the necessary description of this data (85 Fed. Reg. 72333). Given that the mitigation effectiveness scores and assumptions were provided for Phase II, NMFS's rebuttal is inaccurate. Regardless, numerous commenters have pointed out the lack of transparency and arbitrary appearance of the Navy's post-model analysis (85 Fed. Reg. 73332). The Commission agrees and reiterates the point made by another commenter that NMFS's failure to make the Navy's analysis transparent has prevented the public from effectively commenting on it, in contravention of the Administrative Procedures Act and on a matter of obvious significance to the agency's core negligible impact determination findings (85 Fed. Reg. 73332). Furthermore, the National Environmental Policy Act (NEPA), being a procedural statute, has similar requirements regarding transparency such that sufficient detail must be provided about the assumptions made to reach the agency's final conclusion. The Council on Environmental Quality repeatedly noted in its recently revised implementing regulations for NEPA that one of the goals of the revisions was to bring about greater transparency in the process (85 Fed. Reg. 43304), thus providing greater transparency and access to the underlying analyses. Therefore, the Commission recommends that the Navy provide details on how it reduced the various takes based on avoidance and the specific mitigation effectiveness scores, along with examples of how the model-estimated takes were reduced. These issues taken together with the Commission's concerns regarding the Navy's use of cut-off distances, as provided in a previous section of this letter, underscore the fact that the Navy's post-model analyses underestimate the various numbers of takes. The Commission again recommends that the Navy (1) specify the total numbers of model-estimated Level A harassment (PTS) and mortality takes rather than reduce the estimated numbers of takes based on the	

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Navy's post-model analyses and (2) include the model-estimated Level A harassment and mortality takes in its LOA application to inform NMFS's negligible impact determination analyses. Most, if not all, of the Commission's recommendations would apply to the Navy's LOA application as well and should be considered as such. Please contact me if you have questions concerning the Commission's recommendations or rationale. *Footnotes:* 63 That is, whether the first three to four pings equated to 5 percent of the total pings *and* 5 percent of the overall time active, not whether the animals avoided the source since horizontal animal movement was not incorporated in the Navy's modeling. 64 For both simulated and scaled sources. Similar results were observed with Risso's dolphins, California sea lions, and common dolphins during previous BRSs (Southall et al. 2011, 2012, 2013, and 2015).	
U.S. Department of Interior (DOI)		
DOI-01	The Draft SEIS/OEIS contains an analysis of potential environmental impacts, including to ESA-listed species managed by the DOI's U.S. Fish and Wildlife Service (USFWS). These are the Southwest Alaska Distinct Population Segment (DPS) of the northern sea otter (*Enhydra lutris kenyoni*) and the short-tailed albatross (*Phoebastria albatrus*). Our comments broadly address: 1) the scope of the environmental impacts analysis, 2) recommendations for mitigation measures aimed at minimizing potential impacts to the short-tailed albatross, and 3) minor text edits and suggested citations, including updated population estimates for the northern sea otter. Detailed comments from the USFWS on specific sections of the document are provided in the enclosure.	Thank you for reviewing the 2020 Draft SEIS/OEIS and for your comments. The Navy has responded to your specific comments in this Appendix as well as made any applicable changes to this Final SEIS/OEIS.
DOI-02	DOI appreciates the detailed analysis of the potential effects of acoustic stressors to marine mammals, including the northern sea	The Navy is not required to and therefore does not address accidents in its analysis of potential direct impacts. Best

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	otter, and to the short-tailed albatross. We recommend broadening the scope of the environmental impacts analysis to include the potential effects of: • accidental hydrocarbon release to the marine environment, resulting from the Proposed Action; and • vessel movement as it relates to short-tailed albatross, specifically potential vessel strikes and light attraction.	management practices and standard operating procedures are in place to ensure accidental hydrocarbon release does not occur as a result of the Proposed Action. The Navy, however, addresses oil spills and other accidental hydrocarbon releases to the marine environment in Chapter 4 (Cumulative Impacts). The Navy's analysis in this SEIS/OEIS includes consideration of impacts from non-acoustic and non-explosive stressors. The analysis suggests that short-tailed albatross would not be adversely affected by these stressors. The Navy has consulted with USFWS on non-acoustic and non-explosive stressors that would occur from the Proposed Action. Informal consultation was completed with USFWS on March 29, 2022, with the Service concurring with the Navy's determination that the Proposed Action is not likely to adversely affect listed species that fall under the Service's management authority, or their designated critical habitats (refer to Appendix E, Correspondence).
DOI-03	DOI recommends including standard operating procedures or mitigation measures, aimed at reducing potential impacts to short-tailed albatross and other seabirds, to the Final SEIS/OEIS. We suggest the following best practices for all vessel operators: • To reduce the potential for vessel strikes, reduce speed to approximately 8 knots while operating near ESA-listed species or within designated critical habitat. • When working at night or in reduced lighting conditions or inclement weather, minimize lighting by shading interior windows using blackout curtains, minimizing deck and other lighting, and shielding lights and directing lighting downward to the maximum extent possible, except when necessary for human and vessel safety. Care should be taken not to point downward-directed lights at reflective surfaces.	The Navy recognizes that vessel collisions with seabirds (and potentially the short-tailed albatross) continue to be a threat. These threats are most prevalent among commercial fishing vessels because they operate with considerably more lighting than Navy vessels. The Navy added language to the Biological Assessment submitted to USFWS, as well as the Final SEIS/OEIS in Section 2.3.2.3 (Vessel Lighting) addressing standard operating procedures for reducing the visibility of white lights from outside the ship. The procedure is referred to as "Darken Ships Bill" and is addressed in Chief of Naval Operations Instruction 3120.32D. Compliance with this instruction will reduce the potential for light attraction to vessels by seabirds because no white lights shall be visible from outside the ship. In addition, the Navy developed new mitigation for this Final SEIS/OEIS to further reduce the already low potential for vessel strikes of large-bodied seabirds, such as albatross, as described in Section 5.3.4.1 (Vessel Movement). The Navy does not anticipate any vessel strike of short-tailed albatross from the Proposed Action.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
DOI-04	Finally, DOI recommends the Navy use the same mitigation zones to reduce the potential for ordnance and explosive impacts to short-tailed albatross as are being used for marine mammals and sea turtles. Lookouts would already be scanning the impact area, and it should be possible to detect a large-bodied seabird such as an albatross at 1,000 yards. If individual albatross or seabird feeding flocks are seen in the impact area, we request the Navy implement similar procedural mitigation measures as used for other species.	The Navy developed new mitigation for this Final SEIS/OEIS to further reduce the already low potential for impacts from explosive and non-explosive stressors on short-tailed albatross, as described in Chapter 5 (Mitigation). The Navy will observe for large-bodied seabirds, such as albatross, within mitigation zones around the intended targets during explosive and non-explosive gunnery and bombing exercises.
DOI-05	The Navy has committed to consulting with the USFWS regarding: 1) the potential effects of noise produced by vessels, aircraft, and weapons; 2) the potential effects of explosives to the ESA-listed short-tailed albatross and Southwest Alaska DPS of the northern sea otter; and 3) the potential to affect the short-tailed albatross through noise produced by sonar and other transducers as well as through impacts to the availability of prey species. The USFWS looks forward to working with the Navy to ensure that joint responsibilities are met under the ESA.	The Navy appreciates the USFWS' commitment to this consultation process On June 1, 2021, the Navy requested reinitiation of consultation with USFWS. Informal consultation was completed with USFWS on March 29, 2022 with the Service concurring with the Navy's determination that the Proposed Action is not likely to adversely affect listed species that fall under the Service's management authority, or their designated critical habitats (refer to Appendix E, Correspondence).
DOI-06	Section 3.8.2.1 - Table 3.8-1 & footnotes: Stock and stock abundances in the table are cited to National Marine Fisheries Service (NMFS) Stock Assessment Reports (SARs) Carretta et al. (2020b) and Muto et al. (2020). While northern sea otter stock assessments are included in an appendix to Muto et al. 2020, it would be more appropriate to cite them directly to U.S. Fish and Wildlife Service (USFWS) stock assessment reports (available here: https://www.fws.gov/ecological-services/species/stock-assessment-reports.html) Change text to: "Notes: The stocks and stock abundance number are as provided in Carretta et al. (2020b); Muto et al. (2020) with exceptions. Northern sea otter stocks and stock abundances are as provided by U.S. Fish and Wildlife Service (USFWS) 2014a, 2014b, and 2014c. Stock abundances for blue whales and the California, Oregon, Washington stock of humpback whales reflect more recent data	The text has been updated in this SEIS/OEIS as requested.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	(Calambokidis and Barlow 2020) than what is presented in the 2019 SARs."	
DOI-07	Section 3.8.2.1.5 – Hunting: More recent northern sea otter harvest numbers are available. Please edit to reflect updated harvest data: The USFWS records show that in 2012, there were 1,281 sea otters reported taken in Alaska as part of that year's subsistence harvest (Lichtenstein 2013). A total of 1,623 sea otters were harvested in Alaska in 2019, and annual subsistence harvest has ranged from 1,409 to 2,167 sea otters between 2012 and 2019 (communication with USFWS, 2021).	The text has been updated in this SEIS/OEIS as requested.
DOI-08	Section 3.8.2.23: Rather than citing Muto et al. 2020 (NMFS Alaska SARs, which include USFWS sea otter SARs in an appendix) in this section, please directly cite USFWS northern sea otter SARs (available here: https://www.fws.gov/ecological-services/species/stock-assessment- reports.html) Change the four Muto et al. 2020 citations to cite the appropriate USFWS SAR (for the southwest, southeast, and southcentral Alaska northern sea otter stocks).	The text has been updated in this SEIS/OEIS as requested.
DOI-09	Section 3.8.3: NMFS has jurisdiction over marine mammals in the Gulf of Alaska (GOA) Temporary Maritime Activities Area (TMAA), except the northern sea otter. This species falls under jurisdiction of the USFWS. This distinction is unclear throughout the document. Please edit text so it is clear that the NMFS Record of Decision and Biological Opinion (BiOp) apply to all marine mammals except the northern sea otter.	The text has been updated in this SEIS/OEIS as requested.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Additionally, the USFWS letter of concurrence should be cited wherever the NMFS BiOp is cited and where text refers to all marine mammals (including the northern sea otter).	
DOI-10	Section 3.8.3: The Navy undertook this Draft SEIS/OEIS to analyze the following stressors for marine mammals: acoustic and explosives. According to the 2016 SEIS and NMFS Final Rule under the Marine Mammal Protection Act (MMPA), other stressors are unlikely to result in the incidental take of marine mammals. The stressors previously analyzed were: non-explosive ordnance use (ingestion, strikes), electronic combat, discharge of expended materials (physical disturbance, strikes, entanglement, ingestion, sediments and water quality). However, oil spills and hazardous material releases also pose risks to marine mammals. Spills of oil or hazardous materials do not seem to have been considered in the 2011 Final Environmental Impact Statement (FEIS) and were not included in the Draft SEIS/OEIS at hand. There could be a potential risk to marine mammals, including the northern sea otter, with an increase in vessel activity for training exercises in the TMAA. The USFWS requests that the Navy consider oil spill risk, resulting from the Proposed Action and within the cumulative effects sections of this Draft SEIS/OEIS.	The Navy is not required to and therefore does not address accidents in its analysis of potential direct impacts. Best management practices and standard operating procedures are in place to ensure accidental hydrocarbon release does not occur as a result of the Proposed Action. The Navy, however, addresses oil spills and other accidental hydrocarbon releases to the marine environment in Chapter 4 (Cumulative Impacts). Please refer to Table 4-1 for a discussion of the cumulative effects of historic and potential future oil spills on marine life. Additionally, in Table 4-1 there is discussion of oil spill monitoring plans and organizations, such as the Gulf of Alaska Monitoring Plan, whose actions could have net positive cumulative impacts on the GOA Study Area and surrounding marine environment with respect to oil spills.
DOI-11	Section 3.8.3.1.3 to 3.8.3.1.5 – textboxes: The Navy has committed to consulting, pursuant to the Endangered Species Act (ESA), with the USFWS regarding potential effects of noise produced by vessels, aircraft, and weapons to the ESA-listed Southwest Alaska Distinct Population Segment (DPS) of the northern sea otter. The USFWS looks forward to working with the Navy to ensure we meet our joint responsibilities under the ESA.	The Navy appreciates the USFWS' commitment to this consultation process. On June 1, 2021, the Navy requested reinitiation of consultation with USFWS. Informal consultation was completed with USFWS on March 29, 2022, with the Service concurring with the Navy's determination that the Proposed Action is not likely to adversely affect listed species that fall under the Service's management authority, or their designated critical habitats (refer to Appendix E, Correspondence).

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
DOI-12	Section 3.8.3.2.2.4 – textbox: The Navy has committed to consulting with the USFWS regarding potential effects of explosives to the ESA-listed Southwest Alaska DPS of the northern sea otter. The USFWS looks forward to working with the Navy to ensure we meet our joint responsibilties under the ESA.	The Navy appreciates the USFWS's commitment to this consultation process. On June 1, 2021, the Navy requested reinitiation of consultation with USFWS. Informal consultation was completed with USFWS on March 29, 2022, with the Service concurring with the Navy's determination that the Proposed Action is not likely to adversely affect listed species that fall under the Service's management authority, or their designated critical habitats (refer to Appendix E, Correspondence).
DOI-13	Section 3.9.1 – third paragraph: The Navy analyzed the following stressors for birds: acoustic and explosives. The stressors previously analyzed (p. 3.9-11 of the 2011 FEIS) were: vessel movements, aircraft overflights (disturbance, strikes), ordnance use, explosions and impacts, and expended materials (habitat alteration, entanglements, ingestion, hazardous materials). The Navy is requesting consultation with the USFWS based, in part, on new distribution information for the short-tailed albatross. The 2011 FEIS states, "The probability of ship and seabird interactions occurring in the TMAA depends on several factors, including the presence and density of birds" (p. 3.9-12). Given that "new information is available that improves understanding of short- tailed albatross occurrences within the TMAA" (Draft SEIS 2020, p. 3.9-17), this stressor should be carried forward for analysis in the current document.	The Navy's analysis in the 2011 Final GOA EIS/OEIS, and reaffirmed in the 2016 GOA Final SEIS/OEIS, and subsequent analyses from other Navy study areas (e.g., the Northwest Training and Testing Study Area) where the same stressors occur, concluded that there would be no significant impacts on marine species from non-acoustic and non-explosive stressors. The Navy has concluded its consultation with USFWS on short-tailed albatross, which addressed potential effects from non-acoustic and non-explosives stressors, including vessel movements, and on March 29, 2022, the Navy received a Letter of Concurrence from USFWS concurring with the Navy's determination that the Proposed Action may affect but is not likely to adversely affect the short-tailed albatross.
DOI-14	Section 3.9.2.1 – Table 3.9-1: Birds that may be present in the TMAA during the training activity window, and that are listed as birds of conservation concern, but are not included in this table are: red-throated loon (USFWS 2015) and red-faced cormorant, Aleutian tern, Kittlitz's murrelet (USFWS 2008a).	These birds have been added to the table in this SEIS/OEIS as requested.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Please add red-throated loon under Family Gaviidae, red-faced cormorant under Family Phalacrocoracidae, Aleutian tern under Family Laridae, and Kittlitz's murrelet under Family Alcidae.	
DOI-15	Section 3.9.2.1 – first and second paragraphs: Reference is made to a 2019 Birds of Conservation Concern (BCC) list, and the citation lists the following source: U.S. Fish and Wildlife Service. 2019. Birds of Conservation Concern 2019. Falls Church, VA: U.S. Department of the Interior, Fish and Wildlife Service, Division of Migratory Bird Management. The most current, finalized BCC list is the list from 2008. Please clarify what list is being referenced. If it is a draft that was provided to the Navy, please provide the document to our office so that we are working off the same version of the document in our review and correspondence. Please correct the citation to reflect the 2019 document as a draft (with date of the draft and version of the document).	The Navy has clarified that the 2019 BCC list is a draft and will monitor information sources for any recent updates to the list.
DOI-16	Section 3.9.2.1 – additional information: Two marine Important Bird Areas (IBAs) of Global importance exist within the TMAA, and a third IBA of Global importance borders the TMAA on its northeastern edge. We recommend adding information about two IBAs that overlap the TMAA, and a third IBA that is outside but nearby the TMAA. The two overlapping IBAs are the Gulf of Alaska Shelf 151W58N (important for the glaucous-winged gull, which is a bird of conservation concern) and the Gulf of Alaska Shelf Edge 148W59N (important for the black-footed albatross, which is also a bird of conservation concern). Audubon reports detailing information about these two IBAs can be found at: https://netapp.audubon.org/iba/Reports/4414 and https://netapp.audubon.org/iba/Reports/4410 A third IBA of Global importance is found just outside the TMAA. This is the Middleton Island Colony, which is important for the pelagic cormorant (also a bird of conservation concern). Pelagic cormorants	The Navy appreciates the recommendation to include the two IBAs that occur within the GOA TMAA and the third IBA outside of the GOA TMAA. This SEIS/OEIS has been updated with this information. Updates are included in Section 3.9.2.1 (General Background).

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	and other seabirds breeding on Middleton Island likely forage within the TMAA. The Audubon report for this IBA can be found at: https://netapp.audubon.org/iba/Reports/4477	
DOI-17	Section 3.9.2.1.6 – General Threats: Vessel movement (including vessel strike and light attraction/collision) is not listed as a stressor under General Threats in the Draft SEIS, but this is a concern for seabird species, including the short-tailed albatross. Please add information and analysis on the effects of vessel movement in the GOA and discuss this potential stressor to seabirds.	The Navy's analysis in this SEIS/OEIS includes consideration of impacts from non-acoustic and non-explosive stressors. The analysis suggests that short-tailed albatross would not be adversely affected by these stressors, when considering the standard operating procedures and new mitigation the Navy has developed for this Final SEIS/OEIS as described above.
DOI-18	Section 3.9.2.1.6 – Commercial Industries paragraphs: The text discussing bycatch by species group does not cite a source. Please clarify the source(s) of the bycatch numbers. If Krieger and Eich (2020) is the source of bycatch numbers, it is currently cited only in a table footnote and should be cited in the text as well.	This citation has been added to the text in this SEIS/OEIS as requested.
DOI-19	Section 3.9.2.1.6 – Albatross paragraph: The last sentence appears to be inaccurate regarding number of short- tailed albatross reported as bycatch in Alaska fisheries in 2014. Please recheck the following information, "11 short-tailed albatross reported as bycatch in 2014," update as necessary, and provide a citation. The 2015 NMFS annual bycatch report suggests there were three short-tailed albatross reported as bycatch in 2014: two in September 2014 and one in December 2014. See: https://repository.library.noaa.gov/view/noaa/16993	The Navy has rechecked the information as requested and updated this SEIS/OEIS as necessary with a citation provided in Section 3.9.2.1.6 (General Threats).
DOI-20	Section 3.9.2.1.6 – Albatross paragraph: Since the three short-tailed albatross reported as bycatch in Alaska fisheries in 2014, two additional short-tailed albatross have been reported as bycatch. These two albatross were reported in 2020.	The Navy has updated the section in this SEIS/OEIS to include the two short-tailed albatross reported as bycatch in 2020 as requested.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Please update this section to include the two short-tailed albatross reported as bycatch in 2020. The bulletin reporting the 2020 take can be found at: https://www.fisheries.noaa.gov/bulletin/ib-20-80-noaa-fisheries-reports-take- second-short-tailed-albatross-bsai	
DOI-21	Section 3.9.2.1.6 – Northern fulmar paragraph: Number of northern fulmar reported as bycatch in 2019 is not included. Please include the number of northern fulmar reported as bycatch in 2019 (2,929 birds; Krieger and Eich 2020).	The Navy has updated the section in this SEIS/OEIS to include the number of northern fulmar reported as bycatch in 2019 as requested.
DOI-22	Section 3.9.2.1.6 – Gull paragraph: Family name and the number of birds reported as bycatch for this species group is not included, but it is noted for other species. Please update this paragraph to reflect that the species group being considered is Family Laridae, and include the number of gulls reported as bycatch in 2019 (244 birds; Krieger and Eich 2020).	The Navy has updated the section in this SEIS/OEIS to reflect that the species group being considered is Family Laridae, and included the number of gulls reported as bycatch in 2019 as requested.
DOI-23	Section 3.9.2.2.1 – second paragraph: Vessel movement is not listed as a stressor, but was considered in the 2011 GOA Final EIS/OEIS and 2016 GOA Final SEIS/OEIS. Please add vessel movement to the list of stressors previously considered.	The Navy has added vessel movement to the list of stressors that were previously considered as requested.
DOI-24	Section 3.9.2.2 – abundance paragraph: Current population of the short-tailed albatross has increased and is currently estimated at 7,365 individuals, with the average growth rate for the population (3-year running average) estimated at 8.9 percent (USFWS 2020). Please update this section using the information provided, which comes from:	The Navy has reviewed the information provided in the citation and updated the section accordingly in this SEIS/OEIS.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	U.S. Fish and Wildlife Service. 2020. Short-tailed Albatross (Phoebastria alabtrus) 5-Year Review: Summary and Evaluation. This document is available at: https://ecos.fws.gov/docs/five_year_review/doc6487.pdf	
DOI-25	Section 3.9.3: In terms of potential impacts to migratory bird trust resources in the TMAA, the stressors the USFWS is most concerned about include: vessel-based disturbance, vessel strike, and light attraction/collision (could be grouped under "vessel movement," as in the 2011 FEIS); aircraft disturbance ("aircraft overflights" in the 2011 FEIS); injury and disturbance from ordnance and explosives; impacts from increased debris in the marine environment, including ingestion and entanglements; impacts from a spill of oil or other substances in the marine environment; and impacts from accidental introduction of rats or mice to areas otherwise free of rats and mice (e.g., Middleton Island). Please consider changing the focus of the Environmental Consequences section. The currently available literature suggests physical impacts from acoustic stressors and sonar (including injury such as hearing loss) are less of a concern for birds in the TMAA than other stressors we have listed. In particular, we suggest vessel movement should be analyzed in the Environmental Consequences section.	The Navy acknowledges that vessel movements are a potential stressor on ESA-listed species and other trust resources managed by USFWS. Navy vessels, unlike commercial fishing vessels and container vessels, represent a small risk to birds at sea in terms of visual disturbance from lights because these vessels are considerably less lit than other vessels. As such, information has been added to Chapter 4 (Cumulative Impacts) to discuss vessel disturbance.
DOI-26	Section 3.9.3: The potential for increased spills of oil or hazardous materials, as a result of increased vessel activity in the GOA resulting from the Proposed Action, does not seem to have been considered in the 2011 Final EIS impacts anaylsis, nor in the 2020 Draft SEIS. Water contamination through hydrocarbon inputs or other inputs was briefly mentioned in the 2011 Final EIS in the ocean resources section, 3.3.1.1, and in the cumulative impacts section, 4.1.1.3. However, impacts to other resources, including but not limited to ESA-listed bird	The Navy is not required to and therefore does not address accidents in its analysis of potential direct impacts. Best management practices and standard operating procedures are in place to ensure accidental hydrocarbon release does not occur as a result of the Proposed Action. The Navy, however, addresses oil spills and other accidental hydrocarbon releases to the marine environment in Chapter 4 (Cumulative Impacts). Please refer to Table 4-1 for a discussion of the cumulative effects of historic and potential future oil spills on marine life. Additionally, in Table 4-1 there is discussion of oil spill monitoring plans and organizations,

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	and marine mammal species, as a result of a spill under the Proposed Action do not appear to have been analysed in either the 2011 Final EIS or the 2020 Draft SEIS, and should be discussed.	such as the Gulf of Alaska Monitoring Plan, whose actions could have net positive cumulative impacts on the GOA Study Area and surrounding marine environment with respect to oil spills.
DOI-27	Section 3.9.3.1 – Acoustic stressors, aircraft noise: Cardinals and starlings are passerines adapted to living in urban environments, unlike birds that would be encountered in the GOA TMAA. Comparing the reproductive success of cardinals in areas with high versus low levels of military training activities is not likely to be meaningful to the species of concern in the TMAA. Likewise, how starlings respond to noise is probably not comparable to how seabirds and other species in the TMAA respond to noise. Many of the cited studies (e.g., Barron et al. 2012, Kight et al. 2012, Partecke et al. 2006, Pytte et al. 2003, Johnson et al. 1985) involve species very different from species that would be found within the GOA TMAA. We recommend updating this section to reflect studies about waterbirds, and/or remove text as appropriate. Some references that may be applicable to species in the GOA can be found in a Seabird Protection Network/NOAA-funded literature review at: https://seabirdprotectionnetwork.org/wp-content/uploads/2017/01/Aircraft- disturbance-literature-review.pdf	Data on bird responses to aircraft noise are limited, and the Navy respectfully disagrees with the commenter that data from bird species not found in the GOA Study Area should be removed. However, waterbird studies from the reference provided by the commenter have been reviewed, and the best available science therein has been incorporated into this SEIS/OEIS. The Navy thanks the commenter for providing this resource.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
DOI-28	Section 3.9.3.1 – Acoustic stressors, aircraft noise: Acoustic impacts are only one potential mechanism of impact associated with aircraft overflights. Visual disturbance from the flight itself can be a stressor to birds, and noise and visual disturbance might work in tandem to cause a response. We recommend analyzing "Aircraft Overflights" instead of "Aircraft Noise" (and move this out of the 3.9.3.1 Acoustic Stressors section). This analysis would benefit from increasing the scope to include impacts outside of dB-caused injury. Monitoring-based research (including from studies in the literature review provided above) might help inform this analysis.	Section 3.9.3.1.1.5 (Behavioral Reactions to Aircraft) states, "There are multiple possible factors involved in behavioral response to aircraft overflights, including the noise stimulus as well as the visual stimulus." Since it is not possible to segregate visual and acoustic disturbance from aircraft overflights, this concept is used to analyze aircraft overflights holistically in Section 3.9.3.1.4 (Impacts from Aircraft Noise): "Potential impacts considered are masking of other biologically relevant sounds, physiological stress, and changes in behavior." Therefore, the scope of the current analysis addresses the commenter's concerns, and the impact analyses in this SEIS/OEIS have changed to "Aircraft Disturbance," consistent with the 2011 Final EIS/OEIS. Additionally, the two sections mentioned above have been revised to include additional best available science.
DOI-29	Section 3.9.3.1.1 – last paragraph: Please consider removing frigatebirds and pelicans to focus this list only on bird groups that might be affected by sound-producing activities in the GOA TMAA. We recommend adding shorebirds as a group that might nest coastally or inland, forage coastally, and fly over in large numbers during spring and fall migration periods.	The Navy has revised this general list of birds to acknowledge the potential for shorebirds to traverse through the GOA Study Area during migration periods. The edited text may be found in Section 3.9.3.1.1 (Background).
DOI-30	Section 3.9.3.1.2 to 3.9.3.1.5 – textboxes: The Navy has committed to consulting with the USFWS regarding potential effects to short-tailed albatross of noise produced during training activities by sonar and other transducers, vessels, aircraft, and weapons. The USFWS looks forward to working with the Navy to ensure we meet our joint responsibilties under the ESA.	The Navy appreciates the USFWS' commitment to this consultation.
DOI-31	Section 3.9.3.2.2.4 – textbox:	The Navy appreciates the commitment of the USFWS to this consultation.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	The Navy has committed to consulting with the USFWS regarding potential effects of explosives to short-tailed albatross. The USFWS looks forward to working with the Navy to ensure we meet our joint responsibilties under the ESA.	
DOI-32	Section 3.9.3.3 – textbox: The Navy has committed to consulting with the USFWS regarding potential to affect the short-tailed albatross through secondary impacts on prey avaibility. The USFWS looks forward to working with the Navy to ensure we meet our joint responsibilties under the ESA.	The Navy appreciates the commitment of the USFWS to this consultation.
DOI-33	Section 4.4.3: This discussion of cumulative effects is reliant on NMFS findings for marine mammals, but the northern sea otter is under the jurisdiction of the USFWS. This section should distinguish between the northern sea otter and NMFS- managed marine mammals. We recommend making similar changes to those requested in section 3.8.3.	The Navy has updated the marine mammals section as requested to distinguish between the northern sea otter and NMFS-managed marine mammals. These updates have been made throughout this SEIS/OEIS as applicable.
DOI-34	Section 5.1.2.2 – paragraph: The USFWS also uses incident reports to evaluate the effectiveness of mitigation for trust resources, including ESA-listed species, and to determine if adaptive adjustments to mitigation are necessary. Please acknowledge the reporting requirements that are part of section 7 consultations with the USFWS.	The Navy updated this SEIS/OEIS to clarify it will continue implementing certain reporting initiatives as a compliance requirement under ESA consultation.
DOI-35	Section 5.3.3.1 – seabird paragraph: Even if identification to species is not possible, large-bodied, white birds sitting on the water might be easier to detect at 1,000 yards in most conditions than cryptically colored sea turtles or small marine mammals. Lookouts would be already be scanning the munitions impact area for sea turtles and marine mammals. If individual	Due to the expected low numbers of short-tailed albatross at sea where training activities would occur, there would be a low potential of exposure to explosives used during training activities. However, the Navy developed new mitigation for this Final SEIS/OEIS to further reduce the already low potential for impacts from explosive and non-explosive stressors on short-tailed

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	albatross or seabird feeding flocks are seen in the impact area, procedural mitigation should be implemented as for other species. If 600- and 1,000-yard mitigation zones are being implemented for marine mammals and sea turtles, it should be possible to implement the same mitigation zones for large-bodied seabirds (such as albatross) without undue cost to training activities. While we recognize that detection will be imperfect, we recommend using the same mitigation zones across species, and update Table 5.3-4 and text in 5.3.3.1 to reflect this.	albatross, as described in Chapter 5 (Mitigation). The Navy will observe for large-bodied seabirds, such as albatross, within the mitigation zone around the intended targets during explosive and non-explosive gunnery exercises.
DOI-36	Section 5.3.3.2 – Table 5.3-5: The procedural mitigations for explosive bombs detailed in this table could also apply to seabirds. A large-bodied white bird sitting on the water might be easier to detect than a cryptically colored sea turtle or small marine mammals, even at a distance of 1,000 yards. We recommend using the same mitigation zones across species, and update Table 5.3-5 and text in 5.3.3.2 to reflect this.	Due to the expected low numbers of short-tailed albatross at sea where training activities would occur, the Navy developed new mitigation for this Final SEIS/OEIS to further reduce the already low potential for impacts from explosive and non-explosive stressors on short-tailed albatross, as described in Chapter 5 (Mitigation). The Navy will observe for large-bodied seabirds, such as albatross, within the mitigation zone around the intended target during explosive and non-explosive bombing exercises.
DOI-37	Section 5.3.4.1 – Table 5.3-6: The Vessel Movement table does not address the potential for seabird strike or light attraction and collision. To reduce the potential for vessel strikes, we recommend that vessels reduce speed to approximately 8 knots while operating near ESA-listed species or within critical habitat. When working at night or in reduced lighting conditions or inclement weather, we recommend that vessels minimize lighting by shading interior windows using blackout curtains, minimizing deck and other lighting, and shielding lights and directing lighting downward to the maximum extent possible, except when necessary for human and vessel safety. Care should be taken not to point downward-directed lights at reflective surfaces. These recommendations help to reduce the potential for seabird attraction, disorientation, collision, and/or grounding and are	The Navy added language to the Biological Assessment submitted to the USFWS, as well as the Final SEIS/OEIS in Section 2.3.2.3 (Vessel Lighting) addressing standard operating procedures for reducing the visibility of white lights from outside the ship. The procedure is referred to as "Darken Ships Bill" and is addressed in Chief of Naval Operations Instruction 3120.32D. Compliance with this instruction will reduce the potential for light attraction to vessels by seabirds because no white lights shall be visible from outside the ship. In addition, the Navy developed new mitigation for this Final SEIS/OEIS to further reduce the already low potential for vessel strikes of large-bodied seabirds, such as albatross, as described in Section 5.3.4.1 (Vessel Movement). The Navy does not anticipate any vessel strike of short-tailed albatross from the Proposed Action; therefore, additional mitigation would not be warranted.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	best practices we would like all vessel operators to incorporate to protect migratory birds.	
DOI-38	Section 5.3.4.3 – Table 5.3-8: If 600- and 1,000-yard mitigation zones are being implemented for marine mammals and sea turtles, it should be possible to implement the same mitigation zones for large-bodied seabirds (such as albatross) without undue cost to training activities. Lookouts would already be scanning the non-explosive practice munitions impact area for sea turtles and marine mammals. If individual albatross or seabird feeding flocks are seen in the impact area, procedural mitigation should be implemented as for other species. We recommend using the same mitigation zones across species, and update Table 5.3-8 and text in 5.3.4.3 to reflect this.	The Navy developed new mitigation for this Final SEIS/OEIS to further reduce the already low potential for impacts from non-explosive gunnery on short-tailed albatross, as described in Section 5.3.4.3 (Small-, Medium-, and Large-Caliber Non-Explosive Practice Munitions). The Navy will implement the same size mitigation zone for large-bodied seabirds (such as albatross) as marine mammals and sea turtles during non-explosive gunnery exercises.
DOI-39	Section 5.3.4.4 – Table 5.3-9: The procedural mitigations for non-explosive bombs detailed in this table could also apply to seabirds. A 1,000-yard mitigation zone is being implemented for marine mammals and sea turtles, and it should be possible to implement this same zone for large-bodied seabirds (such as albatross) without undue cost to training activities. Lookouts would already be scanning the impact area for sea turtles and marine mammals. If individual albatross or seabird feeding flocks are seen in the impact area, procedural mitigation should be implemented as for other species. We recommend using the same mitigation zones across species, and update Table 5.3-9 and text in 5.3.4.4 to reflect this. Other procedural mitigations listed in this table also apply to seabirds, including reporting any injured or dead seabirds discovered after the activity according to established incident reporting procedures.	As described in Section 5.3.4.4 (Non-Explosive Bombs), the Navy developed new mitigation for this Final SEIS/OEIS to further reduce the already low potential for impacts from non-explosive bombs on short-tailed albatross. The Navy will observe for large-bodied seabirds, such as albatross, within a mitigation zone around the intended target during non-explosive bombing exercises.
DOI-40	Section 5.4 – Table 5.4-1: The 2011 Final EIS states that mitigation "includes avoidance of seabird colonies and habitats where seabirds may concentrate" (p. 3.9	As described in Section 5.4 (Geographic Mitigation to be Implemented) of this SEIS/OEIS, the Navy expanded its geographic mitigation for explosives to further reduce the already low potential

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	12). Were areas within the TMAA assessed for key biological or ecological importance to birds? If any static areas of importance to seabirds (including but not limited to the short- tailed albatross) were identified within the TMAA, such locations should be included in this table (e.g., Portlock Bank). Similar to mitigation areas identified for Steller sea lions, if the TMAA boundary was adjusted to avoid key areas for birds, this should be noted. Please describe how such locations were determined to exist (or not exist) within the TMAA (i.e., which databases or sources were checked).	for impacts on short-tailed albatross. The Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) within the Continental Shelf and Slope Mitigation Area, which extends over the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The mitigation area overlaps the habitat areas short-tailed albatross are most likely to use (including for foraging), based on species occurrence data as described in Chapter 3.9 (Birds).
DOI-41	Section 5.4 – Table 5.4-1; suggest a new section: 5.4.1.6: Areas where whales feed are also areas that may concentrate seabirds: Haynes, T.B. et al. 2011. Dynamics of multi-species feeding associations in marine waters near Juneau, Alaska. Marine Ornithology 39:227-234; and Anderwald, P. et al. 2011. Role of feeding strategies in seabird–minke whale associations. Marine Ecolological Progress Series 424:219-227. We recommend adding seabirds to Table 5.4-1 and including a new section (5.4.1.6) with text describing multi-species feeding assemblages.	Information about short-tailed albatross occurrence and habitat use (including foraging areas) has been included in Section 5.4.1.5 (Birds and Fish) of this SEIS/OEIS. The information was used to inform development of the new Continental Shelf and Slope Mitigation Area.
DOI-42	Section 5.5.2: A sinking exercise is discussed in detail, but descriptions of the proposed action and potential environmental effects stated (in multiple locations in the Draft SEIS) that sinking exercises were no longer part of the training activities. If sinking exercises are not part of the proposed action, consider removing this discussion in the mitigation chapter.	The Navy has retained the text regarding sinking exercises to provide an explanation for why certain mitigation areas were not carried forward in this SEIS/OEIS.
DOI-43	Section 5.5.7: Any vessel or aircraft strike of a northern sea otter, short-tailed albatross, or other bird species should be reported to the USFWS.	The Navy's incident reporting procedures, including reporting incidents involving ESA-listed species to the USFWS, are detailed in Section 5.1.2.2.3 (Incident Reports) of this SEIS/OEIS.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	Please update the text accordingly. The USFWS is happy to work with the Navy on a procedure for reporting northern sea otter, short-tailed albatross, or other seabird take if a procedure is not already in place.	
DOI-44	Section 5.6 – Table 5.6-1: This table will need to be updated to reflect suggested changes, if made. If seabirds are included in mitigation for explosive and non-explosive bombs and vessel movement, as requested by the USFWS, please update this table accordingly.	Table 5.6-1 has been updated to reflect the new mitigation developed for short-tailed albatross in this Final SEIS/OEIS.
DOI-45	Section 2.2.2.1.1 – last paragraph: The final paragraph in the section describing dive depths and percentages for Northern sea otters references the findings of Laidre et al. 2009. The summary of offshore resting distances includes females at 1,000 meters (m) and males from 1,000-1,500 m and 2,000-2,500 meters. Laidre et al 2009 found females rest at <1,000 m, and there are additional patterns seen when comparing subadult males and females. Change "Females tend to rest 1,000 m offshore…." to "Females tend to rest <1,000 m offshore". The paragraph would also be improved by adding a (very brief, 1-2 sentences) discussion of subadult females and subadult males as well.	The Navy has reviewed the information provided and searched for the information requested to be added to the discussion on northern sea otters. This information has been added to this SEIS/OEIS as applicable.
U.S. Environmental Protection Agency (EPA)		
EPA-01	**Consultation with Tribes** EPA advised the Navy in our 2020 SEIS/OEIS scoping comments that the proposed project could affect traditional way-of-life practices in tribal communities of Prince William Sound and Kodiak Island. The 2020 Draft EIS/OEIS does not make apparent that the Navy has done more than a cursory attempt to provide notice to the federally recognized Alaska Native Tribes in the proposed action area that the action may occur. This is concerning since the document states that	The Navy has routinely communicated with potentially affected Alaska Native Tribal governments and invited participation and government-to-government consultation in the 2020 SEIS/OEIS process. Robust measures to engage these tribal governments included sending letters regarding the Notice of Intent to Prepare a SEIS/OEIS for GOA Navy Training Activities February 6, 2020, via priority mail to 24 tribal chairpersons, presidents, or chiefs of Alaska Native federally recognized tribes. Invitations to government-to-government consultation for continuation of Navy training in the

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	that the proposed action has the potential to significantly affect tribal rights, protected resources, and/or Indian lands. EPA again recommends that the 2020 SEIS/OEIS identify historic resources, including subsistence resources, and assure that resource protections and privileges are addressed appropriately. We encourage the Navy to invest the necessary time and care to appropriately work with Alaska Native tribes on a government-to-government basis to address issues concerning tribal self-government, trust resources, and tribal treaty and other rights. We strongly recommend documentation of these consultations be included in the 2020 SEIS/OEIS and is consistent with the July 28, 1999 memorandum from the Council on Environmental Quality to Heads of Federal Agencies[1]. We again strongly encourage the Navy to invite affected tribal governments to participate in the 2020 SEIS/OEIS process and take more robust measures to engage these governments prior to the 2020 Final SEIS/OEIS. As previously mentioned, the 2016 SEIS/OEIS did not mention subsistence use areas. The 2011 EIS/OEIS includes contradicting statements regarding whether there would be effects on subsistence harvesting, "[t]he [Temporary Maritime Activities Area] also is used for subsistence harvesting by Alaska Natives…. Navy training exercises will not affect subsistence harvest because the subsistence use areas are outside of the TMAA." We recommend tribal consultation on the project to help understand the use of the training area by Alaska Natives for subsistence harvesting to accurately inform the Supplemental EIS. We note that the National Marine Fisheries Service reports harvests for seals, sea lions and otters for subsistence uses in several communities on Kodiak Island and in other communities proximate to the TMAA such as Nanwalek and Chenega Bay. The 2020 Draft EIS/OEIS relies on information that is 15 years old (the literature cited within the 2011 EIS/OEIS). In an environment like the Gulf of Alaska that is rapidly changing, EPA finds it unlikely that subsistence use patterns are the same as they were at the time of the initial analysis.	GOA Study Area were sent to the 24 tribal chairpersons, presidents, or chiefs of Alaska Native federally recognized tribes December 3, 2020. Tribal letters, including enclosures of a fact sheet booklet and a CD-ROM of all volumes of the 2020 Draft SEIS/OEIS, were mailed December 16, 2020, via certified mail to 24 tribal chairpersons, presidents, or chiefs of Alaska Native federally recognized tribes. Copies of all communication with the Alaska Native federally recognized tribes can be found in Appendix E (Correspondence). In February 2022, with the Notice of Intent to change the Proposed Action to expand the Study Area and incorporate the Continental Shelf and Slope Mitigation Area, the Navy expanded the number of Alaska Native Tribes communicated with for the SEIS/OEIS project. The Navy increased the number of tribes to 41 total to involve more tribal governments across the broader study area. The Navy is committed to working with Alaska Native Tribes and to keeping open lines of communication and coordination with tribal members. The Navy has reached out to the Sun'aq Tribe of Kodiak (STK) and has been in contact regarding consultation between the 2020 Draft SEIS/OEIS and Final SEIS/OEIS after receiving their comments on the 2020 Draft SEIS/OEIS. The Navy will continue to coordinate with STK to ensure government-to-government consultation meetings are conducted as requested by the Tribe. Subsistence use in the TMAA was addressed in multiple sections in the 2011 GOA Final EIS/OEIS. The text quoted in the comment is taken from Section 3.14.1.1 (Existing Conditions) in the Public Safety section of the 2011 GOA Final EIS/OEIS and could reasonably be interpreted as ambiguous when considered out of context. The complete statement referred to in the comment is: "The TMAA also is used for subsistence harvesting by Alaska Natives. Alaska Natives rely heavily on the harvesting of marine mammals and fish that inhabit the TMAA. Designated subsistence-use areas are located within 3 nautical miles (nm) (5.5 kilometers [km]) of shore. Navy training exercises will not affect subsistence

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	We recognize that the document does discuss the subsistence use of certain biological resources, which is helpful to understand the circumstances that the animal biological resources are being impacted by the cumulative impacts within their respective habitats. EPA recommends that the Navy consider the project impacts that are perpetuated to tribal communities via the impacts to their subsistence resources. EPA encourages decisions – and, where appropriate, measures and practices – that ensure that the significance and integrity of way-of-life activities will be maintained during the proposed activities. We find that these measures and practices are most implementable and beneficial when they are supported by robust, thorough, and deferential consultations. *Footnotes* [1]https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-desig_nonfed_coop_agencies.pdf	harvesting because the subsistence use areas are outside of the TMAA." It could be inferred from the statement that subsistence harvesting occurs in the TMAA, but the statement is intended to explain that marine mammals and fishes that are hunted for subsistence use may also occur in the TMAA, and impacts to those species in the TMAA could indirectly impact subsistence fishing where that occurs outside of the TMAA. The statement adds that subsistence fishing areas are within 3 nautical miles from shore. Multiple maps in the 2011 GOA Final EIS/OEIS show that the TMAA is beyond the U.S. Territorial Sea, which begins at 12 nautical miles from shore, and is well offshore of subsistence fishing locations. Adding that information to the text in Section 3.14.1.1 (Existing Conditions) would have helped to support the concluding sentence that, "Navy training exercises will not affect subsistence harvesting because the subsistence use areas are outside of the TMAA." Section 3.10 (Cultural Resources) also addresses subsistence use and states, "The tribes nearest the TMAA include the Alutiiq, Eyak and Tlingit groups; however, there is no subsistence use of the TMAA" and "Training activities in the TMAA take place in the air, on the ocean surface, and subsurface. No historic resources, traditional cultural properties, or areas containing resources exploited for subsistence use are known to exist within the TMAA." Additional text clarifying potential impact on subsistence use has been added to Section 3.11 (Socioeconomic Resources and Environmental Justice) of the 2022 GOA Final SEIS/OEIS. The 2020 Draft SEIS/OEIS, as well as the Supplement to the Draft SEIS/OEIS, included a thorough review and incorporation of new literature, laws, regulations, and publications pertaining to the resources in the 2011 GOA Final EIS/OEIS and the 2016 GOA Final SEIS/OEIS. The Proposed Action is the continuation of training activities that have occurred for more than a decade. No impacts on

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
		traditional subsistence practices or resources are predicted from the proposed activities.
EPA-02	**Public Participation and Environmental Justice** EPA recognizes the limits of COVID-19 on attaining in-person public participation. The 2011 EIS/OEIS notes that Region of Influence for environmental justice analysis includes only the TMAA, which is 12 - 24 nautical miles offshore, and therefore does not include any environmental justice communities. EPA recognizes that this is factually correct; however, it does not address the recommendation that EPA brought up during scoping, which was to take a comprehensive accounting of all impacts on low income or minority communities, including, but not limited to, cumulative and indirect impacts, exposure pathways unique to the impacted communities, historic exposures, and impacts to cultural, historic and protected resources. Alaska Native people who live in recognized indigenous villages have diets that are higher in local fish and marine mammals; this diet is especially rich in marine mammals such as seals. Most home ranges of seals are hundreds, up to thousands of square miles; this negates the perception that impacts to environmental justice communities may only occur within the geographical boundary of the TMAA. Impacts to marine mammals that alter the accessibility, quality or spiritual connection of subsistence or traditional way-of-life practices of an indigenous minority community are a direct example of impacts to an environmental justice community. EPA also notes that Alaska Native villages disproportionately face intensifying climate change impacts as global temperatures and sea levels rise. Alaska Native livelihoods and health are closely tied with their environment. As evidenced in our earlier recommendations, EPA finds that there is additional analysis and discussion that should be included in the 2020 SEIS/OEIS. We recommend that subsistence resources of these	The Navy recognizes the importance of engagement with Alaska Native federally recognized tribes, stakeholders, and the public. Invitations to government-to-government consultation for continuation of Navy training in the GOA Study Area were sent to 24 tribal chairpersons, presidents, or chiefs of Alaska Native federally recognized tribes December 3, 2020. Copies of all communication with the Alaska Native federally recognized tribes can be found in Appendix E (Correspondence). The Navy recognizes that harbor seals and sea lions that are harvested for subsistence use have broad home and migratory ranges. In its analysis, Navy considered both direct and indirect impacts to Alaska Natives. The Navy determined that there would be no direct impacts (i.e., impacts to access; direct removal of a marine mammal resource, etc.) to tribal harvest which typically occurs from land at pinniped haulouts, or from a boat in specific protected, nearshore waters where Tribal harvest can occur safely. In addition, the Navy also considered impacts to Alaska Native Tribes from indirect impacts to a tribal resource that may occur outside of direct harvesting areas, but may still have an effect on subsistence because the migratory nature of the species (i.e., a taking of marine mammals outside of subsistence area may still have an effect on tribal harvest if that animal was no longer available for harvest at a later date). The Navy determined that there were no direct impacts, but also determined that there would be no indirect impacts as the species that are harvested by Alaska Native Tribes in the GOA Study Area would not be significantly impacted by the Proposed Action. Species harvested in the Study Area include harbor seals and sea lions. Because of the nearshore presence of these animals, the Navy's acoustic model determined that there would be no exposure from acoustic or explosive stressors to these species. Therefore, the Navy's activities have no direct effect on subsistence harvest, nor do they have an indirect

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	environmental justice communities be addressed. Since many coastal Alaskan communities in proximity to the TMAA are also tribal environmental justice communities, we think it is of critical importance to demonstrate that these potential reference communities were evaluated to determine if they would bear disproportionately high and adverse effects from the proposed action.	impact to accessibility, quality, or spiritual connection on the marine mammals utilized by Alaska Natives. As discussed in previous comment responses, subsistence use of resources in the GOA, to include fish and marine mammals, has been consulted on with applicable resource agencies and impacts on those species have been addressed in Section 3.6 (Fishes) and 3.8 (Marine Mammals) of this SEIS/OEIS. Determinations by the Navy and the resource agencies concluded that no significant reductions to subsistence stocks would result from the Proposed Action. Regarding climate change, it is discussed and analyzed in various resource sections as applicable, as well as in Chapter 4 (Cumulative Impacts). Due to the widespread outbreak of respiratory illness from the novel coronavirus pandemic (COVID-19), federal, state, and local guidance on social distancing resulting in the temporary closure of government offices and public facilities, the Navy took additional steps to broaden efforts to notify and inform the public, as described in Appendix F (Public Participation) of this SEIS/OEIS. Due to coronavirus pandemic (COVID-19) travel and public event restrictions, the Navy was unable to hold in-person meetings in Alaska and instead held virtual public meetings using the Zoom video conferencing platform. The Navy's goal was to provide an opportunity for the public to learn more about the project and the environmental impact analysis, as well as have their questions answered, just as they would at a poster station at an in-person public meeting. The Navy held two virtual public meetings January 19, 2021, and February 3, 2021. Interested individuals could attend a virtual public meeting by computer, tablet, mobile device, or telephone. The virtual public meetings consisted of a short welcome video from Commander, Navy Region Northwest Rear Admiral Stephen Barnett, a slide presentation, and a question-and-answer session to discuss the Proposed Action and the draft environmental impact analysis.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
		The Navy considered environmental justice issues in Section 3.13 (Environmental Justice and Protection of Children) and Section 3.14 (Public Safety) in the 2011 Final EIS/OEIS, 2016 Final SEIS/OEIS, and in Section 3.11 (Socioeconomic Resources and Environmental Justice) in the 2020 Draft SEIS/OEIS. The continuing activities in the GOA Study Area would have a negligible effect on the soundscape over environmental justice communities. The airspace where the activities would occur has been in use for decades by the same type of activities and for the Proposed Action is all over the open ocean in the GOA. There are no changes to the activities that would result in a change to the results of the previous analyses. Therefore, as stated in the 2011 Final EIS/OEIS, Section 3.13 (Environmental Justice and Protection of Children), "no disproportionately high and adverse effects on low-income or minority populations have been identified.".
EPA-03	**Marine Acoustics** EPA appreciates the thorough analysis of the impacts from sonar and other acoustic noise in the marine environment that could be caused by the proposed action. We recommended additional statements to make this information more transparent to the public. The seismic environmental analyses have common statements such as "[t]he project proponent plans on firing 14 air guns at 2500 psi every 5-10 seconds for up to 24 hours a day, for 8 weeks." EPA believes it would be more beneficial and accessible to the public to provide an introductory section with a figure or table explaining the information in plain language. We also recommend direct language about when acoustic noise transforms from what could be reasonably considered "sound" (compressions and dilatations of the water column in a state of equilibrium) into "shockwaves" (when the amplitude becomes so large that discontinuities in acoustic quantities such as pressure and particle velocity occur) to clarify when it becomes a percussive force experienced by marine biological resources. This would help distinguish the impacts by clarifying between the physical impacts of	The Navy has provided an explanation of acoustic and explosive concepts, including an introduction to acoustic propagation, terminology, definitions, and metrics in Appendix B (Acoustic and Explosive Concepts) of this SEIS/OEIS, which is similar to an Introduction to Acoustics resource manual, and is designed so that laymen and people from every profession could understand the terms being discussed. Clear and comprehensive information about the Navy Activities and associated stressors is provided in Chapter 2 (Description of Proposed Action and Alternatives), Section 3.0.4 (Stressors-based Analysis), and Appendix A (Navy Activities Description). The transition between "shockwave" and "sound" is not clear cut and differs for each explosive type, scenario, and locations. It should be noted that the only sound sources proposed by Navy that can produce any appreciable "shockwave" are explosions. Impacts on marine species are assessed in this SEIS/OEIS using criteria developed specifically for explosive and non-explosive exposures.

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	the sound and impacts caused by the perception of sound by marine animals.	
EPA-04	**Pelagic Species** We recommend additional analysis of the impacts of noise on pelagic species, particularly plankton. The 2011 EIS/OEIS notes that any surface or near-surface explosions or impacts have the potential to kill or harm individual planktonic animals and plants in the immediate vicinity. A 2017 study[2] suggested that experimental air gun signal exposure decreased zooplankton abundance, as measured by sonar and net tows and caused a two- to threefold increase in dead adult and larval zooplankton. The study also recognizes that all larval krill were killed after air gun passage. Some scientists question these results since the study did not consider the diurnal migration of these animals. However, this study remains relevant to this proposed action because some of the devices and equipment used during training activities create noise within similar acoustic ranges used in the study. EPA recommends describing the potential hectares of zooplankton (and other pelagic species) that would be impacted by underwater explosions. EPA recognizes that this will be less than the entire ensonification area of these events since lethality of the impacts would diminish as the distance from the explosion increases. If the Navy determines that these impacts could be extensive in acreage, we recommend that the Navy incorporate a mitigation measure which could be simply avoiding large plankton blooms or planning activities when the plankton will not be the same strata of the water column when detonating explosives. We recommend considering the potential cumulative impacts of climate change and acoustic noise on these resources since they are a critical component of a successful food web within the marine environment. ***Footnotes***	The Navy is not proposing to conduct any activities that use in-water or underwater explosives—only in-air explosives at or above the water's surface are part of the Proposed Action. Only plankton at the surface near an in-air explosion would potentially be affected, and the relevant stressor is more likely to be physical disturbance and strike from limited debris impacting discrete areas rather than from acoustic stressors. Plankton are not known to be sensitive to pressure changes associated with acoustic stressors, including sonar and explosions. Also, diel (or diurnal) vertical migration by zooplankton generally occurs with plankton near the surface at night, when the Navy is not proposing to conduct most activities, and at the bottom of the photic zone (approximately 200 m) during daylight hours. This pattern of migration would effectively remove plankton and other invertebrates that conduct a similar migration from impacts due to in-air explosives. Furthermore, the Proposed Action does not include the use of air guns. As described in Section 3.5 (Marine Plants and Invertebrates) in the 2011 Final SEIS/OEIS, impacts on invertebrates in the GOA Study Area, including plankton, are expected to be negligible and would not lead to long-term consequences for populations. The Navy reviewed the McCauley et al. (2017) reference, in addition to several new references on plankton occurrence, and determined the information in the references did not change the analysis in the 2011 Final EIS/OEIS. In-air explosives would continue to have temporary and localized effects on plankton and would have negligible impacts on plankton populations. The Navy developed a new mitigation area, known as the Continental Shelf and Slope Mitigation Area, that is included in Section 5.4 (Geographic Mitigation to be Implemented) of this SEIS/OEIS. The Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) during training within the

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	[2] McCauley, R., Day, R., Swadling, K. et al. Widely used marine seismic survey air gun operations negatively impact zooplankton. Nat Ecol Evol 1, 0195 (2017). https://doi.org/10.1038/s41559-017-0195	Continental Shelf and Slope Mitigation Area. Previously, the Navy's restriction on explosives applied seasonally within the North Pacific Right Whale Mitigation Area and within the Portlock Bank Mitigation Area. With the development of the Continental Shelf and Slope Mitigation Area, that restriction now applies across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The expanded mitigation is intended to help the Navy further avoid or reduce potential impacts on humpback whales, gray whales, North Pacific right whales, ESA-listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. The Continental Shelf and Slope Mitigation Area also moves explosives seaward of designated coho, groundfish, and shellfish EFH, and dramatically reduces the overlap of this activity with the other salmonid's EFH. The mitigation will also benefit other marine species that inhabit that continental shelf and slope, including invertebrates such as plankton. Additional mitigation measures for plankton are not warranted based on the impact assessment findings. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA. The Navy considered the potential cumulative impacts of climate change and acoustic noise to marine plants and invertebrates, including plankton, in Chapter 4 (Cumulative Impacts) of the 2016 Final SEIS/OEIS in Section 4.4.2 (Climate Change), and 2011 Final EIS/OEIS in Section 4.2.5 (Marine Plants and Invertebrates).

Table G-1: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
EPA-05	**Monitoring** EPA commends the Navy for its long-term baseline Marine Species Research and Monitoring program in the Gulf of Alaska. Baseline monitoring is an essential tool for the successful mitigation of environmental impacts. We appreciate the detailed discussion of monitoring and mitigation measures throughout the document.	The Navy appreciates the commendation and agrees that baseline monitoring is an essential tool for the successful mitigation of environmental impacts. The Navy will continue to include the discussion of monitoring and mitigation measures in its documents.

G.1.2 Alaska Native Federally Recognized Tribes

Table G-2 contains comments received from Alaska Native federally recognized tribes during the 2020 Draft SEIS/OEIS public comment period and the Navy's response to those comments.

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes

Commenter	*Comment*	*Navy Response*
Sun'aq Tribe of Kodiak (STK)		
STK-01	Sun'aq Tribe of Kodiak (STK) is providing this letter to communicate our grave concerns with this training, and in particular, that the Navy has remained reliant on past Environmental Assessments (EAs) and EISs/OEISs that are incomplete. Nor have they adequately addressed or mitigated concerns we have raised on repeated occasions. As we have stated during numerous Government-to-Government consultations, public comment periods, and at public presentations, there are substantial and significant questions about whether your actions, and the actions of other parties related to this training will have detrimental impacts of any type or magnitude on natural resources and our cultural resources.	The Navy appreciates STK's comment letter and will continue to coordinate with STK to ensure government-to-government consultation meetings are conducted as requested by the Tribe and all substantive comments are properly considered. The Navy has updated this Final Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) based on the STK's comments and input, to include the new Continental Shelf and Slope Mitigation Area.

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
STK-02	First and foremost, we appreciate the opportunity to provide comments to the Navy regarding protecting our marine resources, however we do not feel we have been given adequate time to engage in truly meaningful dialogue or consultation between our Tribal Council and the Navy in this matter. Therefore, future comment periods must include enough time to thoroughly review proposed EIS/OEIS supporting documents to enable constructive evaluations and feedback. These federal actions should always initiate formal Government-to-Government consultation offers with impacted Tribal Governments. Therefore, we feel that the Navy is negligent in meeting their tribal trust responsibility regarding both Northern Edge 2021, and the proposed Final Supplemental EIS/OEIS.	The Navy understands the tribe's concerns and invited potentially affected tribal governments to participate in the 2020 Draft SEIS/OEIS process. Robust measures to engage these tribal governments included sending letters regarding the Notice of Intent to Prepare a SEIS/OEIS for Gulf of Alaska (GOA) Navy Training Activities February 6, 2020, via priority mail to 24 tribal chairpersons, presidents, or chiefs of Alaska Native federally recognized tribes, including STK. Invitations to government-to-government consultation for continuation of Navy training in the GOA Temporary Maritime Activities Area (TMAA) was sent to the Chairperson of the Sun'aq Tribe of Kodiak, the Honorable Nina Gronn, on December 3, 2020. Tribal letters, including enclosures of a fact sheet booklet and a CD-ROM of all volumes of the 2020 Draft SEIS/OEIS, were mailed December 16, 2020, via certified mail to 24 tribal chairpersons, presidents, or chiefs of Alaska Native federally recognized tribes. The Navy accepted comments on the 2020 Draft SEIS/OEIS until February 16, 2021. Copies of all communication with the Alaska Native federally recognized tribes can be found in Appendix E (Correspondence). The Navy will continue consultation with STK. The Navy is working with STK to ensure government-to-government consultation is properly conducted as requested by the Tribe.
STK-03	Alutiiq People were the original stewards of lands, waters, and resources bordering the Gulf of Alaska before the arrival of the Russians, the Americans, and the creation of the State of Alaska. With over 1,800 citizens, Sun'aq Tribe of Kodiak represents the largest Native community in the western Gulf of Alaska. We are very concerned about the lands, waters, air and other natural resources that helped sustain our ancestors, and now for the people of today, who continue to rely on the same resources for economic support, subsistence, and cultural identity - of which the health and vitality of marine and terrestrial resources are an essential cultural component.	The Navy understands the list of requirements presented by STK; however, the Navy does not have "take" or catch rate data for fish or bird species and is unable to provide this requested data.

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
	On July 6, 2016, STK hosted a formal Government-to-Government consultation between the Navy's Pacific Fleet, Alaskan Command, the U.S. Coast Guard Base Kodiak (as invited observer) and four of the largest federally-recognized Alutiiq Tribes in the western Gulf of Alaska. Tribes in attendance included: Native Village of Afognak, Native Village of Ouzinkie, Tangirnaq Native Village, and Sun'aci Tribe of Kodiak. At this meeting, STK presented a list of requirements to the Navy for continued Gulf of Alaska training activities. The requirements included: a. Navy partner with Tribe, Federal, State, and other organizations to help provide "take" (or catch rate) biomass data of important indicators species, as if Navy training activities/sonar operations/release of "expended materials" were similar to subsistence, sport, or commercial fishing activities and related. Research and report similar for avian species.	
STK-04	b. Reschedule Northern Edge exercise dates to late fall/early winter months, and partition exercises to particular sectors of the ''TMAA" when least potential for adverse impacts to marine food chain species occurs, and in particular, to avoid migration routes of key species such as whales and salmon.	Northern Edge is a U.S. Indo-Pacific Command (USINDOPACOM) sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades, and although naval warships and planes play a vital role in Northern Edge the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on a number of factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region, and important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		oceanic conditions and, therefore, would not meet the purpose and need addressed in the SEIS/OEIS. The Navy will continue implementing a number of mitigation measures designed to avoid or reduce potential impacts on marine species, including fish, birds, and marine mammals. To further protect these species within key habitat areas as STK suggested, for this Final SEIS/OEIS, the Navy newly developed the Continental Shelf and Slope Mitigation Area. As detailed in Section 5.4 (Geographic Mitigation to be Implemented), the Continental Shelf and Slope Mitigation Area extends across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The Navy will prohibit the detonation of explosives below 10,000 ft. altitude (including at the water surface) in this mitigation area during training. Furthermore, as discussed in Chapter 2 (Description of Proposed Action and Alternatives), the Navy no longer includes the Sinking Exercise as part of the Proposed Action, and, therefore, removed the need to use in-water explosives in the TMAA. The mitigation is intended to help the Navy further avoid impacts on humpback whales, gray whales, North Pacific right whales, ESA listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA.
STK-05	c. Until more is known about potential for adverse impacts to migratory and resident fish and birds that tend hold to coastlines and off-shore canyons, or areas designated as "Essential Fish Habitat," move exercises further off-shore	The Navy developed a new mitigation area known as the Continental Shelf and Slope Mitigation Area, that is included in Section 5.4 (Geographic Mitigation to be Implemented) of this SEIS/OEIS. The Navy will not detonate explosives below 10,000 ft. altitude (including

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
	into/over deeper waters, off the continental shelf. Proof of "no adverse impacts" by Navy exercises is verified by data obtained and tracked over time in item "a." described above.	at the water surface) during training within the Continental Shelf and Slope Mitigation Area. Previously, the Navy's restriction on explosives applied seasonally within the North Pacific Right Whale Mitigation Area and within the Portlock Bank Mitigation Area. With the development of the Continental Shelf and Slope Mitigation Area, that restriction now applies across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The expanded mitigation is intended to help the Navy further avoid or reduce potential impacts on humpback whales; gray whales; North Pacific right whales; ESA-listed salmonids (e.g., Chinook salmon, coho, chum, sockeye, and steelhead) and green sturgeon; ESA-listed short-tailed albatross; fishery resources in important foraging, migration, and maturation habitats; and within essential fish habitats for numerous salmon, groundfish, and shellfish species. Regarding migratory fish occurrence over the continental shelf, recent data reveal that several Endangered Species Act (ESA)-listed populations of salmonids south of the Columbia River are not known to migrate as far north as the GOA Study Area, or, if they are present, occur less frequently in off-shelf portions of the Study Area where training activities using explosives occur. Specifically, recent tagging studies near Chignik, Kodiak, and Yakutat, Alaska of ESA-listed and non-listed Chinook salmon have demonstrated that the majority of these fish originate from the Columbia River, British Columbia, and Southeast Alaskan river systems (Seitz and Courtney, 2022). This study found that Chinook salmon largely occupied habitats over the continental shelf and slope relative to over-basin habitats. When considering implementation of the Continental Shelf and Slope Mitigation Area, the Navy's analysis concludes that the potential overlap of some ESA-listed fish populations known to occur in the Study Area with training activities that use explosives would be so unlikely as to be discountable. Due to the limited total time of Northern Edge (21 days within a year) and the short-term, infrequent, and localized nature of explosives use, the probability of co-occurrence between training activities and species of concern, including some ESA-listed species, that could occur in the offshore

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		portion of the Study Area is low. As described in Section 3.6.3.2.2.4 (Impacts from Explosives Under Alternative 1), although individuals may be impacted, long-term consequences for populations of marine species would not be expected. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA.
STK-06	d. Move exercises away from locally-important Portlock Bank, its canyons, and deep ocean seamounts for similar reasons explained in item ''c." above.	The Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) during training within the Continental Shelf and Slope Mitigation Area, which extends across the entire continental shelf (including Portlock Bank) and continental slope out to the 4,000 m depth contour within the TMAA. All explosive activities conducted under the Proposed Action would occur in-air, at the surface, or just above the surface of the water. Therefore, impacts on species located in deep-sea canyons and seamounts are not expected, and mitigation for these seafloor habitats would not be warranted.
STK-07	e. No aviation or marine vessel fuel discharges over water to lessen adverse impacts to avian species and shallow-swimming biota (unless emergency). Report all discharge events.	The Navy does not discharge aviation or marine vessel fuel over the water during training activities. The Navy has best management practices and standard operating procedures in place to avoid discharge events and, in the unlikely event that a spill was to occur, the Navy would report it in accordance with these practices and procedures.
STK-08	f. Adopt seasonal marine mammal and other protections as granted to "Biologically Important Areas" in new rules set for Navy training ranges in Hawaii and Southern California; Also relates in part to item "b." above.	As described in Section 5.4 (Geographic Mitigation to be Implemented), the Navy developed geographic mitigation specifically to avoid particularly important marine species or fishery habitats located within the TMAA. For example, from June 1 to September 30, the Navy would continue to not use surface ship hull-mounted MF1 mid-frequency active sonar within the North Pacific Right Whale Mitigation Area. The Navy developed the mitigation area to

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		encompass the portion of the Biologically Important Area identified by Ferguson et al. (2015) for North Pacific right whale feeding that overlaps the TMAA. The Navy will implement the mitigation from June 1 to September 30, which fully corresponds with the North Pacific right whale feeding period in this area. The mitigation will also help avoid or reduce potential impacts on fishery resources that inhabit the mitigation area. As described in Section 5.4.1.5 (Birds and Fish), the productive waters off Kodiak Island support a strong trophic system from plankton, invertebrates, and small fish to higher-level predators, such as large fish, birds, and marine mammals. The Navy's newly developed Continental Shelf and Slope Mitigation Area and the area where pre-event large whale awareness notification messages would be broadcast also fully encompass the biologically important North Pacific right whale feeding habitat and biologically important gray whale migration habitat identified by Ferguson et al. (2015).
STK-09	g. Similar to nearly all commercial fisheries, maintain complete and 3rd party Observer coverage.	As detailed in Section 5.5.5 (Third-Party Observers), there are several reasons why the use of third-party observers from air or surface-air platforms, in addition to or instead of the existing Navy-trained Lookouts, is simply not practicable. Unlike commercial fishing permits, compliance with mitigation under the Navy's Marine Mammal Protection Act (MMPA) take authorization is mandated to be accomplished by the military with complete control over all personnel, due to the military chain of command structure. Navy Lookouts are trained with the National Marine Fisheries Service (NMFS)-approved Marine Species Awareness Training, which educates on animal identification and observation techniques. The Navy Lookouts meet NMFS' requirements under the MMPA take authorization. The use of independent wildlife observers in air or on surface platforms, in addition to Navy Lookouts, would result in unacceptable impacts on readiness. Embarking non-Navy observers would displace essential Navy personnel who must receive training to complete certification and meet exercise objectives. Using third-party observers on slower-moving civilian vessels or aircraft to monitor Navy training

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		would create substantial safety risks, including an increased likelihood of accidents and reduced training realism. The use of third-party observers could compromise security due to the requirement to provide advance notification of specific times and locations of Navy platforms. Lack of available berthing, duration of at-sea periods because ships typically are from homeports outside Alaska and may be tasked to transit directly to other events, and security clearance requirements make reliance on the availability of third-party personnel impracticable and may impact training flexibility, thus adversely affecting training effectiveness. The presence of other aircraft in the vicinity of naval exercises would raise safety concerns for both the commercial observers and naval aircraft. Furthermore, security clearance issues would have to be overcome to allow non-Navy observers onboard exercise platforms.
STK-10	h. The Navy agrees to work harder to build trust among all Kodiak citizens (and throughout the GOA). In just decades, misunderstood or the unintentional consequences of Navy's training activities could adversely impact a culture that has survived in one place for thousands of years.	The Navy has worked with the public in Kodiak and throughout the GOA over the past decade to build trust through attendance at public outreach events as well as virtual events during the coronavirus pandemic (COVID-19) outbreak.
STK-11	i. Items on this list shall be addressed in Navy's GOA "Final SOEIS" and subsequent environmental documents until resolved to our respective Tribal Councils' satisfaction.	The Navy has addressed all applicable items from public comments in this SEIS/OEIS.
STK-12	NOTE: As a result of the July 6, 2016 formal Government-to-Government consultation, the Navy agreed to prohibit explosives training over Portlock Bank (requirement "d"). Sun'aq Tribe and other participating Tribes gratefully acknowledge the Navy for eliminating explosives in this biologically important area. In addition, we commend the Navy for establishing the North Pacific Right Whale Cautionary Area during summer feeding months. Never-the-less, most of the 2016 "List" items remain unaddressed. The "List" items still remain as valid as they did in 2016.	The Navy appreciates the commendation and will work with STK during government-to-government consultation to address other issues as they are able.

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
STK-13	To assist Navy planners in completing the new Supplemental EIS/OEIS, we provide the following observations and recommendations: As specified in requirement "i", STK wishes that all items on the List be addressed in the 2020 Gulf of Alaska Navy Training Activities Supplemental EIS/OEIS and subsequent environmental documents. Current Northern Edge training activities occur during critical timing for migrations of fish and marine mammals in the Gulf of Alaska. The Gulf of Alaska encompasses 592,000 square miles and includes the Temporary Maritime Activities Area (TMAA), a large area where 300 fish species, 147 species of birds, and 26 species of marine mammals reside. Biological research and monitoring efforts are needed to ensure there are no long-term impacts on the health and population statuses of fish, marine mammals, and seabirds (live, injured, and dead). Monitoring during the two-week Northern Edge exercise is not sufficient and STK requests that the Navy include a long-term monitoring plan within the Gulf of Alaska Navy Training Activities Supplemental EIS/OEIS. Research is needed on the following topics and should be addressed in the document:	The Navy developed the Integrated Comprehensive Monitoring Program to serve as the overarching framework for coordinating its marine species monitoring efforts and as a planning tool to focus its monitoring priorities pursuant to ESA and MMPA requirements, as described in Section 5.1.2.2.1.2 (Integrated Comprehensive Monitoring Program). This process includes conducting an annual adaptive management review meeting where the Navy and NMFS jointly consider the prior year's goals, project results, and related scientific advances to determine if monitoring plan modifications are warranted to address program goals more effectively. The Strategic Planning Process serves to guide the investment of resources to most efficiently address Integrated Comprehensive Monitoring Program objectives and intermediate scientific objectives. Research and funding priorities are determined through this program in coordination with NMFS. The Navy currently uses and will continue to use passive acoustic devices (e.g., remote acoustic sensors, expendable sonobuoys, passive acoustic sensors on submarines) to complement visual observations for marine mammals when passive acoustic assets are already participating in an activity, as discussed in Section 5.2.1.1 (Lookouts). As discussed in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices), there are significant manpower and logistical constraints that make constructing and maintaining additional passive acoustic monitoring systems or platforms for each training and testing activity impractical. The Navy's existing passive acoustic monitoring devices (e.g., sonobuoys) are designed, maintained, and allocated to specific training units or testing programs for specific mission-essential purposes. Reallocating these assets to different training units or testing programs for the purpose of monitoring for marine mammals would prevent the Navy from using equipment for its intended mission-essential purpose. Diverting platforms that have integrated passive acoustic monitoring capabilities would impact their ability to meet their Title 10 requirements and reduce the service life of those systems. Furthermore, adding a passive acoustic monitoring capability to explosive activities (either by adding a passive acoustic

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		monitoring device to a platform already participating in the activity, or by adding an additional platform to the activity) for mitigation is not practical. For example, all platforms participating in an explosive bombing exercise (e.g., firing aircraft, safety aircraft) must focus on situational awareness of the activity area and continuous coordination between multiple training components for safety and mission success. Therefore, it is impractical for participating platforms to divert their attention to non-mission essential tasks, such as deploying sonobuoys and monitoring for acoustic detections during the event (e.g., setting up a computer station). The Navy does not have available manpower or resources to allocate additional aircraft for the purpose of deploying, monitoring, and retrieving passive acoustic monitoring equipment during a bombing exercise. As stated in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2020 Draft SEIS/OEIS, to develop an estimated position for an individual marine mammal, the animal's vocalizations must be detected on at least three hydrophones. As stated in Section 5.2.1 (Procedural Mitigation Development), "Based on the number and type of passive acoustic devices that are typically used, passive acoustic detections do not provide range or bearing to a detected animal in order to determine its location or confirm its presence in a mitigation zone." The Navy re-emphasizes that the passive acoustic monitoring devices typically used during its training and testing activities do not provide range or bearing to marine mammals, based on the number (e.g., one or two) and type of assets used. As discussed in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices), although the Navy is continuing to improve its capabilities to use range instrumentation to aid in the passive acoustic detection of marine mammals, at this time it would not be effective or practical for the Navy to monitor instrumented ranges for real-time mitigation or to construct additional instrumented ranges as a tool to aid in the implementation of mitigation.

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
STK-14	• To restate requirement "a." of the List, Navy planners should estimate their "take" of a particular species, and then express that as a proportion of the total take, or the most salient take; ○ For example, if the Northern Edge training activity (including all military and classified activity) is estimated to kill 2 gray whales a year and 8 others arc killed by other human activities, then planners would state in the SOEIS that training activities are predicted 10 cause 20% of the human-caused whale mortality in a given year ○ The same proportional estimates should be made for all avian and marine species, especially noting estimates made for commercial fish species	The Navy does not expect there to be any "take" by serious injury or mortality of a marine mammal as suggested by the comment's example referring to "… kill 2 gray whales." Takes under the MMPA and the ESA (and referenced in this SEIS/OEIS) have a different meaning than in common usage for hunting and fishing takes. As presented in this SEIS/OEIS, there would be no population-level effects on any marine species resulting from the proposed Navy training, and therefore no proportion of the total take can be given.
STK-15	• Salmon migration routes/areas utilized for migration within the Gulf of Alaska ○ In the current EIS, Section 3.6 states that "of the five [sic] Pacific salmon species, Chinook would be the most affected by the Navy's trainings'', but the document doesn't state why, i.e.; ▪ Why have Chinook salmon returns been so low? Research is needed on low returns and impacts to Chinook salmon resulting from the Northern Edge training activities ▪ Additionally, the document should instead note that there are five Pacific salmon species known to frequent these impacted waters, and the sixth Pacific salmon species of the nonwestern Pacific (*masu* salmon) likely does not occur in the impacted area	The Navy was unable to find this quote in the 2020 Draft SEIS/OEIS. However, in the 2020 Draft SEIS/OEIS and this Final SEIS/OEIS, the Navy correctly references Daly (2019), to support the following statement "…of the five Pacific salmon species caught in the marine waters of the eastern and central regions of the GOA." Regarding variability in salmon returns, the Navy relies on the research and reporting efforts by regional experts, including NMFS, the Alaska Department of Fish and Game (ADFG), universities, and other research entities, to help identify salmon escapement trends and factors that influence these trends. In addition, to gathering fishery-independent data, the Navy is also funding a University of Alaska study investigating the distribution and movement patterns of subadult Chinook salmon relative to the GOA Study Area. The Navy has also developed the Continental Shelf and Slope Mitigation Area, which will prohibit the use of explosives below 10,000 ft. altitude (including at the water surface) over the continental shelf and slope out to the 4,000 m depth contour within the TMAA. This mitigation area further reduce potential impacts on salmon species that occur over the shelf and slope.

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		With respect to the Northern Edge training activity and its co-occurrence with salmonids, the Navy continues to rely on best available science to assess potential effects. At the time of the 2020 Draft SEIS/OEIS, NMFS presented the most currently compiled Chinook coded wire tag bycatch data in Masuda (2019). For fishery research data, the Navy has coordinated with NMFS regarding available data, and has reviewed and incorporated by reference recent research trawl data (e.g., (Balsiger, 2021; Beamish & Riddell, 2020; International Year of the Salmon, 2019; Pakhomov et al., 2019)). To advance the knowledge of fishery-independent research of Chinook salmon in the GOA region, since 2020, the Navy has funded the University of Alaska Fairbanks to conduct a satellite tag survey of large immature Chinook salmon near Chignik, Kodiak, Yakutat, Alaska. The ongoing surveys are tracking Chinook salmon utilization of on-shelf and off-shelf habitats in the GOA, as well as their relative occurrence in the GOA Study Area. The preliminary findings show the vast majority of large immature Chinook salmon occur over the continental shelf and slope, and therefore, the Continental Shelf and Slope Mitigation Area would prevent exposure of explosive stressors to fish occurring over the Continental shelf and slope. The study was designed to avoid the inherent bias of salmonids caught by vessels as either bycatch or research. The design of this study was to provide fishery-independent distribution data for Chinook salmon for NE Pacific waters. Preliminary findings for Chinook salmon tagging at the first three locations have been presented in at the 2021 and 2022 Alaska Marine Science Symposiums, the 2021 and 2022 American Fisheries Society Alaska Chapter Meeting, and the fall, 2021 North Pacific Fishery Management Council meetings. The Navy also had summaries of this data available for review at the March, 2022 ComFish event in Kodiak. The preliminary report and updated findings are included in this SEIS/OEIS. This is an ongoing study, with two additional sites selected for tagging in spring of 2022. These findings

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		will be incorporated into a future preliminary findings document prior to the comprehensive Final Report.
STK-16	○ Pacific herring hearing/lateral line system ▪ The EIS shows research results of Atlantic herring hearing and how they are the only species which hearing overlaps with sonar frequency ▪ Herring are a significantly important prey fish for many species in the Gulf of Alaska ▪ Research and documentation are needed on how sonar influences Pacific herring hearing and associated mortality	The Navy has thoroughly reviewed and analyzed the latest and best available science on the impacts of sonar on fishes. As described in Section 3.6.3.1.1.1 (Injury due to Sonar and Other Transducers) in this SEIS/OEIS, non-impulsive sources such as sonar have not been known to cause direct injury (e.g., ruptured organs, damaged cells in the lateral line system) or mortality in fishes due to the acoustic characteristics of the signal (i.e., slow rise times and lack of a shock wave/impulse as is present with explosive sources). Although some research hypothesizes that under very specific environmental conditions, certain acoustic frequencies may result in swim bladder resonance and therefore could potentially result in harm in exposed fishes, this phenomenon has not actually been observed or supported by available research and documentation (Jorgensen et al., 2005; Kvadsheim & Sevaldsen, 2005). As mentioned in the comment, available data do indicate that herring have the potential to detect frequencies up to a few kilohertz (kHz) and therefore may be able to hear some Navy sonars operated within the TMAA. However, the ability to detect a signal does not always indicate that injurious or harmful effects would occur during an exposure. As SEIS/OEIS Figure 3.6-2 shows, the uppermost portion of herring hearing detection is at frequencies up to 5 kHz. This means that although herring can hear signals at these frequencies (as tested in a laboratory setting), the sound source itself would have to be relatively loud and herring would have to be close to the source (i.e., within tens of meters) to be able to detect the signal at all. Their need to be close to the source to be able to detect the signal is also demonstrated by the low, or absent, estimated ranges to temporary threshold shift in Table 3.6-7 of this SEIS/OEIS. Estimated hearing impacts would only occur within a maximum of 10 meters from the sound source. If herring are present where sonar is operated, it is more likely that they would show behavioral responses, such as a brief startle

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		response, momentary changes in swim depths, or speeds. Section 3.6.3.1.1.5 (Behavioral Reactions due to Sonar and Other Transducers), summarizes the known responses of fishes to non-impulsive sources. Specifically, Doksæter et al. (2009; 2012) and Sivle et al. (2014; 2012) studied the reactions of both wild and captive Atlantic herring to the Royal Netherlands Navy's experimental mid-frequency active sonar ranging from 1 to 7 kHz. In this study, Atlantic herring showed little or no response to sonar, but responded to other more threatening sound sources (e.g., killer whale vocalizations). Sivle et al. (2014) created a model to report on the possible population-level effects on Atlantic herring from active naval sonar and concluded that the use of sonar poses little risk to populations of herring regardless of season, even when the herring populations are aggregated and directly exposed to sonar. Lastly, naval sonar use would be dispersed in space and time as sonar is operated on moving platforms, and the Proposed Action would only occur over the course of 21 days in a given year. Overall, the Navy's analysis along with the available research and documentation supports the conclusions that impacts, if any to fishes (including herring), would be minimal and would not lead to population level consequences and thus would not impact other protected species that utilize herring as prey items.
STK-17	○ Accumulation of metals and toxins within the TMAA ▪ The TMAA is important habitat for shellfish and 59 managed groundfish species Do shellfish and groundfish species within the TMAA bioaccumulate metals and toxins from the expended materials from Northern Edge? ▪ Research and long-term monitoring on metals and toxins is needed on the impacts to species residing in the TMAA	Bioaccumulation effects, or the long-term metal and toxin build up in a species, must be analyzed according to impact on individual species. Section 3.2 (Expended Materials) of the 2011 Final EIS/OEIS and 2016 Final SEIS/OEIS identifies the expended materials that would be part of the Proposed Action and the effects known to date of these chemicals. A detailed species by species analysis of bioaccumulation potential for all possible contaminants is not possible with the best available scientific data at this time. Impacts from bioaccumulation present a large and complex set of variables, including marine mammal and fish occurrence in the GOA Study Area, population size, toxicity to each individual species, and habitat types and characteristics of the GOA Study Area. Due to the short-term duration

Table G-2: Responses to Comments from Alaska Native Federally Recognized Tribes (continued)

Commenter	*Comment*	*Navy Response*
		and impacts of Navy training activities in the GOA, bioaccumulation impacts are not expected to be significant.
STK-18	○ Missile Defense Agency openly admits to use of the TMAA when testing anti-ballistic missile systems launched from the Alaska Aerospace Corporation-operated space port on Kodiak Island or off-shore locations, but it is not declared as a "TMAA" when utilized for their purposes; ▪ Acknowledge and calculate cumulative impacts from related Defense Department-sponsored activities such as those related to splash down of missile and rocket debris or other hazardous materials within the TMAA ▪ Complete an Environmental Justice assessment of economic losses from cumulative impacts	Testing of anti-ballistic missile systems launched from the Alaska Aerospace Corporation-operating space port on Kodiak Island or off-shore locations are outside of the scope of the Proposed Action covered in this SEIS/OEIS; however, they are considered in Chapter 4 (Cumulative Impacts).
STK-19	These research and monitoring projects could be based at the Kodiak Seafood and Marine Science Center, which focuses on seafood safety, seafood quality, bycatch reduction, product markers/development, and marine foods sustainability. Basing long-term research and monitoring efforts out of the community of Kodiak would make economic and logistic sense and demonstrate the Navy's commitment to understanding the marine environment and protecting its rich marine resources.	The Navy agrees that research and monitoring are essential tools for the successful mitigation of environmental impacts and will continue to include the discussion of monitoring and mitigation measures in its documents. The Navy will also continue to implement research and monitoring efforts in the GOA. The Navy is currently funding the University of Alaska Fairbanks and NMFS Northwest Fisheries Science Center to conduct a Chinook tagging study. The Navy is also partnered with NMFS to conduct a marine mammal survey in the TMAA.
STK-20	The Gulf of Alaska is an extremely productive area that provides the foundation supporting all our needs. Sun'ag Tribal citizens and ancestors have relied on the marine resources from the Gulf of Alaska for thousands of years. To ensure the well-being of future generations of Alutiiq and other Indigenous people, maintaining the health of marine resources in our communities is vital both economically and culturally. Sun'aq Tribe of Kodiak appreciates the opportunity to provide comments during the scoping period.	Thank you for reviewing the 2020 Draft SEIS/OEIS, your comments are a part of the official record.

G.1.3 Nongovernmental Organizations

Table G-3 contains comments received from nongovernmental organizations during the 2020 Draft SEIS/OEIS public comment period and the Navy's response to those comments. Attachments referenced in the following comment can be found on the GOA SEIS/OEIS project website (www.goaeis.com).

Table G-3: Responses to Comments from Nongovernmental Organizations

Commenter	*Comment*	*Navy Response*
Center for Biological Diversity, Eyak Preservation Council, Natural Resources Defense Council, Inc. (NRDC), Native Conservancy, Alaska Marine Conservation Council (CBD et al.)		
CBD et al.-01	On behalf of the Center for Biological Diversity, Eyak Preservation Council, Native Conservancy, NRDC, and Alaska Marine Conservation Council; we are writing to urge the Navy to ensure robust measures to protect marine mammals, fish, and other wildlife from its testing and training activities in the Gulf of Alaska. The Navy proposes to conduct air and sea warfare training in the Gulf of Alaska that will include active sonar; vessel and aircraft traffic; weaponry — guns, missiles, torpedoes, rockets; and electronic warfare activities. The proposed activities will harm and harass marine life. Sonar and explosions can deafen, disturb, and displace marine mammals. While we recognize the importance of national security and the Navy's training needs, we urge the Navy to adopt robust mitigation measures to protect sensitive marine life, fisheries, and subsistence needs.	The Navy will implement robust mitigation and monitoring measures in the Gulf of Alaska (GOA) Study Area to minimize potential impacts on marine, cultural, and physical environmental resources. To clarify, the Proposed Action does not include missile or torpedo use in the GOA Study Area. The Navy's mitigation is described in detail in Chapter 5 (Mitigation). For the Final SEIS/OEIS, the Navy developed new procedural mitigation to avoid or reduce potential impacts on ESA-listed short-tailed albatross from explosive and non-explosive activities. In addition, the Navy developed a new mitigation area, known as the Continental Shelf and Slope Mitigation Area, which was added to Section 5.4 (Geographic Mitigation to be Implemented) in the Final SEIS/OEIS. The Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) during training within the Continental Shelf and Slope Mitigation Area. Previously, the Navy's restriction on explosives applied seasonally within the North Pacific Right Whale Mitigation Area and within the Portlock Bank Mitigation Area. With the development of the Continental Shelf and Slope Mitigation Area, that restriction now applies across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The expanded mitigation is intended to help the Navy further avoid or reduce potential impacts on humpback whales, gray whales, North Pacific right whales, ESA-listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. The addition of mitigation area avoids impacts to designated coho, groundfish, and shellfish EFH, and minimizes or mitigates effects to other designated salmon EFH.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA.
CBD et al. -02	1. **The Navy's Supplemental 2020 EIS/OEIS Is Inadequate** NEPA's fundamental purposes are to guarantee that: (1) agencies consider the environmental consequences of their actions before these actions occur; and (2) agencies make the relevant information available to the public so that it may also play a role in both the decision-making process and the implementation of that decision.[1] NEPA, the nation's "basic national charter for protection of the environment," seeks to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken," and to "help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment."[2] To assure transparency and thoroughness, agencies also must "to the fullest extent possible...[e]ncourage and facilitate public involvement" in decision-making.[3] NEPA requires federal agencies to prepare an EIS for all "major federal actions significantly affecting the quality of the human environment."[4] The public must be given adequate information about the project and its environmental effects to be able to provide input prior to the issuance of the permits. Moreover, the Navy cannot avoid its obligation to conduct a comprehensive review of the direct, indirect, and cumulative impacts of its action, and to analyze a reasonable	The Navy has conducted a comprehensive review of the direct, indirect, and cumulative impacts of its action, and analyzed a reasonable range of alternatives and mitigation measures in this SEIS/OEIS in compliance with the National Environmental Policy Act (NEPA). The 2020 Draft SEIS/OEIS was released for public review and comment from December 11, 2020, to February 16, 2021. Due to coronavirus pandemic (COVID-19) travel and public event restrictions, the Navy was unable to hold in-person meetings in Alaska and instead held virtual public meetings using the Zoom video conferencing platform. The Navy's goal was to provide an opportunity for the public to learn more about the project and the environmental impact analysis, as well as have their questions answered and accept official comments on the Draft SEIS/OEIS, just as they would at a poster station at an in-person public meeting.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	range of alternatives and mitigation, by relying on the regulatory amendments recently issued. The new regulations are unlawful and, in any event, cannot trump the agency's statutory obligations to fully consider the direct, indirect, and cumulative effects of its actions and analyze alternatives and mitigation. [1] See, e.g. 40 C.F.R. § 1500.1 (2019). These comments refer to the regulations in effect during the preparation of this draft Supplemental EIS/OEIS; we maintain that the recent revisions to the NEPA regulations are unlawful and are under review pursuant to Executive Order, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (Jan. 20, 2021). [2] 40 C.F.R. § 1500.1(a)-(c). [3] 40 C.F.R. §1500.2(d). [4] 42 U.S.C. § 4332(2)(C); see also 40 C.F.R. § 1501.4.	
CBD et al. -03	a. <u>The Navy has failed to consider a reasonable range of alternatives</u> The Navy's draft EIS/OEIS fails to analyze a reasonable range of alternatives. EISs must include a reasonable range of alternatives,[5] and provide "a clear basis for choice among options by the decisionmaker and the public."[6] NEPA requires a "detailed statement" of "alternatives to the proposed action."[7] The purpose of this section is "to insist that no major federal project should be undertaken without intense consideration of other more ecologically sound courses of action, including shelving the entire project, or of accomplishing the same result	Please see Chapter 2, Section 2.4 (Action Alternatives Development) and Section 2.5 (Alternatives Eliminated from Further Consideration) for the Navy's analysis of reasonable alternatives. The action alternative and the mitigation measures that are incorporated in the action alternative were developed to meet both the Navy's purpose and need to train. No other action alternative met the purpose and need. The Navy's action alternative incorporates mitigation measures, standard operating procedures, and best management practices. Mitigation measures considered and implemented can be found in Chapter 5 (Mitigation).

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	by entirely different means."[8] The alternatives analysis must "rigorously explore and objectively evaluate all reasonable alternatives."[9] While an agency is not obliged to consider every alternative to every aspect of a proposed action, the agency must "consider such alternatives to the proposed action as may partially or completely meet the proposal's goal."[10] Here, the Navy examined only the preferred alternative and the no-action alternative, which is insufficient to ensure informed decision-making. For example, the Navy should have examined an alternative with additional mitigation that would better protect marine wildlife from active sonar, ship strikes, and weapons use. [3] 40 C.F.R. §1500.2(d). [4] 42 U.S.C. § 4332(2)(C); see also 40 C.F.R. § 1501.4. [5] 42 U.S.C. § 4332(2)(C)(iii), (E), 40 C.F.R. § 1508.9(b). [6] 40 C.F.R. § 1502.14. [7] 42 U.S.C. § 4332(2)(c). [8] *Environmental Defense Fund v. Corps of Engineers*, 492 F.2d 1123, 1135 (5th Cir. 1974). [9] 40 C.F.R. § 1502.14. [10] *Nat. Resources Defense Council, Inc. v. Callaway*, 524 F 2d. 79, 93 (2d Cir. 1975).	
CBD et al. -04	b. <u>The environmental impacts analysis fails to take a hard look at the impacts the training activities will have on marine life and habitat and must be revised</u> These proposed training activities would pose significant risk to whales, fish, and other wildlife that depend on sound for	Please see Chapter 3 (Affected Environment and Environmental Consequences), specifically Section 3.6 (Fishes), 3.7 (Sea Turtles), 3.8 (Marine Mammals), and 3.9 (Birds) for the Navy's detailed analysis of impacts on wildlife as a result of the Proposed Action.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	breeding, feeding, navigating, and avoiding predators—in short, for their survival. They will also adversely affect fisheries and the communities that depend on the Gulf of Alaska for their livelihoods. Preparation of a revised draft Supplemental EIS/OEIS is necessary, before a decision can be made, because the EIS/OEIS has not considered new information discussed below, nor has it fully and fairly evaluated certain preexisting information. To proceed without such revision would be a violation of NEPA.	
CBD et al. -05	*Take Is Underestimated* The Navy improperly discounts the adverse impacts of behavioral responses to sonar and explosions. Interference with essential marine mammal behaviors can reduce fitness, impede foraging, displacement from preferred habitat, and reduce breeding and reproduction with population level effects. The Navy has likely underestimated the number of behavioral impacts by arbitrarily determining cut-off distances and eliminating those potential takes of marine mammals from the estimated take. EIS/OEIS at Tables 3.8-8 – 3.8-10. Additionally, in its analysis of marine mammal impacts, the Navy (1) has based its estimates of mortality and non-auditory injury from explosives on an averaging of risk, inconsistent with the probability standards in the Marine Mammal Protection Act; (2) has applied erroneous and non-conservative criteria in its estimation of hearing loss; (3) has largely based its behavioral response estimates for odontocetes on captive studies of a relatively unresponsive species (bottlenose dolphins) and disregarded a number of relevant studies on wild marine mammals; and (4) has failed to account in its behavioral response functions to heightened	The consideration of proximity (cut-off distances) was part of the criteria developed in consultation with the National Marine Fisheries Service (NMFS) and was applied within the Navy Acoustic Effects Model. Cut-off distances were used to better reflect the take potential for military readiness activities as defined in the Marine Mammal Protection Act (MMPA). As stated in 2020 Draft SEIS/OEIS Section 3.0.1.1.2 (Navy's Quantitative Analysis to Determine Impacts to Sea Turtles and Marine Mammals), the derivation of the behavioral response functions and associated cut-off distances is provided in the technical report titled "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)," available at www.goaeis.com. Much of the data used to derive the behavioral response functions was from nearby, scaled sources, thereby potentially confounding results since it is difficult to tell whether the focal marine mammal is reacting to the sound level, the proximity of the source or vessel, or other potentially confounding contextual factors that are unlike Navy events for which the behavioral response functions (BRFs) are being derived. To account for these non-applicable contextual factors, all available data on marine mammal reactions to Navy activities and sound sources (or to large-scale activities, such as seismic surveys, when information on proximity to sonar sources is not available for a

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	response to dipping sonar. These problems, including the improper application of "cut-off" distances, are general to the third round of NEPA review that the Navy has undertaken for its offshore range activities. A more detailed response can be found in the Attachment to this comment letter, at 9- 18.[11] The Navy must also continue to obtain better data about the density of marine mammals in the TMAA, and it should incorporate a conservative approach and address the uncertainty in its modeling. It must also better address group sizes for marine mammal take estimates. [11] Comments from NRDC et al. to Naval Facilities Engineering Command Northwest (June 12, 2019) (comments on the Navy's Draft Supplemental EIS for Northwest Training and Testing), appended to this comment letter as Attachment A.	given species group, e.g., harbor porpoises) were reviewed to find the farthest distance to which significant behavioral reactions were observed. These distances were rounded up to the nearest 5 or 10 kilometer (km) interval, and for moderate to large-scale activities using multiple or louder sonar sources, these distances were greatly increased—doubled in most cases. The Navy's BRFs applied within these distances are currently the best-known method for providing the public and regulators with a more realistic (but still conservative where some uncertainties exist) estimate of impact and potential take under military readiness for the Proposed Action within this SEIS/OEIS. Thus, the assertion that takes were "eliminated" is incorrect, as consideration of distance is an integral part of the application of the Phase III criteria and thresholds which does not contradict the data underlying the Bayesian BRFs nor result in underestimation of take due to military readiness activities. Responses to the four additional concerns expressed by the commenter are addressed below. 1. The Navy used test data for the lowest exposures that resulted in any effect in the experimental data in Richmond et al. (1973) to conservatively inform the development of mitigation zones for explosives. In all cases, the mitigation zones for explosives extend beyond the range of any non-auditory injury risk, even for a small animal (representative mass = 5 kilograms [kg]). Some measure of central tendency (whether median or mean) is used in almost all other cases (e.g., onset temporary threshold shift) to derive thresholds for predicting the number of animals that could be impacted, thus the approach used to predict the number of non-auditory impacts due to explosives for marine mammals is not inconsistent with approaches used to assess risk for other potential impacts. The thresholds are not set to over-estimate risk; rather, the Navy's thresholds and analysis predict injuries that have a significant potential to occur.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		The permanent threshold shift/temporary threshold shift criteria and thresholds, as set by NMFS, include numerous conservative assumptions, such as (1) the Navy assumes no recovery of hearing during time intervals between intermittent exposures. However, multiple studies from humans, terrestrial mammals, and marine mammals have demonstrated less temporary threshold shift from intermittent exposures compared to continuous exposures with the same total energy because hearing is known to experience some recovery in between noise exposures. Therefore, the Navy's approach is known to over-estimate the effects of intermittent noise sources, such as tactical sonars. (2) Marine mammal temporary threshold shift data have shown that for two exposures with equal energy, the longer duration exposure tends to produce a larger amount of temporary threshold shift. Since most marine mammal temporary threshold shift data have been obtained using exposure durations of tens of seconds up to an hour, much longer than the durations of many tactical sources, the use of the existing marine mammal temporary threshold shift data tends to over-estimate the effects of sonars with shorter duration signals. Since marine mammal hearing and noise-induced hearing loss data are limited, both in the number of species and in the number of individual's available, attempts to minimize pseudo replication would further reduce these already limited data sets. Specifically, with marine mammal behavioral temporary threshold shift studies, behaviorally derived data are only available for two mid-frequency cetacean species (bottlenose dolphin and beluga whale) and two phocids in-water pinniped species (harbor and northern elephant seals), with otariids, water pinnipeds, and high-frequency cetaceans only having behaviorally derived data from one species (California sea

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		lion and harbor porpoise). Arguments from Wright (2015) regarding pseudo replication within the temporary threshold shift data are therefore largely irrelevant in a practical sense because of limited data. Multiple data points were not included for the same individual at a single frequency; if multiple data existed at one frequency, the lowest temporary threshold shift onset was always used. There is only a single frequency where temporary threshold shift onset data exist for two individuals of the same species: 3 kilohertz (kHz) for dolphins. Their temporary threshold shift (unweighted) onset values were 193 and 194 dB re 1 μPa^2s (Sound Exposure Level unit cumulative over a 24-hour period). Thus, the Navy has determined that the current approach makes the best use of the given data. Appropriate means of reducing pseudo replication may be considered in the future, if more data become available. Many other comments from Wright (2015) and the comments from Racca et al. (2015) appear to be erroneously based on the idea that the shapes of the auditory weighting functions and temporary threshold shift/permanent threshold shift exposure thresholds are directly related to the audiograms; i.e., that changes to the composite audiograms would directly influence the temporary threshold shift/permanent threshold shift exposure functions [e.g., Wright (2015) describes weighting functions as "effectively the mirror image of an audiogram" (p. 2) and states "The underlying goal was to estimate how much a sound level needs to be above hearing threshold to induce temporary threshold shift." (p. 3)—both statements are incorrect and suggest a fundamental misunderstanding of the criteria/threshold derivation.] This would require a constant (frequency-independent) relationship between hearing threshold and temporary threshold shift onset that is not reflected in the

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		actual marine mammal temporary threshold shift data. Attempts to create a "cautionary" outcome by artificially lowering the composite audiogram thresholds would not necessarily result in lower temporary threshold shift/permanent threshold shift exposure levels, since the exposure functions are to a large extent based on fitting mathematical functions to the existing temporary threshold shift data. 2. The Navy has used all available data for the development of updated criteria and thresholds, and limiting the data to the small number of field studies would not provide enough data with which to develop new risk functions. In addition, the Navy accounts for the fact that captive animals may be less sensitive to sound, and the scale at which a moderate to severe response was considered to have occurred is different for captive animals than for wild animals, as the Navy understands those responses will be different. Please see the 2018 technical report titled "Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing (U.S. Department of the Navy, 2017c)," available at www.goaeis.com, for details on how the Navy accounted for the differences in captive and wild animals in the development of the BRFs. 3. The new risk functions were developed in 2016, before several recent papers were published or the data were available. As new science is published, the Navy continues to evaluate the information. It is unreasonable to revise and update the criteria and risk functions every time a new paper is published. These new and future papers provide additional valuable information, and the Navy has already begun to consult them for updates to the criteria in the future. Although not incorporated into the behavioral response functions, relevant new studies are not excluded from the

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		analysis in this SEIS/OEIS. Thus far, no new information has been published or otherwise conveyed that would fundamentally change the assessment of impacts or conclusions of this SEIS/OEIS. 4. The Navy's current beaked whale BRF acknowledges and incorporates the increased sensitivity observed in beaked whales during both behavioral response studies and during Navy training events. Falcone et al. (2017) was not available at the time the behavioral response functions were developed. This research was thoroughly reviewed by the Navy and will be quantitatively incorporated into the Navy's future BRFs, as appropriate. However, the Navy's current beaked whale BRF covers the responses observed in Falcone et al. (2017) since the beaked whale risk function is more sensitive than the other risk functions at lower received levels. Thus far, no new information has been published or otherwise conveyed that would significantly change the assessment of impacts or conclusions of this SEIS/OEIS. Uncertainty in the density estimates was incorporated into the estimation of take for all species for which appropriate measures of uncertainty were available. Uncertainty for density estimates included all cetaceans but only one pinniped (northern fur seal). Pinnipeds: The Navy continues to seek appropriate means of incorporating uncertainty into density estimates for pinnipeds and by extension into the Navy's estimates of exposures. Of the six pinniped species for which densities were calculated, only northern fur seal incorporated a coefficient of variation (CV) as a measure of uncertainty in the density estimate. The CV was provided in the Stock Assessment Report (SAR) (Muto et al., 2020a) as a measure of uncertainty in the abundance of northern fur seals, and that abundance (620,660 fur seals) was the basis for the calculation of a density, making the CV directly applicable to the density estimate. Only limited data were available for calculating a density for California sea lion and ribbon seal in the TMAA, as described in the Density Technical Report, and no estimate

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		of uncertainty in either the abundance or the density was available or could be estimated. The SAR did not provide a CV or other measure of uncertainty in the abundance estimate for northern elephant seal, so none was available to be used in the calculation of a density. The SAR provided a standard error in the abundance estimates for the four harbor seal stocks (Muto et al., 2020a) as a measure of uncertainty in the abundance; however, those abundance estimates were combined as described in the Density Technical Report and used to calculate an abundance over the continental shelf area—the only part of the harbor seal distribution area within the TMAA. The stock abundances were not direct inputs into the density calculations; therefore, the Navy determined that it would not be statistically correct to manipulate (sum or average) four standard error values representing uncertainty in the separate abundance estimates to derive a standard error and apply it to a calculated continental shelf abundance. The abundance for Steller sea lions was taken from Fritz et al. (2016) Table 1A (pups) and Table 6 (non-pups for E Gulf). The recommended formula of pup count x 3.5 was used to estimate the C Gulf non-pup abundance (Note that Table 6 only included the abundance for RCA-9, a portion of the C Gulf abundance. No measure of uncertainty in the abundance is provided in either table (Fritz et al., 2016). The Navy intends to incorporate uncertainty in its density estimates for pinnipeds in the future, as data or statistically valid methodologies allow. Similarly, the Navy incorporated uncertainty into group size when distributing animats in the Navy Acoustics Effects Model for those species with uncertainty values available.
CBD et al. -06	*North Pacific Right Whales* The North Pacific right whale is one of the most critically endangered whales in the world. The population hovers around 26–31 individuals.[12] Any removal of one of these animals would be detrimental to the viability of the population. The TMAA is only 16 nautical miles west of critical habitat for the North Pacific right whale. While North Pacific	The Navy is aware that the North Pacific right whale population is critically endangered. The Navy considers potential impacts on North Pacific right whales in the planning for any training or testing, and has included all relevant information about their population density and distribution in its analysis, including the research and reports cited in this comment. In addition, among many other publications, the Navy has included Nowacek et al. (2004)'s results in the Phase III behavioral

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	right whales have not been well studied, there is now more information about their habitat from monitoring. North Pacific right whales are present in the Gulf of Alaska year-round,[13] and monitoring has indicated that they occur in the TMAA.[14] The best available science indicates that right whales respond to low levels of acoustic alarms between 133-148 dB re 1µPa by ceasing foraging dives.[15] This will adversely affect right whales through feeding disruption and energetic costs; additionally, by remaining near the surface, they become more vulnerable to a collision with vessels. Right whales in the North Atlantic are known to experience substantial mortality from ship strikes, and the training activities include vessel traffic that would cut through the North Pacific right whale's range habitat.[16] The serious injury or death of even one whale from this population—particularly if it is a reproductive-aged female—would have catastrophic consequences for species survival and recovery.[17] The Navy must also consider the risks of vessel noise on the species. Chronic stress in North Atlantic right whales is associated with exposure to low frequency noise from ship traffic. Specifically, "the adverse consequences of chronic stress often include long-term reductions in fertility and decreases in reproductive behavior; increased rates of miscarriages; increased vulnerability to diseases and parasites; muscle wasting; disruptions in carbohydrate metabolism; circulatory diseases; and permanent cognitive impairment."[18] These findings have led researchers to conclude that "over the long term, chronic stress itself can reduce reproduction, negatively	response functions. The quantitative analysis predicts no injuries of North Pacific right whales due to acoustic or explosive exposures. The training activities proposed for the GOA Study Area are similar if not nearly identical to activities that have been occurring in Alaska waters for decades and would occur over a maximum time period of up to 21 consecutive days during the months of April to October. Thus, any potential exposure to vessels and vessel noise would be limited. Given the extremely low potential for a right whale to be present in the GOA Study Area, the very short period (a 21-day maximum) for training, and Navy standard operating procedures and mitigation measures, the potential risk from a vessel strike to a right whale in the GOA Study Area is discountable. The Navy considered best available science on behavioral reactions to vessels by mysticetes in Section 3.8.3.1.1.5 and on physiological stress in marine mammals in Section 3.8.3.1.1.3. Based on the best available science summarized in this SEIS/OEIS (Section 3.8.4.1, Summary of Monitoring and Observations During Navy Activities Since 2016), long-term consequences for marine mammal populations are unlikely to result from Navy training and testing activities in the GOA Study Area. Please also refer to Chapter 5 (Mitigation) of this SEIS/OEIS, detailing the procedures and mitigation measures during its training and testing activities designed to reduce impacts on North Pacific right whales from Navy activities.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	affect health, and even kill outright."[19] North Pacific right whales likely suffer in the same ways. [12] Muto, M. et al., Alaska Marine Mammal Stock Assessments, 2019: NORTH PACIFIC RIGHT WHALE, NOAA-TM-AFSC-404 (2020). [13] Wright, D.L., et al., Acoustic detection of North Pacific right whales in a high-traffic Aleutian Pass, 2009−2015, 37 Endang. Species. Res. 77-90 (2018). [14] Rice, A.C., et al., Passive Acoustic Monitoring for Marine Mammals in the Gulf of Alaska Temporary Maritime Activities Area September 2017 to September 2019, Interim Report (2019).	
CBD et al. -07	*Blue Whales* The EIS/OEIS underestimates the behavioral responses and discounts the potential impacts on blue whales. There are fewer than 2,000 blue whales in the affected population. The National Marine Fisheries Service estimates that the removal of 2.1 blue whales would impede its conservation, and this stock is already in excess of that level between entanglements in fishing gear and ship strikes.[20] The endangered blue whale is adversely affected by military sonar and other mid-frequency and low-frequency anthropogenic noise. Blue whales exposed to mid-frequency sonar (with received levels of 110 to 120 dB re 1 µPa) are less likely to produce calls associated with feeding behavior.[21] The Goldbogen et al. 2013 study, described in the EIS/OEIS, is particularly concerning because of the potential impacts of sonar on the essential life functions of blue whales. It found that mid-frequency sonar can disrupt feeding and displace blue whales from high-quality prey patches, significantly	The analysis in this SEIS/OEIS does not underestimate or discount behavioral impacts on blue whales. The quantitative analysis predicts no permanent threshold shift or other injury to blue whales. The best available science on blue whale, as well as other mysticete, responses to acoustic stressors is presented in Section 3.8.3.1.1.5 (Behavioral Reactions – Behavioral Reactions to Sonar and Other Transducers – Mysticetes). The Phase III behavioral response function for mysticetes incorporates the data on blue whale behavioral responses in Goldbogen et al. (2013) and subsequently in DeRuiter et al. (2017), as described in the technical report titled "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)" (U.S. Department of the Navy, 2017a), available at www.goaeis.com. All of the research on blue whales cited by the commenter has been considered in the analysis of impacts on blue whales in this SEIS/OEIS. Based on the best available science summarized in Section 3.8 and the Navy's analysis of potential impacts, long-term consequences for marine mammal populations, including blue whales, are unlikely to result from Navy training and testing activities in the Study Area. As discussed in Chapter 5 (Mitigation) of this SEIS/OEIS, the Navy would

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	impacting their foraging ecology, individual fitness and population health.[22] Even fairly low-received levels can have an adverse impact.[23] Mid- frequency sonar has been associated with several cases of blue whale stranding events.[24] Additionally, low-frequency anthropogenic noise can mask calling behavior, reduce communication range, and damage hearing.[25] A subsequent study with a larger data set confirmed the findings of Goldbogen that blue whales disrupt deep diving foraging behavior in response to sonar.[26] The researchers noted that since the acoustic disturbance interrupts foraging it can have effects on the fitness of the whales and potential population level impacts.[27] A new study highlights that the adverse effects depend on the context, and some blue whales exposed to brief or even weak sonar can lose an entire day of foraging.[28] Finally, a passive acoustic study demonstrated that exposure to mid-frequency sonar suppresses blue whale vocalizations, including, potentially, vocalizations used in foraging, over large areas of ocean.[29] These impacts from sonar on blue whales suggest that the action's impacts would have long-term impacts on the blue whale population. [20] Carretta, J. et al. Stock Assessment Report 2019: Eastern North Pacific Blue Whale (2020). [21] Melcón, M. L., et al., Blue Whales Respond to Anthropogenic Noise, 7 PLoS ONE e32681 (2012); Southall, B. et al., Marine Mammal Behavioral Response Studies in Southern California: Advances in Technology and Experimental Methods, 46 Marine Technology Society Journal 48–59 (2012).	implement mitigation to avoid or reduce potential impacts from the Proposed Action on marine species. Lastly, an incorrect statement was made by the commenter and is corrected here: Mid-frequency sonar has *not* been associated with any blue whale stranding events, and Goldbogen et al. (2013) does *not* make that claim.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	[22] Goldbogen, J., et al., Blue Whales Respond to Simulated Mid-Frequency Military Sonar, 280 Proceedings of the Royal Society 20130657 (2013). [23] Id. at 1,6. [24] Id. at 2. [25] Id. at 1. [26] DeRuiter, S.L. et al., A multivariate mixed hidden markov model for blue whale behaviour and responses to sound exposure, 11 Annals of Applied Statistics 362–392 (2017) [27] Id. [28] Pirotta, E. et al., Context-dependent variability in the predicted daily energetic costs of disturbance for blue whales, 00 Conservation Physiology 1 (2021). [29] Melcon, M.L. et al., Blue whales respond to anthropogenic noise, 7 PLoS ONE e32681 (2012)	
CBD et al. -08	*Humpback Whales* In its SEIS/OEIS, the Navy has underestimated the potential harm to the relevant distinct population segments (DPS) of humpback whales. The stock definitions for humpback whales are woefully outdated and should match the DPSs as defined under the Endangered Species Act (ESA). In its 2016 listing determination, the National Marine Fisheries Service identified 14 DPSs— because they occur in the area, relevant here are the threatened Mexico DPS and the unlisted Hawaii DPS.[30] Moreover, ship-strikes and entanglements in fisheries are impeding their recovery.[31] Additionally, new science signals that the Hawaii DPS population, which migrates to Alaska in the summer, is declining.[32] Researchers report that mother-calf encounter rates dropped by more than 76 percent between 2013 and 2018.[33] Acoustic monitoring also indicated that	In this SEIS/OEIS, the Navy discusses humpback whale DPSs as defined under the ESA and identified by the NMFS in the most recent Alaska stock assessment (Muto et al., 2020b). In the analysis in this SEIS/OEIS, the Navy does not underestimate potential harm to the distinct population segments of humpback whales that are present in the Study Area. Impacts were analyzed for the three DPSs present in the Study Area from breeding areas in Hawaii (not ESA-listed), Mexico (threatened), and the Western North Pacific (endangered). In Section 3.8.2.3.1 (Status and Management), the 14 DPSs established under the ESA in September 2016 (81 FR 62259) are clearly defined, and current humpback whale stock structure, status, and management are explained. Subsequent sections also detail humpback whale abundance (Section 3.8.2.3.2) and distribution (Section 3.8.2.3.3) in the GOA. In addition, impacts on all humpback whale stocks/DPSs present in the Study Area are both analyzed and assessed in Section 3.8.3.1.2.4 (Impacts from Sonar and Other

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	vocalizations off Maui declined 50 percent between 2014 and 2019.[34] [30] National Marine Fisheries Serv., Endangered and Threatened Species; Identification of 14 Distinct Population Segments of the Humpback Whale (Megaptera novaeangliae) and Revision of Species-Wide Listing, 81 Fed. Reg. 62259 (Sept. 8, 2016). [31] National Marine Fisheries Serv., 2019 West Coast Whale Entanglement Summary (Spring 2020). [32] Cartwright R., et al., Fluctuating reproductive rates in Hawaii's humpback whales, Megaptera novaeangliae, reflect recent climate anomalies in the North Pacific, 6 R. Soc. open sci.181463 (2019). [33] Id. [34] Kügler, A, et al. Fluctuations in Hawaii's humpback whale Megaptera novaeangliae population inferred from male song chorusing off Maui, 43 Endangered Species Research 421 (2020).	Transducers Under Alternative 1) and Section 3.8.3.2.2.4 (Impacts from Explosives Under Alternative 1).
CBD et al. -09	*Beaked Whales* Beaked whales, which are highly sensitive to sonar, occur in the TMAA. Beaked whale strandings have a highly significant co-occurrence with military active sonar use.[35] The densities of beaked whales, including their groupings and locations, must be carefully considered and conservative.[36] The EIS/OEIS may underestimate take of these animals. Beaked whales are also sensitive at large distances. A study of Cuvier's beaked whales in Southern California exposed to mid-frequency sonar, including both hull-mounted and air-deployed, "dipping" systems, confirmed that they modify their diving behavior up to 100 km away.[37] This science disproves the Navy's assumption	The Navy's behavioral response criteria takes into account the greater sensitivity of beaked whales to acoustic disturbance. The Navy relied upon the best science that was available to develop the BRFs in consultation with NMFS. The Navy acknowledges and incorporates the increased sensitivity observed in beaked whales during behavioral response studies and Navy training events in the current beaked whale BRF. Falcone et al. (2017) was not available at the time the behavioral response functions were developed. The information and data presented in the article was thoroughly reviewed and will be quantitatively incorporated into the Navy's future BRFs, as appropriate. However, the Navy's current beaked whale BRF covers the responses observed in Falcone et al. (2017) since the beaked whale risk function is more sensitive than the other risk functions at lower received levels. Thus far, no new information has been

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	that beaked whales will find suitable habitat nearby within their small range. Moreover, this modified diving behavior indicates disruption of feeding.[38] Accordingly, impacts on beaked whales could include interference with essential behaviors that will have more than a negligible impact on the species. In addition, lookouts and shutdowns do not protect beaked whales from Navy sonar because this is a deep-diving species that are difficult to see from ships. For example, "only 23 % of Cuvier's beaked whales . . . are estimated to be seen on ship surveys if they are located directly on the survey trackline."[39] Moreover, a recent study indicated that displacement of beaked whales from good foraging habitat could have detrimental population consequences, and researchers recommended locating sonar exercises outside of key foraging habitat and avoiding activities that disperse beaked whales into sub-optimal foraging areas.[40]	published or otherwise conveyed that would significantly change the assessment of impacts or conclusions of this SEIS/OEIS. As described in Section 3.8.3.1.1.5 (Behavioral Reactions – Behavioral Reactions to Sonar and Other Transducers - Odontocetes), although beaked whales have been shown to avoid naval activity, Navy ranges where training occurs year-round potentially host resident populations. The naval activity in this Proposed Action, however, would only occur over a 21-day period; thus, the temporal overlap with beaked whale foraging would be limited. The Navy's quantitative analysis accounts for potential behavioral disruptions including avoidance and foraging disruptions. The commenter incorrectly states that the Navy assumes "beaked whales will find suitable habitat nearby within their small range;" in fact, tagging studies of beaked whales have shown that they may regularly travel long distances (Schorr et al., 2014). While the Benoit-Bird et al. (2020) was not a behavioral response study, authors provided valid variables (e.g., location demographics, prey metrics) to consider using in Population Consequences of Disturbance models to create explicit comparisons of relative energetic consequences of disturbance events and open consideration of alternative nutrient-rich areas to forage, which could prevent deleterious consequences of disturbance if displaced, as discussed in Section 3.8.3.1.1.7 (Long-Term Consequences) of this SEIS/OEIS. As described in detail in the 2018 technical report titled "Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing" (available on www.goaeis.com) and Chapter 5 (Mitigation), the Navy's quantitative analysis assumes that Lookouts would not be 100 percent effective at detecting all individual marine mammals due to the inherent limitations of observing marine species and because the likelihood of sighting individual animals is largely dependent on observation conditions (e.g., time of day, sea state, mitigation zone size, observation platform) and animal behavior (e.g., the amount of time an animal spends at the surface of the water). This is particularly true

[35] Simonis AE, et al., Co-occurrence of beaked whale strandings and naval sonar in the Mariana Islands, Western Pacific, 287 Proc. R. Soc. B: 20200070 (2020).

[36] Rone, B.K., et al., Report for the Gulf of Alaska Line-Transect Survey (GOALS) II: Marine mammal occurrence in the Temporary Maritime Activities Area (TMAA) (2014); Yack, T.M., et al., From clicks to counts: Using passive acoustic monitoring to estimate the density and abundance of Cuvier's beaked whales in the Gulf of Alaska (GoA) (2015).

[37] Falcone, E.A. et al., Diving behaviour of Cuvier's beaked whales exposed to two types of military sonar, Royal Society Open Science 4(8) (2017).

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	[38] Id. [39] Barlow J., Trackline detection probability for long-diving whales, Marine Mammal Survey and Assessment Methods 209–22 (1999). [40] Benoit-Bird KJ, et al., Critical threshold identified in the functional relationship between beaked whales and their prey, 654 Mar. Ecol. Prog. Ser. 1-16 (2020).	for small marine mammals and marine mammals that display cryptic behaviors. Species sightability, or "detection probability," referred to as g(0), is factored into the Navy's conservative analysis, which also considers additional sightability variables such as if activities would be conducted at night, in poor visibility conditions, or high sea states. NMFS has concurred with the analytical approach used. Please see Chapter 5 (Mitigation) of this SEIS/OEIS for details on the mitigation areas and procedural mitigation measures the Navy would implement to avoid or reduce potential impacts on marine mammals. Based on the best available science summarized in this SEIS/OEIS (Section 3.8.4.1, Summary of Monitoring and Observations During Navy Activities Since 2016), long-term consequences for marine mammal populations are unlikely to result from Navy training and testing activities in the Study Area. While exact causes of strandings are uncertain, scientists have identified potential contributing factors for strandings including age, illness, or disease; ingestion of marine debris/plastics; contaminant load; and manmade sources. A small number of strandings have been associated with the use of U.S. Navy sonar; none of these strandings have occurred in the Study Area. Information on the beaked whale strandings associated with Navy training and testing activities is provided in the Navy's technical report titled "Marine Mammal Strandings Associated with U.S. Navy Sonar Activities" (U.S. Department of the Navy, 2017b), available at www.goaeis.com. While Simonis et al. (2020) found a significant correlation between beaked whale strandings and Navy sonar use, the Center for Naval Analysis (CNA) found insufficient evidence of a correlation between sonar use and beaked whale strandings when considering the complete sonar use record for that location (Mariana Islands). Simonis et al. (2020) relied on incomplete or inaccurate assumptions about U.S. Navy sonar use around the Mariana Islands. Additional information on the findings of the CNA analysis is presented in Section 3.8.3.1.1.6 (Stranding) in Section 3.8 (Marine Mammals) of this SEIS/OEIS.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		The Navy takes its environmental stewardship responsibilities seriously while preparing for its mission. As a steward of the environment, the Navy avoids, minimizes, or mitigates potential effects on the environment from its activities. The Navy supports basic and applied research and technology development related to understanding the effects of sound on marine mammals, including physiological, behavioral, ecological, and population-level effects. To learn more about marine species, sonar, and sound in the water, and the Navy's ocean stewardship programs, visit the following websites: • The Navy's Marine Species Monitoring webpage at: www.navymarinespeciesmonitoring.us/ • The Discovery of Sound in the Sea website at: www.dosits.org • The Living Marine Resources Program at: https://www.navfac.navy.mil/lmr • The Office of Naval Research's Science and Technology programs at: https://www.onr.navy.mil/Science-Technology/Departments/Code-32/all-programs/marine-mammals-biology • The Navy's project website at: www.goaeis.com In addition, for the Navy's 2020 Mariana Islands Training and Testing (MITT) Final Supplemental EIS/OEIS, the Navy agreed to several additional research and monitoring initiatives designed to help advance the understanding of beaked whales and strandings in the MITT Study Area. The Navy co-funded the Pacific Marine Assessment Program for Protected Species (PACMAPPS) Mariana Islands survey in spring-summer 2021 and will fund future studies starting in 2022 to help document beaked whale occurrence, abundance, and distribution in the Mariana Islands. The Navy will also fund additional stranding response and necropsy analyses for the Pacific Islands region, and research a framework to improve statistical stranding analysis. Collaboratively with NMFS, the Navy will fund and organize an expert panel to provide recommendations on scientific data gaps and uncertainties for further protective measure consideration to

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		minimize potential impacts of Navy training and testing activities on beaked whales in the Mariana Islands. While centered on the MITT Study Area, these projects will help advance the science and understanding of beaked whales in relation to Navy activities, regardless of where activities occur. The Navy has continued to update density estimates for beaked whales in the GOA. The Navy-sponsored GOALS II survey cited in the comment (Rone et al., 2014) was followed by the 2015 GOALS III survey (Rone et al., 2017). Density estimates for Cuvier's, Baird's, and Stejneger's beaked whales were updated for Phase III. Please refer to the Density Technical Report "U.S. Navy Marine Species Density Database Phase III for the GOA Temporary Maritime Activities Area," available at www.goaeis.com, for more information on species density estimates and methodologies used to estimate densities.
CBD et al. -10	*Other Marine Mammals* The Gulf of Alaska hosts and maintains an additional array of vertebrate marine mammals including: sea otters, sea lions, harbor seals, Dall's, white-sided and harbor porpoises, and dolphins. The Navy must update and consider recent data regarding the impacts to these marine mammals during and after the Northern Edge military trainings in the Gulf of Alaska.	The Navy is aware that the GOA is home to multiple species of marine mammals. The studies cited in this SEIS/OEIS support the Navy's conclusions regarding acoustic and explosive noise impacts on species present in the Study Area. The Navy used the best available data, science, and information accepted by the relevant and appropriate regulatory and scientific communities in its analysis in accordance with NEPA, the Administrative Procedure Act (5 United States Code sections 551–596), and Executive Order 12114. Best available science used to inform the assessment of impacts on marine mammals from noise is provided in Section 3.8 (Marine Mammals). The Navy continuously updates the literature in this SEIS/OEIS and has accounted for the listed species of odontocetes (Dall's porpoises, Pacific white-sided dolphins, harbor porpoise), pinnipeds (Steller sea lions, California sea lions, harbor seals), and mustelids (northern sea otters) throughout this chapter. Specifically, Impacts from Sonar and Other Transducers (Section 3.8.3.1.2) and impacts from Explosives (Section 3.8.3.2.2) can be found in that section and detail the analysis and impacts on each species.
CBD et al. -11	*Sea Turtles*	The Navy has thoroughly reviewed and analyzed the latest and best available science on sea turtle hearing research, including Piniak et al.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	Leatherback sea turtles are critically imperiled in the Pacific. Leatherback sea turtles are sensitive to noise between 50 and 1200 Hz, responding to received levels as low as 84 dB re 1 µPa-rms at 300 Hz.[41] Additionally, leatherback sea turtles are vulnerable to vessel strikes. The National Marine Fisheries Service completed a status review of the worldwide listing of leatherback sea turtles under the federal Endangered Species Act and found that Pacific leatherbacks are at a high risk of extinction.[42] Importantly, the new estimate of western Pacific leatherback sea turtle abundance includes 1,277 adult female leatherbacks nesting on Bird's Head Peninsula, the largest nesting beaches.[43] This estimate provided a benchmark by which to measure the continuing decline of leatherbacks, comparable to the 2007 estimate of 2,025 adult female leatherbacks nesting on Bird's Head Peninsula.[44] This means the population has declined by a third in just under 15 years, which underscores the detrimental impact that removal of even a single turtle could have on the population. [41] Dow Piniak, W.E. et al. Underwater hearing sensitivity of the leatherback sea turtle (Dermochelys coriacea): Assessing the potential effect of anthropogenic noise (2012). [42] *Endangered and Threatened Wildlife; 12-Month Finding on a Petition To Identify the Northwest Atlantic Leatherback Turtle as a Distinct Population Segment and List It as Threatened Under the Endangered Species Act*, 85 Fed. Reg. 48332, (Aug. 10, 2020. [43] 85 Fed. Reg. at 48387. [44] *Id*. at 48388.	(2012). Review and analysis of hearing research can be found in Section 3.7.2.1.3 (Hearing and Vocalization) in this SEIS/OEIS, and in the technical report titled "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)" (U.S. Department of the Navy, 2017a), available online at www.goaeis.com. In addition, leatherback sea turtle abundance and distribution are examined in Section 3.7.2.1 (General Background) of this SEIS/OEIS, which acknowledges the realized and projected declines in eastern and western Pacific leatherback sea turtle subpopulations. Information in Section 3.7 (Sea Turtles) of this SEIS/OEIS, and in the current NMFS Biological Opinion (NMFS, 2017) states that leatherback sea turtles are rare and have a low expected occurrence in the TMAA (with a density estimate of 0.00001 leatherbacks/square kilometer utilized for the Navy's quantitative analyses). There is also a low likelihood of temporal overlap given the limited duration of the Proposed Action each year of up to 21 consecutive days during the months of April to October. In addition, the Navy implements mitigation measures to avoid striking marine species, and there has never been a documented case of a Navy vessel striking a leatherback sea turtle in the TMAA. Overall, it is unlikely that a Navy vessel during the proposed training activities in the GOA Study Area would strike a leatherback sea turtle, and the likelihood is so low as to be discountable.
CBD et al. -12	*Sea Birds*	The Navy's analysis includes all available new science, including the reference mentioned by the commenter. The results of Hansen et al.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	The Navy's analysis of the activities on seabirds is deficient. The "habitat found within the TMAA supports a wide diversity of resident and migratory seabirds and waterfowl." EIS/OEIS at 3.9-4. While the EIS/OEIS acknowledges a lack of information, it unreasonably concludes that impacts are unlikely. EIS/OEIS at 3.9-10. It must provide additional analysis of the adverse impacts on seabirds and their prey. For example, the Navy should consider new science that demonstrates seabird behavioral responses, such as startle and cessation of feeding, to underwater sonar.[45] A study of mid-frequency sonar demonstrated that murres had behavioral responses to received levels from 110 to 137 dB re 1 µPa.[46] The Navy must minimize its harm to migratory birds. The Migratory Bird Treaty Act, 16 U.S.C. § 703 et seq., makes it illegal for any person, including any agency of the Federal government, —by any means or in any manner, to pursue, hunt, take, capture, [or] kill any migratory birds except as permitted by regulation. 16 U.S.C. § 703. Congress' exemption to the incidental take of seabirds for military activities requires the Navy to consult with the Secretary of Interior to "minimize and mitigate, to the extent practicable, any adverse impacts of authorized military readiness activities on affected species of migratory birds." National Defense Authorization Act (Authorization Act) § 315 (2003); *see also* 50 C.F.R. §21.15 ("for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces must confer and cooperate with the Service to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects"). Accordingly, the Navy must comply with these directives.	(2020) are discussed in this SEIS/OEIS, Section 3.9.3.1.1.5 (Behavioral Reactions), under the subtitle Behavioral Reactions to Sonar and Other Active Acoustic Sources. This information was used in the impacts analysis (Section 3.9.3.1.2.4) to conclude that "[s]onar and other transducers have the potential to cause behavioral reactions and physiological stress. Although individuals may be impacted, long-term consequences for populations would not be expected." This conclusion is further supported by the plunge-diving (as opposed to pursuit-diving) feeding behavior of the short-tailed albatross; as stated in this SEIS/OEIS: "[t]he short-tailed albatross is a surface feeder and scavenger, and predominately takes prey by surface-seizing, not diving (U.S. Fish and Wildlife Service, 2008)." The results from Hansen et al. (2020) are more applicable to pursuit-diving species, which spend more time under the water's surface, but were conservatively applied to the analysis of a plunge-diving species. Informal consultation was completed with USFWS on March 29, 2022, with the Service concurring with the Navy's determination that the Proposed Action is not likely to adversely affect listed species that fall under the Service's management authority, or their designated critical habitats (refer to Appendix E, Correspondence). Secondary impacts, including prey availability, are considered in Section 3.9.3.3. Per Section 3.9.4 (Summary of Stressor Assessment [Combined Impacts of All Stressors]), the take of an individual bird from the Proposed Action is allowed under the Migratory Bird Treaty Act regulations applicable to military readiness activities (50 Code of Federal Regulations Part 21) provided it does not result in a significant adverse effect on a population of a migratory bird species. As presented in the 2011 Final EIS/OEIS and 2016 Final SEIS/OEIS, the Proposed Action would not diminish the capacity of a population of a migratory bird species to maintain genetic diversity, to reproduce, and to function effectively in its native ecosystem, nor would it adversely affect migratory bird populations. Because the Proposed Action has not changed and there is no new information that would

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	Comment	Navy Response
	[45] Hansen, K.A., et al., The common murre (*Uria aalge*), an auk seabird, reacts to underwater sound, 147 J. Acoust. Soc. Am. 4069 (2020). [46] Id.	change the analysis conducted in support of the 2011 Final EIS/OEIS and 2016 Final SEIS/OEIS, the Navy is not required to confer with the USFWS on the development and implementation of conservation measures to minimize or mitigate adverse effects on migratory birds that are not listed under the ESA.
CBD et al. -13	*Fish and Invertebrates* The EIS/OEIS discounts the potential impact of the training activities on fish and fisheries. High- intensity noise can harm fish and invertebrates,[47] which can impede prey availability and foraging for marine mammals and seabirds. Fish and invertebrates use sound for their life functions. A review of 42 studies on the effect of noise on fish suggested that the majority of fishes are sensitive to noise, including alarming impacts on foraging, predation risk, and reproductive success.[48] Another review recently determined that 81 and 82 percent of relevant studies have found significant impacts of noise on invertebrates and fish.[49] Seismic air gun surveys have been found to damage fish ears at distances of 500 m to several kilometers from seismic surveys, with no recovery apparent 58 days after exposure.[50] Even under moderate levels of noise exposure, some fish experience temporary hearing loss, with fish occasionally requiring weeks to recover their hearing.[51] Noise has been shown to produce a stress response and behavioral reactions in some fish that include loss of coherence, dropping to deeper depths, milling in compact schools, ‘‘freezing,’’ or becoming more active.[52] While it is unclear whether such effects are generalizable to other noise sources, lobsters exposed to seismic surveys experienced physiological damage to their statocyst sensory	The Navy has thoroughly reviewed and analyzed the latest and best available science on the impacts of anthropogenic sound on fishes, including the list of references provided in this comment. In fact, several of the papers provided in the comment are also cited in this SEIS/OEIS [e.g., Duarte et al. (2021); Popper and Hastings (2009); Slabbekoorn et al. (2010)]. The remaining cited references in the comment do not appear in this SEIS/OEIS because they are not relevant to the analysis of the Proposed Action or similar research and review papers that contain similar conclusions on the effects of noise on fishes have already been incorporated into the analysis. Inclusion of these remaining references would not change the conclusions of the Navy's impact analysis. Also note, the majority of research cited in the comment pertain to observations of behavioral reactions to air guns and seismic surveys, acoustic sources that are not utilized in the GOA Study Area. Although some generalities can be made on fish responses to impulsive sound sources, which have been summarized in this SEIS/OEIS, specific observations are not always directly comparable to Navy activities conducted under the Proposed Action and should be reviewed with caution. As noted in the comment, temporary hearing loss has been documented due to exposure to impulsive sound sources in several research papers. These findings are also highlighted in the Navy's impact analysis, and estimated ranges to this effect are provided for context in the overall analysis (see Table 3-6.11, Range to TTS for Fishes with a Swim Bladder from Explosions). The Navy is not proposing to conduct any activities that use in-water or underwater explosives—only in-air explosives at or above the

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	hairs and exhibited impaired ability to right themselves for up to a year post-exposure.[53] Studies of seismic surveys on fish demonstrate that at least some types of anthropogenic noise can have detrimental effects on fisheries. Some fish species, including cod, have been reported to flee as inferred from decreased catch rates for both long lines and trawler fisheries near operating airguns.[54] Reduced catch rates of 40%–80% and decreased abundance of some fish species have been reported near seismic surveys.[55] In one study, fish presence declined by 78 percent during seismic surveys.[56] Recent science shows that seismic surveys are also detrimental to zooplankton, which could have damaging effects up the food chain. The study found that a single airgun blast caused an abundance decline of at least 50 percent in 58 percent of the zooplankton species observed,[57] raising questions about the effects of the Navy's acoustic and explosive sources. The Navy's conclusion that "training activities do not compromise productivity of fishes or impact their habitats," EIS/OEIS 3.6-72, fails to provide the hard look required by NEPA. [47] Popper, A.N. & Hastings, M.C. Effects of Anthropogenic Sources of Sounds on Fishes, 75 Journal of Fish Biology 455 (2009); Weilgart, L. The Impact of Ocean Noise Pollution on Fish and Invertebrates, (2018). [48] Cox, K., et al., Sound the alarm: A meta-analysis on the effect of aquatic noise on fish behavior and physiology, 24 Global Change Biology 3105 (2018).	water's surface are part of the Proposed Action. The Navy developed a new mitigation area, known as the Continental Shelf and Slope Mitigation Area, which was added to Section 5.4 (Geographic Mitigation to be Implemented) of the Final SEIS/OEIS. The Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) during training within the Continental Shelf and Slope Mitigation Area, which extends across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The mitigation area will help the Navy avoid or reduce potential impacts on ESA-listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon in important foraging, migration, and maturation habitats. For example, ongoing studies by University of Alaska Fairbanks indicate that Chinook salmon prefer habitats located on the continental shelf and slope, which would limit their overlap with explosives. The addition of the mitigation area would also avoid impacts from explosives on designated coho, Groundfish, and Scallop essential fish habitats as described within the Fishery Management Plans for salmon (North Pacific Fishery Management Council et al., 2018), groundfish (North Pacific Fishery Management Council, 2019), and scallops (North Pacific Fishery Management Council, 2014), minimize effects within other designated salmon essential fish habitat, and avoid effects within important Alaska Native tribal, recreational, and commercial fishing areas. Although fish that are present near an impulsive source (i.e., explosive detonations) could experience some level of hearing loss, injury, or mortality as analyzed in this SEIS/OEIS, the probability of this occurring within the TMAA is considered low due to the dispersed nature of explosive activities, the limited total time the Proposed Action would occur in the TMAA (a total of 21 days and only from April through October), and the expansive size of the Study Area compared to the conservatively estimated ranges to each of the mentioned effects. Furthermore, explosive activities would only occur in-air or near the water's surface, further reducing the potential for sound and energy from detonations to travel great distances through

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	[49] Duarte CM, et al., The soundscape of the Anthropocene ocean. 371 Science 6529 (2021). [50] Weilgart, L,A review of the impacts of seismic airgun surveys on marine life, Submitted to the CBD Expert Workshop on Underwater Noise and its Impacts on Marine and Coastal Biodiversity, 25-27 (2014), available at: http://www.cbd.int/doc/?meeting=MCBEM-2014-01. [51] *Id.* [52] *Id.* [53] Day, R.D., et al., Seismic air guns damage rock lobster mechanosensory organs and impair righting reflex, 286 Proc. R. Soc. B 20191424 (2019). [54] Slabbekoorn, H. *et al.* A noisy spring: the impact of globally rising underwater sound levels on fish, 25 Trends in Ecology and Evolution 419-427 (2010). [55] Weilgart 2013. [56] Paxton, A. B. et al, Seismic survey noise disrupted fish use of a temperate reef, 78 *Marine Policy* 68-73 (2017). [57] McCauley, D. et al., Widely used marine seismic survey air gun operations negatively impact zooplankton, 1 *Nature Ecology and Evolution* 195 (2017).	the water column. It is likely that only fishes near the surface would potentially be exposed to, and therefore impacted by, explosive activities. As discussed in the analysis, although Navy activities could result in brief or minor reactions in fishes such as startle responses or other minor physiological effects, overall impacts are not anticipated to result in long-term consequences to fish populations as supported by the summarized research presented within the body of this SEIS/OEIS (see Section 3.6.3.1.1, Background, within the Fishes section). The addition of the mitigation area also avoids impacts to designated coho, groundfish, and scallop Essential Fish Habitat and minimizes or mitigates effects to other designated salmon Essential Fish Habitat. In locations where explosives could occur at or near the surface, only plankton at the surface would potentially be affected, and the relevant stressor is more likely to be physical disturbance and strike from limited debris impacting discrete areas rather than from acoustic stressors. Plankton are not known to be sensitive to pressure changes associated with acoustic stressors, including sonar and explosions. Also, diel (or diurnal) vertical migration by zooplankton generally occurs with plankton near the surface at night, when the Navy is not proposing to conduct most activities, and at the bottom of the photic zone (approximately 200 m) during daylight hours. This pattern of migration would effectively remove plankton and other invertebrates that conduct a similar migration from impacts due to in-air explosives. Furthermore, the Proposed Action does not include the use of air guns. As described in Section 3.5 (Marine Plants and Invertebrates) in the 2011 Final SEIS/OEIS, impacts on invertebrates in the GOA Study Area, including plankton, are expected to be negligible and would not lead to long-term consequences for populations. The Navy reviewed the McCauley et al. (2017) reference, in addition to several new references on plankton occurrence, and determined the information in the references did not change the analysis in the 2011 Final

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		EIS/OEIS. In-air explosives would continue to have temporary and localized effects on plankton and would have negligible impacts on plankton populations.
CBD et al. -14	*Vessel Strikes* The Navy relies on the flawed 2016 OEIS for its analysis of vessel strikes of marine mammals. Ship strikes are one of the overarching threats to large whales. New scientific information suggests that for imperiled populations, "death from vessel collisions may be a significant impediment to population growth and recovery."[58] Ship strike mortality is "thought to be the number one killer of blue and fin whales and the second greatest cause of death for humpback whales along the U.S. West Coast."[59] Rockwood et al. 2017 reports a best conservative estimate of 18 blue and 22 humpback whale deaths from ship strikes per 6-month season. Based on these predictions and the average annual strike reports from 2006-2016 (1.0 for blue and 1.4 for humpback whale), they calculated that 95 percent of blue whale and 94 percent of humpback whale strike deaths go undocumented. Given the uncertainty in accounting for whale collision avoidance, they also calculated strike mortality in the case of no avoidance, producing estimates of 40 blue and 48 humpback whale deaths. The EIS/OEIS fails to account for this greater estimate of ship-strike risk, including the probability that previous Navy ship-strikes have gone undocumented, in its analysis. [58] Rockwood, R.C., J. Calambokidis, & J. Jahncke. Correction: High mortality of blue, humpback and fin whales from modeling of vessel collisions on the U.S. West Coast suggests population impacts and insufficient protection, 13 PLoS ONE e0201080 (2018).	The Navy has for many years recorded vessel strikes to whales by Navy ships, and there have been no ship strikes in the GOA Study Area as a result of Navy activities. Furthermore, vessel strikes by Navy vessels are rare. Please see the discussion in the 2011 Final EIS/OEIS titled Collisions with Whales (page 3.8-116) for more details. As described in Section 5.3.4.1 (Vessel Movement), the Navy is able to detect if a whale is struck due to the diligence of standard watch personnel and Lookouts stationed specifically to observe for marine mammals while a vessel is underway. Please see the Section 3.8.2.4 (General Threats) of the 2016 Final SEIS/OEIS for a discussion of the potential for ship strikes. Individual species write-ups in Section 3.8.2 (Affected Environment) present the threat of ship strikes on a species level.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	[59] Rockwood RC, Calambokidis J, Jahncke J, High mortality of blue, humpback and fin whales from modeling of vessel collisions on the U.S. West Coast suggests population impacts and insufficient protection, 12 PLoS ONE e0183052 (2017).	
CBD et al. -15	*Aircraft Noise* A new study that monitored military aircraft noise for 28 days in Washington State detected concerning noise levels 30 meters below the sea surface.[60] The researchers noted that the noise exceeded thresholds that can trigger behavioral responses in marine mammals, fish and sea birds. The study demonstrates that the sea surface does not serve as an acoustic barrier to military aircraft noise, and that the Navy must re-examine the impacts of the aircraft noise based on this new information. [60] Kuehne, Lauren, et al. Above and below: Military Aircraft Noise in Air and under Water at Whidbey Island, Washington, 8 J. Mar. Sci. Eng. 923 (2020).	The Navy's analysis in this SEIS/OEIS considers best available science on aircraft impacts on marine species, including fish (Section 3.6.3.1.4), marine mammals (Section 3.8.3.1.4), and birds (Section 3.9.3.1.4). The measurements reported in Kuehne et al. (2020) were for a low-altitude aircraft activity (airfield operations) not present in the Study Area. Most of the aircraft activity in the GOA Study Area would be at higher altitudes above the water, thereby decreasing the received sound level of any animal underwater. Briefly, Kuehne et al. (2020) does not provide any new information about responses to aircraft noise. The authors made no direct observation of any species being affected by Growler overflights, but instead compared the measured in-air and underwater received sound levels with published audiograms and prior behavioral response studies of terrestrial and marine species. Many of the response "threshold" values used by Kuehne et al. (2020) were received levels at which different types of behavioral reactions were observed to noise sources such as vessels, sonar, pile driving, air guns, or noise bursts. Behavioral responses are context-dependent and highly reliant on signal type (Harris et al., 2018; Kastelein et al., 2014; Neo et al., 2014); thus, many of the values were not appropriate for comparison with the type of noise generated by Growler overflights.
CBD et al. -16	C. <u>The environmental justice analysis is woefully outdated and deficient</u>	The Navy is aware of the cultural and economic importance fishing has for Alaska Native Tribes as well as Alaska fishing communities. The Navy continues to engage with Alaska Native Tribes, fishing organizations, coastal communities, and the public to understand

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	The proposed training activities will adversely impact Alaska Native fishing communities in the Gulf of Alaska. The Navy's environmental justice analysis must be revised to thoroughly evaluate and avoid adverse impacts on Alaska Native peoples. Executive Order 12,898 directs that, "[t]o the greatest extent practicable and permitted by law," all agencies "shall make achieving environmental justice part of its mission by identifying and addressing . . . disproportionately high and adverse human health or environmental effects of [their] activities on minority populations and low-income populations." 59 Fed. Reg. 7629 (Feb 11, 1994), at § 1-101. Moreover, President Biden has made environmental justice a priority of all agencies.[61] A 2021 Executive Order makes the Secretary of Defense part of the White House Interagency Council charged with increasing the Federal Government's efforts to address current and historic environmental injustice. The Navy relies on its analysis from 2016, which in turn relies on its analysis from 2011. That 10-year-old document's cursory analysis stated that no fishing resources would be impacted and concluded that "[n]o effects are anticipated from training activities and overflights; no disproportionately high and adverse effects on any low-income or minority groups would occur." 2011 EIS/OEIS at 3.13-4. However, that analysis is woefully outdated and inadequate. There is no confirmed or available public data that confirms that "no fishing resources would be impacted" nor that they have been in subsequent trainings. Fishing is central to subsistence and identity to some of the region's Alaska Natives. Changes to the Gulf of Alaska environment and fisheries impacts the cultural resources and lifeways of Alaska Natives.[62] The ability of fishing communities to adapt to changes is limited.[63] According to researchers	their concerns and clarify information regarding Navy training and effects to fishes. Potential impacts to fishes and fisheries activities from the Proposed Action are negligible. Training exercises are proposed to occur up to once per year for a period of up to 21-days. Activities utilizing underwater explosives are not proposed. Any potential impacts to fishery resources would be limited to in-air surface explosives use. Training events with explosives may occur above water, and some explosive energy may affect the top portion of the water column, with the potential to impact only surface-orientated fish such as salmon. However, the training area has been oriented to specifically avoid overlap with salmon fisheries management areas and areas of greatest species occurrence. Groundfish and other species managed by the Alaska Fisheries Council, are unlikely to be affected at all. Despite the minimal impact training activities may have on fish, the Navy has responded to concerns communicated from Alaska Native Tribes and Alaska fishing communities and is proposing to implement a newly developed Continental Shelf and Slope Mitigation Area that will prohibit explosives below 10,000 ft. altitude (including at the water surface) over the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. This new mitigation area will further avoid potential impacts on fishery resources as it prohibits explosives from occurring where these species largely occur. Though there have never been reported disruptions to any Tribal, commercial, or recreational fishing events during past training exercises, this mitigation will also further reduce potential overlap with fishing activities. Considering the existing protective measures and the additional Continental Shelf and Slope Mitigation Area, the Navy's analysis has determined that the Proposed Action will have negligible impacts on individual fishes and will have no impact on fishery populations or fishery harvest. As discussed in the previous GOA 2011 Final EIS/OEIS and 2016 Final SEIS/OEIS document comment responses, subsistence use of resources in the GOA has been consulted on and addressed in this Final SEIS/OEIS.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	already "fishing families throughout the Gulf of Alaska [are] struggling to find new ways to maintain not just their livelihood but their overall well-being."[64] The Copper River and Prince William Sound salmon fisheries have had three (3) disastrous commercial fishing seasons in a row where fish have returned extremely low in numbers and the fish smaller in size. These salmon fisheries are critical to the Prince William Sound's Native villages and thousands of fishermen whose livelihoods depend on their unique subsistence and the commercial fishing way of life. The once prolific Pacific herring runs that numbered 200,000+ ton of herring returning annually to Prince William Sound are now reduced to only 4,000 ton returning, the low returning herring runs has not warranted a fishery except in 2-3 seasons since 1989, the year of the Exxon Valdez oil spill. All five (5) Pacific wild salmon species; Chinook (king), Sockeye (red), Coho (silver), Chum (keta) and Pink (humpy) spend part of their life and up to a year in both the Copper River Delta and Prince William Sound before heading out to sea till they return to spawn and die. Whatever happens in these connected ocean ecosystems happens to all these salmon species that when healthy and respected, feeds millions of people around the world every year. Concerns about the impacts of the Navy's activities, particularly on fishing, prompted eleven Gulf of Alaska coastal cities to pass multiple resolutions urging the Navy to conduct activities after mid-September and away from sea-mounts to reduce impacts on subsistence, commercial and other fishing activities.[65] The Navy overlooks the vocal and repeated concerns of commercial, subsistence, and Indigenous fishermen regarding the lack of concern and available data regarding the timing of and migratory patterns of all species of salmon in the Gulf of Alaska. These resolutions expressed concern about the hazardous materials	The GOA coastal cities' resolutions referred to in the comment were submitted during the previous SEIS/OEIS project and were created based on incorrect and incomplete information regarding the Navy's Proposed Action and possible effects. The Navy will continue to address these communities' concerns through this SEIS/OEIS document and ongoing public engagement.

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	and impacts of Navy training activities on fish and fisheries. They also noted the "cultural, traditional and subsistence activities historically and continually practiced by Native and non-Native peoples in the Gulf of Alaska."[66] [61] Executive Order on Tackling the Climate Crisis at Home and Abroad (Jan. 27, 2021). [62] Szymkowiak, Marysia, Adaptations and well-being: Gulf of Alaska fishing families in a changing landscape, 197 Ocean and Coastal Management 105321 (2020). [63] Id. [64] Id. [65] Hanlon, Tegan, Thousands of military personnel converge on Alaska for Northern Edge exercise, Anchorage Daily News (May 3, 2017). [66] City of Cordova, Alaska, Resolution 06-16-24 (2016).	
CBD et al. -17	d. <u>The Navy must adopt more robust mitigation measures</u> The Navy cannot merely rely on mitigation measures that are known to be ineffective. While necessary to reduce exposures within a short distance of the source, lookouts are not as effective in mitigating acoustic impacts as time-area restrictions.[67] In *Conservation Council*, the court determined that the Service may not choose the lesser mitigation option of lookouts to protect marine mammals from military sonar "especially knowing that many potential disruptions to marine mammal behavior will be difficult to detect or avoid through lookouts."[68]	As described in Chapter 5.0 (Mitigation), mitigation measures that the Navy would implement under the Proposed Action are organized into two categories: procedural mitigation measures and mitigation areas. Although the Navy's quantitative analysis assumes that Lookouts will not be 100 percent effective at detecting all individual marine mammals and sea turtles within the mitigation zones for each activity, visual observations for marine species (i.e., procedural mitigation) provides a means for avoiding or reducing potential impacts, and is a mitigation measure that has been coordinated with and approved by NMFS and the USFWS through MMPA and ESA consultation and take authorization processes. In addition to procedural mitigation, the Navy has developed several mitigation areas in the TMAA to avoid or reduce potential impacts on marine species from active sonar,

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	One of the most effective means to protect marine mammals from noise and disturbance is to impose time and area restrictions. The proposal by the Navy identifies two mitigation areas: the North Pacific Right Whale Mitigation Area and the Portlock Bank Mitigation Area for limited activities. We support these mitigation areas, and the Navy should also consider additional mitigation and time and area restrictions, including but not limited to: • Extending the mitigation areas to include a buffer zone to adequately protect the biologically sensitive areas from received levels that are above the take threshold. • Prohibiting active sonar in the Portlock Bank Mitigation Area. • Moving activities to the fall, after September, which would avoid fishing seasons as well as primary whale feeding months. Alternatively, the Navy should adopt geographic mitigation shoreward of the continental shelf between June and September because that portion of the TMAA is near the biologically important feeding areas for North Pacific right whales, fin whale, humpback whales, and gray whales during those months.[69]	explosives, and physical disturbance and strike stressors in particularly important habitat areas. The Navy evaluated each of the commenter's mitigation recommendations, as described below: • The Navy determined it would be effective and practical to implement a portion of the commenter's first mitigation recommendation, to extend the size of the Navy's mitigation areas. The Navy developed a new mitigation area, the Continental Shelf and Slope Mitigation Area, that has been included in Section 5.4 (Geographic Mitigation to be Implemented) of this SEIS/OEIS. The Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) during training within the Continental Shelf and Slope Mitigation Area. Previously, the Navy's restriction on explosives applied seasonally within the North Pacific Right Whale Mitigation Area and within the Portlock Bank Mitigation Area. With the development of the Continental Shelf and Slope Mitigation Area, that restriction now applies across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The expanded mitigation is intended to help the Navy further avoid or reduce potential impacts on humpback whales, gray whales, North Pacific right whales, ESA-listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. • The Navy determined it would not be practical to increase geographic mitigation requirements pertaining to the use of active sonar in the TMAA, either by adding a sonar restriction to Portlock Bank or expanding the size of the North Pacific Right Whale Mitigation Area, for the reasons detailed in Section 5.5.1 (Active Sonar) of this SEIS/OEIS. Furthermore, specific to the Portlock Bank Mitigation Area, mitigation for

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

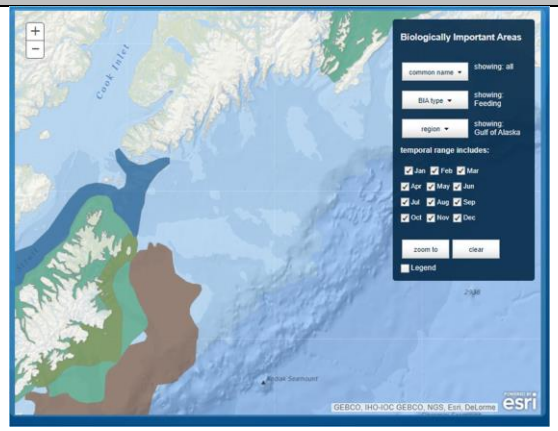
Commenter	Comment	Navy Response
	 • Capping the maximum level of activities each year. • Installing passive acoustic monitoring in the TMAA to inform mariners' warnings about the presence of marine mammals. • Increasing the exclusion zone given the particular sensitivity of some species to sonar at low levels of exposure. • Imposing a10-knot ship speed in Mitigation Areas to reduce the risk of vessel strikes. • Improving detection of marine mammals with restrictions on low-visibility activities and alternative detection such as thermal or acoustic methods.[70] • Adding mitigation for other marine mammal stressors such as dipping sonar and contaminants. • Consulting with Alaska Native communities and adding mitigation for environmental justice impacts.	explosives was included in the 2020 Draft SEIS/OEIS primarily to avoid or reduce potential impacts on fish within an important fishery area used by Alaska Native tribes. As described in Section 3.6.3.1.2 (Impacts from Sonar and Other Transducers), active sonar use under the Proposed Action is unlikely to impact individual fish, or impacts would likely be insignificant (and long-term consequences for fish populations are not expected). Additionally, the Navy consulted with the NMFS and determined that impacts from sonar and other transducers would be minor and insignificant for all ESA-listed fish species; therefore, adding active sonar mitigation for fish in Portlock Bank or elsewhere in the TMAA would not be warranted. • As described in Section 5.4.3 (Operational Assessment) of the 2020 Draft SEIS/OEIS, it would not be practical to shift the months of the Proposed Action due to impacts on safety, sustainability, and mission requirements. Northern Edge is a U.S. Indo-Pacific Command (USINDOPACOM) sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades, and although naval warships and planes play a vital role in Northern Edge the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on a number of factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region, and important environmental considerations. Although the Navy is unable to further restrict the months when training could be conducted in the GOA Study Area, the Navy developed additional mitigation over the continental shelf

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	66 City of Cordova, Alaska, Resolution 06-16-24 (2016). 67 Id. 68 *Conserv. Council for Haw. v. Nat'l Marine Fisheries Serv.*, 97 F. Supp. 3d 1210, 1230 (D. Haw. 2015). 69 Ferguson, M., et al. Biologically Important Areas for Cetaceans Within U.S. Waters – Gulf of Alaska Region, 41 Aquatic Mammals 65-78 (2015). 70 Verfuss, U.K. et al., Comparing methods suitable for monitoring marine mammals in low visibility conditions during seismic surveys, 126 Marine Pollution Bulletin 1–18 (2018).	and slope, as suggested by the commentor and detailed above. • As described in Chapter 2 (Description of Proposed Action and Alternatives), Alternative 1 represents the level and scope of activities necessary to fulfill the Navy's Title 10 responsibilities described in the purpose and need of the Proposed Action. As described in Section 5.5.1 (Active Sonar) and Section 5.5.2 (Explosives) of the 2020 Draft SEIS/OEIS, it would not be practical to reduce or "cap" the amount of sonar or explosive activities for the purpose of mitigation, due to impacts on safety, sustainability, and mission requirements. For example, reducing the number of explosive activities would impede the ability for Navy Sailors to train and become proficient in using explosive weapons systems (which would result in a significant risk to personnel safety during military missions and combat operations), and would ultimately prevent units from meeting their individual training and certification requirements (which would prevent them from deploying with the required level of readiness necessary to accomplish their missions) and impede the Navy's ability to certify forces to deploy to meet national security tasking. • Navy assets with passive acoustic monitoring capabilities that are already participating in an activity would continue to monitor for marine mammals, as described in Section 5.2.1 (Procedural Mitigation Development) and Section 5.3 (Procedural Mitigation to be Implemented). Significant manpower and logistical constraints make constructing and maintaining additional passive acoustic monitoring systems or instrumented ranges impractical and ineffective for the purpose of real-time mitigation, as described in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2020 Draft SEIS/OEIS. • The Navy's mitigation zones for active sonar extend beyond the average ranges to permanent threshold shift for all

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		marine mammals. The active sonar mitigation zones also extend beyond the average ranges to temporary threshold shift for otariids and into a portion of the average ranges to temporary threshold shift for all other marine mammal hearing groups; therefore, mitigation would help avoid or reduce the potential for some exposure to higher levels of temporary threshold shift. As described in Section 5.3.2.1 (Active Sonar), the mitigation zones developed for the Proposed Action are based on the largest areas within which it is practical for the Navy to implement mitigation during training within the TMAA. Increasing the mitigation zone sizes would be incompatible with the practicality assessment criteria for safety, sustainability, and mission requirements. For example, expanding the size of active sonar mitigation zones would significantly diminish event realism and prevent activities from meeting their intended objectives. • Since 1995, the Navy has reported all known or suspected vessel collisions with whales to NMFS, and there have been no known collisions between Navy vessels and whales in the GOA Study Area associated with any of the activities from the Proposed Action. The Navy would continue to implement procedural mitigation to avoid or reduce the potential for vessel strikes of marine mammals. As detailed in Section 5.3.4.1 (Vessel Movement), vessel speed restrictions would not allow the Navy to continue meeting its training requirements due to diminished realism of training exercises. Although it would be impractical to implement speed reductions in the GOA Study Area, the Navy developed new mitigation to further reduce the already low potential for vessel strike, which was included in the 2020 Draft SEIS/OEIS. Occurrences of large whales may be higher over the continental shelf and slope relative to other areas of the TMAA. The Navy would issue pre-event awareness messages to alert ships and aircraft participating in training activities within the TMAA to the possible presence of concentrations

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		of large whales on the continental shelf and slope. Large whale species in the TMAA include, but are not limited to, fin whale, blue whale, humpback whale, gray whale, North Pacific right whale, sei whale, and sperm whale. To maintain safety of navigation and to avoid interactions with these species, the Navy will instruct vessels to remain vigilant to the presence of large whales that may be vulnerable to vessel strikes or potential impacts from training activities. Additionally, ships and aircraft will use the information from the awareness messages to assist their visual observation of applicable mitigation zones during training activities and to aid in the implementation of procedural mitigation. • As described in Section 5.5.1 (Active Sonar), although the majority of sonar use occurs during the day, the Navy has a nighttime training requirement for some active sonar systems. Training in both good visibility (e.g., daylight, favorable weather conditions) and low visibility (e.g., nighttime, inclement weather conditions) is vital because environmental differences between day and night and varying weather conditions affect sound propagation and the detection capabilities of sonar. After sunset and prior to sunrise, Lookouts and other Navy watch personnel employ night visual search techniques, which could include the use of night vision devices. The Navy requires flexibility in the timing of its use of active sonar and explosives in order to meet individual training schedules. In June and July, there are approximately 19 hours of daylight per day in the GOA; therefore, there are naturally fewer hours of available nighttime to be used for sonar training. Due to the already limited timeframe of when the Proposed Action can occur in the GOA Study Area based on weather conditions (April through October), time-of-day restrictions on the use of active sonar would prevent the Navy from successfully completing its mission requirements within the necessary timeframes. The 2020 Draft SEIS/OEIS included a brief

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		summary of the Verfuss et al. (2018) journal article cited by the commenter. As described in Section 5.5.4 (Thermal Detection Systems and Unmanned Aerial Vehicles), thermal detection systems have not been sufficiently studied in terms of their effectiveness and compatibility with Navy military readiness activities. The Navy plans to continue researching thermal detection systems and will provide information to NMFS about the status and findings of Navy-funded thermal detection studies and any associated practicality assessments at the annual adaptive management meetings. • Mitigation for dipping sonar was included in the 2020 Draft SEIS/OEIS. Expanding active sonar mitigation requirements would be impractical for the reasons described above. The Navy developed its mitigation for marine mammals in cooperation with NMFS and the USFWS through ESA and MMPA consultation and take authorization processes. As described in Section 3.8.3.3 (Secondary Stressors) of this SEIS/OEIS, potential impacts of secondary stressors (including contaminants), were determined to be discountable, negligible, or insignificant, and not expected to result in the take of any mammal; therefore, mitigation for contaminants is not warranted. • The Portlock Bank Mitigation Area that was included in the 2020 Draft SEIS/OEIS was developed for the purpose of reducing potential impacts on fishery resources in a location important to Alaska Native tribes. That mitigation area has been expanded in this Final SEIS/OEIS to cover the entire continental shelf and slope in a new area called the Continental Shelf and Slope Mitigation Area. The Navy has consulted and will continue to consult with Alaska Native Tribes through Government-to-Government consultations (refer to Appendix E, Correspondence).

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
CBD et al. -18	**2. The Navy Must Fully Comply with Other Key Environmental Laws** a. The Endangered Species Act The Navy must consult on its activities impacts on endangered species. Section 7(a)(2) of the Endangered Species Act requires federal agencies to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the adverse modification of habitat of such species . . . determined . . . to be critical . . . ."[71] To accomplish this goal, agencies must consult with the delegated agency of the Secretary of Commerce (through the National Marine Fisheries Service) or Interior (through the U.S. Fish and Wildlife Service) whenever their actions "may affect" a listed species.[72] The Service has the discretion to impose terms, conditions, and mitigation on any authorization. The proposed action here clearly affects listed species — the critically endangered North Pacific right whale, other whales, salmon, and Steller sea lions— and therefore the Service must consult. The EIS/OEIS states that the Navy will complete consultation, and we urge the Navy to fulfill this commitment and provide for more robust mitigation in that consultation. [71] 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(a). [72] *Id.*	The Navy is consulting with NMFS pursuant to the ESA (refer to information provided at https://www.fisheries.noaa.gov/). The Navy completed consultation with the USFWS on ESA-listed species under USFWS's management authority. On March 29, 2022, the Navy received a Letter of Concurrence from the USFWS concurring with the Navy's determination that the Proposed Action may affect but is not likely to adversely affect short-tailed albatross, northern sea otter, or northern sea otter critical habitat.
CBD et al. -19	a. The Marine Mammal Protection Act The Navy requires an authorization under the Marine Mammal Protection Act (MMPA), as acknowledged by the EIS/OEIS. The MMPA prohibits the taking of marine mammals, unless the	The Navy is consulting with NMFS in compliance with the MMPA (refer to information provided at https://www.fisheries.noaa.gov/).

Table G-3: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	take falls within certain statutory exceptions.[73] The statute defines "take" is as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect or kill, any marine mammal."[74] Here, the training activities will harass and harm marine mammals and such authorization is required before the activities can proceed. [73] 16 U.S.C. § 1371(a)(3). [74] 50 C.F.R. § 216.3; 16 U.S.C. § 1362(13).	
CBD et al. -20	**3. Conclusion** In conclusion, the Navy must adhere to the concerns voiced by the public, their representatives and the scientific community, to revise its analysis of impacts of the Gulf of Alaska training activities on marine mammals, fish, birds and other marine life. We urge the Navy to advance scientific research and seasonal observation to collect and consider new and needed information and data; and to implement and impose stronger mitigation to protect the Gulf of Alaska and its vast array of marine life. The Navy should prepare a revised draft Supplemental EIS/OEIS that includes a full and fair analysis of impacts of the Gulf of Alaska training activities on marine mammals, fish and other marine life; consider new information; and impose stronger mitigation to protect the Gulf of Alaska and its vast array of marine life.	The Navy has updated this SEIS/OEIS, as applicable, in response to substantive public comments and consultations with STK, NMFS, USFWS, other federal agencies, nongovernmental organizations, and the public.

G.1.4 Individuals

Table G-4 contains comments received from individual members of the public during the 2020 Draft SEIS/OEIS public comment period and the Navy's response to those comments.

Table G-4: Responses to Comments from Individual Members of the Public

Commenter	*Comment*	*Navy Response*
A - B		
Bishop, M	I strongly request that the Navy employ the Precautionary Principle regarding all aspects of the Northern Edge military trainings in the Gulf of Alaska. The Precautionary Principle, respected by a wide array of scientists and explained well by Kriebel et al., (2000), "has four central components: taking preventive action in the face of uncertainty; shifting the burden of proof to the proponents of an activity; exploring a wide range of alternatives to possibly harmful actions; and increasing public participation in decision making". Specifically, I request that the Navy not conduct active sonar in your trainings. There is substantial evidence of mid-frequency active sonar physically harming and causing strandings of beaked whales as well as altering foraging and feeding behaviors in endangered sperm whales (Fernandez et al., 2015; Isojunno et al., 2016). There has been very little empirical, peer-reviewed studies on the impacts of mid-frequency active sonar on fish. These impacts deserve more critical investigation in the DSEIS. I also request that the Navy study alternative sites that are further offshore and away from high concentrations of fish and whales. An alternative would be to rotate the locations of the training exercises. Not only would this disperse the negative impacts, it would also allow the Navy to train in a greater variety of sub-arctic environments, which is the stated point of the trainings. If the exercises must be done in the Gulf of Alaska, we request a return to pre-2010 training levels.	Application of the Precautionary Principle or Precautional Approach is not required by law. As described in Principle 15 of the Rio Declaration on Environment and Development of 1992, "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall be not used as a reason for postponing cost-effective measures to prevent environmental degradation." The Navy has adopted a prudent approach using conservative assumptions for identifying and analyzing potential impacts to the environment and has developed mitigation measures to avoid or reduce potential impacts on marine species, including the Continental Shelf and Slope Mitigation Area. This new mitigation area will benefit the marine environment over the continental shelf and slope out to the 4,000 m depth contour within the TMAA and the species that use the mitigation area as important foraging, maturation, reproduction, or migration habitat. The Navy has made conservative assumptions throughout its analyses when confronted with uncertainty, continues to fund research on how active sonar affects marine species to expand knowledge and understanding of potential impacts and effective mitigation, has explored a wide range of alternatives to the Proposed Action (see below), and has a robust public outreach program which includes participating in public meetings (in-person and virtual), attending conferences open to the public, and maintaining communications through project websites. The Navy reviews and responds to comments from the public on its EISs and related documents, and, in part as a response to comments received on the 2020 Draft GOA SEIS/OEIS, developed the Continental Shelf and Slope Mitigation Area.

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		When assessing and developing mitigation, the Navy considered reducing active sonar training hours, modifying active sonar sound sources, implementing time-of-day restrictions and restrictions during surface ducting conditions, replacing active sonar training with synthetic activities (e.g., computer simulated training), and implementing active sonar ramp-up procedures. The Navy determined that it would be practical to implement certain restrictions on the use of active sonar in the TMAA, as detailed in Section 5.3.2.1 (Active Sonar) and Section 5.4 (Geographic Mitigation to be Implemented). However, it would be impractical for the Navy to limit all active sonar use due to implications for safety and mission success. Information on why training with active sonar is essential to national security is presented in Section 5.3.2.1 (Active Sonar). For example, the ability to effectively operate active sonar is a highly perishable skill that must be repeatedly practiced during realistic training. Proficiency in the use of active sonar is needed to find and counter newer-generation submarines around the world, which are growing in number and are true threats to global commerce, national security, and the safety of military personnel. The Navy uses active sonar during military readiness activities only when it is essential to training missions. Passive sonar and other available sensors are used in concert with active sonar to the maximum extent practicable. Northern Edge is a U.S. Indo-Pacific Command (USINDOPACOM) sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. Similarly, the Navy would be unable to relocate the event to a new location outside of the GOA Study Area (e.g., farther offshore). However, the Navy developed mitigation measures in coordination with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) through the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) consultation and take

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		authorization processes. Mitigation is designed to avoid or reduce potential impacts on marine resources to the maximum extent practical. As discussed in Chapter 5 (Mitigation) of this SEIS/OEIS, the Navy would implement procedural mitigation to avoid or reduce potential impacts from training activities (including active sonar) wherever and whenever they occur in the GOA TMAA. In addition to procedural mitigation, the Navy developed mitigation areas to further avoid or reduce potential impacts on marine species within important habitat areas. For example, the Navy will prohibit MF1 hull-mounted mid-frequency active sonar during training from June 1 to September 30 within the North Pacific Right Whale Mitigation Area. This SEIS/OEIS relies on best available science to assess acoustic impacts on marine mammals and fishes. The behavioral response functions the Navy uses in its analysis to assess potential impacts on odontocetes relies on data obtained from behavioral studies of sperm whales exposed to sonars, as described in the technical report "Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)," available at www.goaeis.com. While exact causes of marine mammal strandings are uncertain, scientists have identified potential contributing factors for strandings, including age, illness, or disease; ingestion of marine debris/plastics; contaminant load; and manmade sources. Please see the Navy's technical report on marine mammal strandings ("Marine Mammal Strandings Associated with U.S. Navy Sonar Activities" [2017], available on the project website at www.goaeis.com) for more information. Based on the best available science summarized in this SEIS/OEIS, the Navy does not predict that any beaked whales would be injured due to behaviorally mediated injury under this Proposed Action. There have been multiple peer-reviewed studies of the effects of mid-frequency sonar on fishes, which are incorporated into analysis of sonar impacts on fishes in Section 3.6 (Fishes) of the 2020 Draft SEIS/OEIS. As described in Section 3.6.3.1.2 (Impacts from Sonar and Other Transducers), active sonar use under the Proposed Action is

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		unlikely to impact individual fish, or impacts would likely be insignificant, and long-term consequences for fish populations are not expected. Additionally, the Navy consulted with NMFS and determined that impacts from sonar and other transducers would be minor and insignificant for all ESA-listed fish species; therefore, active sonar mitigation for fish was not warranted. Regarding the comment's request that the Navy return to pre-2010 training levels, those training levels prior to the 2011 EIS/OEIS would not support current or future Navy training requirements in the Gulf of Alaska. While the level of training activity has fluctuated over the past two decades as the Navy's needs have changed, the levels proposed in this SEIS/OEIS are those required to meet the Navy's purpose and need as stated in Section 1.4 of this EIS/OEIS. Proposed levels are the same or slightly more than pre-2010 levels and they reflect an across-the-board 50 percent reduction from the 2011 to 2016 preferred alternative proposed level of activities (Alternative 2 from the 2016 Final SEIS/OEIS Record of Decision), when the Navy's training requirements were at their highest. Additionally, the sinking exercise, the largest single event conducted by the Navy, has been eliminated since 2016, and the Portable Underwater Training Range (PUTR) is no longer included as part of the Proposed Action in this SEIS/OEIS.
	In addition I ask that the Navy analyze in detail the possibility of meeting the purpose and need of these training exercises without using anti-submarine warfare activities and without using active mid-frequency sonar. I suggest an alternative with a reduced amount of allowable ammunitions – no more than the amount used in 2017. Northern Edge could be equally effective with a lesser number of unretrieved expendables. Northern Edge exercises must eliminate the use of chaff, plastics, and all toxic materials that would simply be left on the seafloor or suspended in the water column. The U.S. Navy has the power and responsibility to minimize the stress on mammals, fish, invertebrates, and the entire GOA	The Navy minimizes the amount of ammunition and other expendable materials, using only what is needed to meet training requirements. Furthermore, the Proposed Action no longer includes the sinking exercise or explosive torpedo exercises, which further reduces the number of explosives and military expended materials relative to the levels analyzed in the 2020 GOA Final SEIS/OEIS. When assessing and developing mitigation for the Proposed Action (which no longer includes a sinking exercise and does not include other types of underwater detonations), the Navy considered further limiting the number, size, locations, and time of day for in-air explosives detonated at or near the surface of the water. The Navy determined that it would be practical to implement certain

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	ecosystem and needs to consider in detail an alternative for moving the timing and locations of Northern Edge. Moving military trainings to a zone that is 300 miles south of the shelf break, conducting exercises in February or March, and refraining from MFAS, SINK-EX, torpedoes, and explosives represent a reasonable alternative. The Navy could still meet its need for fleet readiness and reduce the negative impacts to a system full of marine life that is already in peril.	restrictions on the use of explosives, as detailed in Section 5.3.3 (Explosive Stressors) and Section 5.4 (Geographic Mitigation to be Implemented). However, it would be impractical for the Navy to limit all use of in-air explosives due to implications for safety and mission success as described in Section 5.5.2 (Explosives). Reducing the number and size of explosives would impede the ability for Navy Sailors to train and become fully proficient in using explosive weapons systems (which would result in a significant risk to personnel safety during military missions and combat operations), and would ultimately prevent units from meeting their individual training and certification requirements (which would prevent them from deploying with the required level of readiness necessary to accomplish their missions) and impede the Navy's ability to certify forces to deploy to meet national security tasking. Similarly, the Navy would be unable to reduce the amount of non-explosive practice munitions or associated military expended materials used under the Proposed Action based on its mission requirements. Regarding the occurrence of marine mammals in the GOA, the Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's Western Maneuver Area (WMA) occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS. As discussed in Chapter 5 (Mitigation) of this SEIS/OEIS, the Navy would implement procedural mitigation to avoid or reduce potential impacts from training activities (including explosive and non-explosive activities) wherever and whenever they occur in the TMAA. In addition to procedural mitigation, the Navy developed mitigation

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		areas to further avoid or reduce potential impacts on marine species within important habitat areas. For example, to further protect marine species within key habitat areas as the commentor suggested, for this Final SEIS/OEIS, the Navy newly developed the Continental Shelf and Slope Mitigation Area. As detailed in Section 5.4 (Geographic Mitigation to be Implemented), the Continental Shelf and Slope Mitigation Area extends across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The Navy will prohibit the detonation of explosives below 10,000 ft. altitude (including at the water surface) in this mitigation area during training. The mitigation is intended to help the Navy further avoid impacts on humpback whales, gray whales, North Pacific right whales, ESA listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA.
C		
Carpenter, K.	In the Navy's 2020 Supplemental EIS/OEIS, in its discussion in Section 2.5.3. about an Alternate Time Frame, the Navy says it cannot hold the training exercise in the "winter." No discussion is made of holding the training exercise in the fall months, September or October, or even late August. Holding this exercise in May and June means picking the time frame with the highest capacity to damage the State's salmon fishing resources, as fish are migrating through the Gulf of Alaska at that time to return to their spawning streams.	Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules,

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	Also, the Navy has not adequately address concerns around ocean noise pollution. A study released in February, 2021, "The Soundscape of the Anthropocene Ocean," published in the journal Science, documents how man-made sounds disrupt almost all life stages of marine life, from larval fish to marine mammals. Please show how the plans for Northern Edge take these findings about marine noise pollution into account.	maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS. The Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS. The Navy developed its mitigation measures in coordination with NMFS and the USFWS through MMPA and ESA consultation and take authorization processes. Mitigation is designed to avoid or reduce potential impacts on marine resources to the maximum extent practical. As discussed in Chapter 5 (Mitigation) of this SEIS/OEIS, the Navy would implement procedural mitigation to avoid or reduce potential impacts from training activities (including active sonar) wherever and whenever they occur in the TMAA. In addition to procedural mitigation, the Navy developed mitigation areas to further avoid or reduce potential impacts on marine species within important habitat areas. The Navy developed a new mitigation area, the Continental Shelf and Slope Mitigation Area, that has been included in Section 5.4 (Geographic Mitigation to be Implemented) of this Final SEIS/OEIS. The Navy will not detonate explosives below 10,000 ft.

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		altitude (including at the water surface) during training within the Continental Shelf and Slope Mitigation Area. Previously, the Navy's restriction on explosives applied seasonally within the North Pacific Right Whale Mitigation Area and within the Portlock Bank Mitigation Area. With the development of the Continental Shelf and Slope Mitigation Area, that restriction now applies across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The expanded mitigation is intended to help the Navy further avoid or reduce potential impacts on humpback whales, gray whales, North Pacific right whales, ESA-listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA. The Navy consulted with NMFS and determined that impacts from sonar and other transducers would be minor and insignificant for all ESA-listed fish species; therefore, active sonar mitigation for fish was not warranted. Regarding noise pollution, the Navy addressed the Proposed Action's contribution to noise in the GOA Study Area throughout this SEIS/OEIS in analyses specific to Fishes, Sea Turtles, Marine Mammals, and Birds (see Sections 3.6, 3.7, 3.8, and 3.9, respectively). Overall cumulative Impacts, including impacts from noise, have also been addressed in Chapter 4 (Cumulative Impacts) of this SEIS/OEIS.
Chaney, P.	Why do we not have a Proper Naval Facility with Permanent existence in Alaska? And one off the radar of all the Army and	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	Airforce Bases we have now to consider an off the beaten path location. Please consider a permanent Navy presence in Alaska.	
Courtney, R.	Sirs: From what I have seen of the current day CVBG operations in the Gulf, I totally support US Naval operations in the Gulf of Alaska. In my opinion, the Navy is a great steward of the Gulf eco system and has maintained a watchful eye on the habitat of the various wildlife. I have seen the support provided by the National Marine Fisheries, (NMFS) in the Navy's effort to mitigate harm to Marine animals in the Gulf. The area of operations within the Gulf is small and not in obtrusive to the general maritime traffic or fishing fleets that transit the area. I have not heard of any pollution events such as an oil spill or trash washing upon the beach. I have a weather consultant service and work with many individuals in the Fishing, Tug & Barge and recreational industries. I have heard of no complaints about the Navy's underway shipboard operations. Again all of this indicates to me that the Navy has acted in a very reasonable and responsible way. Further, it is a critical imperative that we operate air surface and subsurface units in the Gulf in order to train the young men and women assigned to these ships. The Gulf provides a unique opportunity to train the CVBG in Arctic and near Arctic weather regimes. Weather impacts the CVBG to a very large degree and there are few opportunities to practice in this environment. This will be needed should we find it necessary to operate in the Arctic against near peer competitors. Finally, I am an Alaskan resident, retired from the National Weather Service, (NWS), and Navy retiree. My Navy profession was as an Aerographer or Meteorology & Oceanography and have been assigned ship's company aboard 1 CV & 1 LPH. Thanks for accepting my comment.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
Cummings, M. G.	Please STAY OUT OF THE GULF OF ALASKA! You are not welcome. Thanks in advance for staying in Port,	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
D - E		
Egle, S.	Dear Sirs, I would just like to comment on the timing of your drills. I feel you could avoid much conflict on both marine mammals and fishermen by scheduling the drills in the fall to winter seasons. I noticed many dead whales reported washed up on beaches after your last drill. As the Grey whales migrate south in the winter this would reduce the impact. Also your drills would be more realistic if they were carried out at different times of year instead of the peak summer season. Good Luck and thank you for considering our natural environment.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS. Regarding fishermen, there have been no indications of impacts on fish or fisheries or reported impacts on the activities of fishermen from any past Navy training in the GOA Study Area. Given, however, the expressed concerns of fishermen from the Native Village of Afognak and the Sun'aq Tribe of Kodiak during government-to-government consultations, the Navy has not only affirmed that the use of explosives would not occur in Portlock Bank during Navy training events in the TMAA, it has expanded its mitigation area. The Navy developed a new mitigation area, the Continental Shelf and Slope Mitigation Area, that has been included in Section 5.4

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		(Geographic Mitigation to be Implemented) of this Final SEIS/OEIS. The Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) during training within the Continental Shelf and Slope Mitigation Area, which extends across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. The Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals.

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS. The Navy has considered the presence of the designated gray whale migration areas between or adjacent to Kodiak Island and Kenai Peninsula as detailed in Section 5.4.1.3 (Gray Whales). Gray whales, humpback whales, and blue whales have largely recovered (see discussions in Section 3.8, Marine Mammals, of this SEIS/OEIS), and there is no evidence that Navy training activities have had any impact on these populations in the Pacific in areas such as Southern California or Hawaii where Navy training has been occurring year round for decades (see Section 3.8.6.1, Summary of Science in the Temporary Maritime Activities Area by the Navy Related to Potential Effects on Marine Mammals Since 2006). Regarding the statement, "many dead whales reported washed up on beaches after your last drill," there have been no reported mortalities as a result of the training activities covered by this SEIS/OEIS in the past, and as detailed in Section 3.8 (Marine Mammals), no marine

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		mammal mortality is expected to result from the continuation of Navy training in the area. The Navy developed its mitigation measure in coordination with NMFS and USFWS through the MMPA and ESA consultation and take authorization processes. Mitigation is designed to avoid or reduce potential impacts on marine resources, including marine mammals, seabirds, fishes, and fishery resources, to the maximum extent practical, as discussed in Chapter 5 (Mitigation) of this SEIS/OEIS. The Navy will implement procedural mitigation to avoid or reduce potential impacts from training activities wherever and whenever they occur in the GOA Study Area. The Navy's newly developed Continental Shelf and Slope Mitigation Area will help avoid or reduce potential impacts from explosives on humpback whales, gray whales, North Pacific right whales, ESA-listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA.
F		
Forsman, E.	YES!! I DO believe the Navy should practice in the waters of Alaska considering the problems we could have with our adversaries.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
Forsman, R.	Since our recent incursion by the Chinese Navy inside our 12 mile limit in Alaska, I strongly support that the US Navy train/drill/live fire what ever is necessary to PROTECT Alaska and the USA. I would encourage the Navy have a permanent Naval Base in Alaska once again. I think Adak is pretty far out, but other places would be better. Maybe look at Cordova, Valdez, Yakutat, as possible	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	Naval Bases. I am a Veteran along with my wife and we support the US Navy in Alaska's Waters!	
G–Z		
Mickelson, M. B.	The Gulf of Alaska Navy Training Activities should be cancelled due to their impacts on some of the world's greatest and most abundant fisheries—including five species of salmon and many species of ground fish and shellfish. This is a resource that already feeds the world—and in this time of environmental stresses and climate change—is even more critical to the survival of everyone. The Gulf of Alaska is also home to seabirds and marine mammals. The Copper River Delta is the best place in the western hemisphere—and maybe in the world—to see migrating shorebirds. Waterfowl also fly through—and some remain to nest in the adjacent wetlands. The explosives and sonar are hazardous to these fish and wildlife. Marine mammals and the salmon migrate right though the Gulf of Alaska where you have scheduled training activities. And ground fish and shell fish live there! The nearby community of Cordova depends almost entirely on fisheries for its income. Laine Welch in her Feb. 9, 2021 article Fish Factor: One Alaska King Salmon Is Now Worth the Same as Two Barrels of Oil said, "Seafood sales are on fire in America's supermarkets and one king salmon from Southeast Alaska is worth the same as two barrels of oil. $116.16 for a troll caught Chinook salmon averaging 11 pounds at the docks vs. $115.48 for two barrels of oil at $57.74/barrel on Feb. 3. As more COVID-conscious customers opted in 2020 for seafood's proven health benefits, salmon powered sales at fresh seafood counters. Frozen and on-the-shelf seafoods also set sales records, and online ordering tripled to top $1 billion. We all look forward to our delicious "first fish" in the spring—and we want to share with everyone! And we are already doing that with fish that is shipped and flown all over the world including to your hometown. Nothing should hinder that…	The GOA Study Area is located far enough offshore of coastal areas to minimize impacts on Alaska Native tribal, commercial, and recreational fishing. The GOA Study Area avoids many sensitive resources of the coastal regions with no overlap of salmon and herring management areas, partial overlap with groundfish and halibut statistical areas, and minimal overlap with shellfish statistical areas. As presented in Section 3.6 (Fish) and Section 3.12 (Socioeconomics) of the 2011 Final EIS/OEIS, the 2016 Final SEIS/OEIS, and the current Final SEIS/OEIS, the Navy is aware of the importance of fisheries in Alaska. The proposed training activities are predicted to have no impact on fish populations, the health of fisheries, or socioeconomic conditions in Alaska. There has been no past evidence of impacts on the health of fisheries or socioeconomic conditions in the GOA Study Area as a result of the Navy training activities proposed. The Navy has developed numerous mitigation measures to further reduce potential effects marine species and resources, such as fish, marine mammals, and marine birds based on comments received from Alaska Native Tribes, agencies, and the public. Details on protective mitigation measures can be found in Section 5 (Mitigation) of the Final SEIS/OEIS.

Table G-4: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	For Cordovans and the Native people who have lived here for thousands of years--the fish and wildlife are sacred; our land is sacred; and the Copper River Delta and the Gulf of Alaska is sacred. It's like a giant cathedral—and you would never bomb a building like that!	

G.2 Public Comments and Navy Responses on the Supplement to the Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement

Since the release of the GOA Draft SEIS/OEIS on December 11, 2020, the U.S. Navy recognized that the size and shape of the Gulf of Alaska Temporary Maritime Activities Area (approximately 42,146 square nautical miles) no longer provides sufficient space for the realistic maneuvering of vessels and aircraft during training exercises. Therefore, the proposed change in the Study Area and the addition of a new Continental Shelf and Slope Mitigation Area warranted the preparation of a Supplement to the GOA SEIS/OEIS. The GOA Supplement to the Draft SEIS/OEIS released to the public on March 18, 2022, with the issuance of a Notice of Availability in the *Federal Register* (87 FR 15414).

The Supplement to the Draft SEIS/OEIS was made available for viewing or download from the project website at www.goaeis.com. Postcards providing notification of the availability of the Supplement were mailed to 521 individuals, organizations, and community groups. Notification letters were mailed to 231 elected officials, agencies, Alaska Native tribes and tribal groups, and organizations. Hard and CR-ROM copy versions of the Supplement were sent to eight information repositories (typically libraries).

The 45-day public comment period on the Supplement began on March 18, 2022, with the issuance of a Notice of Availability. The Navy made significant efforts to notify the public to ensure maximum public participation during the public comment period, including using postcards, press releases, and newspaper display advertisement.

Each row in the following tables presents the identification of the commenter, the comment, and the Navy's response to the comment. Because many comments touched on one topic, in some cases, the commenter's topics were separated into individual comments, assigned a number, and responded to separately.

G.2.1 Federal Agencies

Table G-5 contains comments received from federal agencies during the 2022 Supplement to the SEIS/OEIS public comment period and the Navy's response to those comments.

Table G-5: Responses to Comments from Federal Agencies and Elected Officials

Commenter	*Comment*	*Navy Response*
U.S. Environmental Protection Agency, Region 10		
	The U.S. Environmental Protection Agency has reviewed the Department of the Navy's 2022 Supplement to the Gulf of Alaska Draft SEIS/OEIS Documents (CEQ Number 20220033, EPA Project Number 08-028-DOD). EPA has conducted its review pursuant to the National Environmental Policy Act and our review authority under Section 309 of the Clean Air Act. The CAA Section 309 role is unique to EPA. It requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement. The 2022 Draft SEIS/OEIS describes the Navy's intent to prepare a supplement to the Final EIS/OEIS for the 2011 Gulf of Alaska Navy Training Activities and the 2016 Gulf of Alaska Navy Training Activities. These activities include the use of sonar and weapon systems at sea in the Gulf of Alaska Study Area. The re-analysis is in large part to support the reissuance of current Letters of Authorization from the National Marine Fisheries Service. EPA appreciates the outreach the Navy conducted to discuss the modifications to the Draft SEIS/OEIS. The updated information that has been gathered via the U.S. Navy Marine Species Monitoring in the Gulf of Alaska ensures that the document is scientifically accurate and up to date. EPA understands that the Draft SEIS/OEIS will support the renewal of federal regulatory permits and authorizations under the Marine Mammal Protection Act and the Endangered Species Act that expired in April 2022.	Thank you for your comment. The Navy appreciates your support on its position to implement a new mitigation area within the continental shelf and slope area of the Gulf of Alaska Temporary Maritime Activities Area.

Table G-5: Responses to Comments from Federal Agencies and Elected Officials (continued)

Commenter	*Comment*	*Navy Response*
	EPA recognizes that the Gulf of Alaska Study Area has been expanded geographically compared to the area described in the 2020 Draft Supplemental EIS/OEIS. The changed geographic area does not include an increased number of training activities in the Western Maneuver Area, only an expansion of the area the Navy may use for vessel and aircraft maneuvering purposes during exercises. EPA understands that the number of vessels, aircraft, underway steaming hours, events, and flight times remains the same; and changes will be minor as the majority of training activities would occur only in the Gulf of Alaska Temporary Maritime Activities Area. EPA supports the Navy's proposal to implement a new mitigation area within the continental shelf and slope area of the Gulf of Alaska Temporary Maritime Activities Area. The proposed mitigation area would reduce impacts on marine mammals, fishes (including salmon), and marine birds. The mitigation measure was drafted in response to public and tribal comments. Tribal outreach and consideration of the impacts to environmental justice communities were topics we discussed with the Navy in meetings for the last SEIS/OEIS and for this draft. EPA appreciates the Navy's responsiveness to these concerns. Thank you for the opportunity to provide these comments. If you would like to discuss these comments, please contact Lauren Boldrick at (907) 271-5097 or boldrick.lauren@epa.gov. Sincerely, Rebecca Chu, Chief Policy and Environmental Review Branch	

G.2.2 Nongovernmental Organizations

Table G-6 contains comments on the GOA Supplement to the Draft SEIS/OEIS from nongovernmental organizations.

Table G-6: Responses to Comments from Nongovernmental Organizations

Commenter	*Comment*	*Navy Response*
Center for Biological Diversity		
CBD - 01	The Center for Biological Diversity submits the following comments for your consideration of the 2022 Gulf of Alaska Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (2022 GOA SEIS). These comments are submitted in addition to those the Center submitted on February 16, 2021, which are incorporated here by reference. As a threshold matter, we note this is the third time the Navy has supplemented the 2011 EIS, and together, these supplements make substantial changes to the original EIS the Navy prepared and analyzed nearly a dozen years ago. The Navy must prepare a new EIS and reconsult with wildlife agencies under the Endangered Species Act and Marine Mammal Protection Act, evaluating all military activities in the Joint Pacific Alaska Range Complex as a whole, and using the data and science now available—not continue to segment the project and piecemeal the analysis so the totality of effects is submerged. **Western Maneuver Area** The latest supplemental EIS proposes to add 185,806 square nautical miles as a new "Western Maneuver Area" (WMA), which would increase more than fivefold the surface, sub- surface, and air space where the Navy can conduct warfare training activities—from 42,146 to 227,952 square nautical miles. The Navy attempts to downplay the significance of this expansion, stating, "no new or increased levels of training activities would occur, and no increases in vessel numbers, underway steaming hours, or aircraft events would occur" within it.[1]	Joint Pacific Alaska Range Complex (JPARC) and Segmentation: The Navy feels it has appropriately addressed changes to the Proposed Action in its National Environmental Policy Act analysis for the GOA SEIS/OEIS. Specifically, 40CFR 1502.9(c)(1)(i), states: (d) Supplemental environmental impact statements. Agencies: (1) Shall prepare supplements to either draft or final environmental impact statements if a major Federal action remains to occur, and: (i) The agency makes substantial changes to the proposed action that are relevant to environmental concerns. The Navy is currently conducting regulatory consultations under the ESA and MMPA, evaluating the full scope and area of activities proposed to occur in the GOA. Though other military service activities may occur in the JPARC concurrently with Navy training in the GOA, other service training in the JPARC occurs throughout the year, independent and distinct from training in the GOA. As described in Chapter 1 (Purpose and Need) and Chapter 2 (Description of Proposed Action and Alternatives), the Navy's training requirements are met by conducting the Northern Edge exercise every other year over a maximum 21-day period from

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	However, 30 percent of the Navy's training activities would occur in the new WMA,[2] and while these would exclude active sonar and explosives, they would include activities known to harm and kill marine life.[3] The 2022 Draft SEIS fails to evaluate these impacts, including aircraft and vessels noise and vessel collisions, and it also fails to evaluate alternatives to the proposed action. And nowhere does it include measures to lessen or avoid these impacts. The Navy claims the proposed WMA is needed because the existing Temporary Maritime Activities Area (TMAA)— which is already larger than the state of Tennessee—"does not provide sufficient space for the realistic maneuvering of vessels and aircraft during training exercises."[4] However, the Navy does not explain why it must expand its training areas so vastly or why a smaller expansion is infeasible, particularly since the Navy previously described the existing TMAA as providing "ample" space for training.[5] This brings the purpose and need of the proposed action into question, but regardless, the Navy should evaluate whether a WMA could encompass a smaller area while obtaining the same objective. For example, why does the WMA need to extend to the edge of the continental slope? Why does it need to reach the "Aleutian Islands as far as Dutch Harbor?"[6] The Navy must consider reasonable alternatives to its proposed action, but the 2022 Draft SEIS includes none. At a minimum, the Navy should evaluate alternatives to the proposed WMA that exclude vital migratory routes and feeding areas, including alternatives that (1) exclude all offshore waters near and approaching Unimak Pass; (2) establish a buffer between the WMA and designated critical habitat and known biologically important areas (BIAs), particularly the BIA for the North Pacific right whale; and (3) encompass a smaller area that does not extend the entire length of the Alaska Peninsula to the Aleutian Islands, or to the edge of the continental slope.	As described in Chapter 1 (Purpose and Need) and Chapter 2 (Description of Proposed Action and Alternatives), the Navy's training requirements are met by conducting the Northern Edge exercise every other year over a maximum 21-day period from April through October. The JPARC exercises are more compressive; include multiple activities on land and over the water; and can occur throughout the year on an annual basis. The Navy's Proposed Action includes no land-based components and a limited number of in-air and at-sea activities primarily occurring far from shore over deep ocean waters. The JPARC activities are considered in the cumulative impacts analysis in Chapter 4 (Cumulative) of this SEIS/OEIS. Study Area Expansion: The expanded GOA Study Area, which includes both the TMAA and the WMA, provides the estimated area necessary for air, surface and sub-surface units to freely maneuver during training exercises, duplicating the scale of area U.S. forces may be required to operate in during potential scenarios around the world. Following Exercise Northern Edge 2021, it was determined that the previous Study Area, which included only the TMAA, allowed for a single, predictable air and surface axis of movement to and from land-based areas, which is unrealistic and limiting in preparing for a broad range of possible military actions. Though the proposed Study Area of approximately 227,952 square nautical miles is large, it is representative of the broad areas that current military tactics, technologies, and scenarios dictates. As in potential real-world responses, it is not expected that Navy platforms would need to utilize all portions of the Study Area at any one time or even during every exercise. However, the broad Study Area allows for a thorough environmental analysis of the full volume of area which may be necessary in which to maneuver during future exercises. While the revised GOA Study Area is larger, the type and number of training events would not change, and the majority of training (approximately 70 percent) would still occur only in the TMAA. In addition to improving the realism of training, the broader area would maximize options for airfield diverts available for Navy aircrew.

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	The Aleutian Islands form a unique ecosystem, creating "the world's only longitudinally oriented, high-latitude island archipelago."[7] Spanning nearly 1,100 miles (1,740 km), the archipelago includes thousands of islands but only a few dozen passes between them, effectively dividing the Bering Sea from the Pacific Ocean.[8] Unimak Pass is one of the most significant of these passes, and though it is only about 10 miles wide at its narrowest point, it is the largest of the Fox Island passes and "only major, direct conduit between the [continental] shelves of the North Pacific and eastern Bering Sea."[9] While the proposed WMA does not include Unimak Pass itself, its boundaries are drawn close to its entrance, and nowhere does the 2022 Draft SEIS explain why the WMA must extend near this area or evaluate resulting impacts. The flow through Unimak Pass contains a mixture of water from the North Pacific and Bering Canyon, bringing an important source of nutrients to the southeastern Bering Sea.[10] These nutrients enhance the production of phytoplankton and zooplankton on the shelf's edge, leading to high concentrations of fish and squid, and in turn, huge numbers of seabirds and marine mammals.[11] This rich "Green Belt" is one of the most biologically productive and diverse places on earth.[12] The importance of Unimak Pass to migratory and seasonal movements has long been recognized. A review of information 35 years ago highlighted its significance: Unimak Pass is one of the major migration corridors for mammal populations entering and leaving the Bering Sea. Unimak Pass and the eastern Aleutian Islands are clearly shown to have high use by whales relative to neighboring areas. Most large cetacean species appear to enter the Bering Sea in greatest numbers in June between eastern Aleutian Islands. The diversity and seasonal abundance of marine mammals in	Depending on unit qualification levels in deployment training cycles, aircraft carriers must conduct training in proximity to a diversion airfield when conducting flight operations at-sea, thus limiting where the ship must operate. The TMAA only allows for emergency aircraft diverts to military and civilian airfields in the Anchorage area. By expanding the Study Area to the west to include the WMA, airfields located in Cold Bay, King Salmon, and Dutch Harbor can also be used for emergency aircraft diverts. Additionally, the broader Study Area would improve exercise efficiency by increasing access for commercially based vessels used to simulate opposition forces, historically contracted out of Kodiak, AK. Using only the TMAA requires long transits for these vessels to exercise areas located further to the south, with lost training time and increased fuel usage. Study Area Expansion (Additional Text If Needed): When the Navy was preparing the 2011 EIS/OEIS, the TMAA was of sufficient size to accommodate the Northern Edge activity and to ensure training requirements conducted during the activity were achieved. New advancements in technology, including systems aboard aircraft and vessels that are more capable of identifying and tracking threats, a large part of the training conducted during Northern Edge, highlighted the need for greater flexibility in creating realistic scenarios to achieve training goals now and into the future as technology continues to advance. Incorporating the WMA into the GOA Study Area will allow the Navy to train personnel under conditions similar to those they are likely to encounter in a real-world situation. The Navy would not be conducting activities in the entire WMA or TMAA at any given time; the areas are just available for potential use and give operators the flexibility needed to create realistic scenarios for training purposes. The size of the WMA was determined by Navy operations planners and leadership and who, in addition to training requirements, considered environmentally sensitive habitat, which resulted in the

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	Comment	Navy Response
	and adjacent to Unimak Pass and along the continental slope can be found in no other part of Alaska and perhaps the world. The ecological significance of this region to marine mammals (as well as to other wildlife and fishes) is not yet fully understood, but in sheer numbers and multitude of species it is a region of primary importance because of the concentration of major portions of regional populations of several species.[13] Marine mammals that travel through Unimak Pass include northern fur seals; Steller's sea lions; Dall's porpoise; and humpback, fin, sei, minke, sperm, and gray whales. Millions of seabirds also use Unimak Pass[14]—including Steller's eiders, crested auklets, black-legged kittiwakes, short-tailed shearwaters, and short-tailed albatrosses, to name just a few—as do many species of fish and zooplankton.[15] Scientists long suspected North Pacific right whales also migrate through Unimak Pass,[16] based on observations, assumptions, and the fact that right whales were taken by commercial whalers who were based on Akutan Island, with two whaling records from Unimak Pass itself.[17] These suspicions were confirmed in a long-term acoustical analysis, which used data from a recording devise that was deployed annually in the center of Unimak Pass from 2009 to 2015.[18] Right whales "were acoustically detected in low, but persistent number throughout the dataset, confirming their presence in the high-traffic Unimak Pass."[19] Given the extremely precarious status of the North Pacific right whale, the death or serious injury of a single individual from Navy activities "would be a major blow to this small population."[20] Despite the importance of Unimak Pass, the Navy never explains nor justifies expanding its training activities to areas near this vital habitat, nor does it evaluate related impacts as NEPA requires and intends. This violates the intent of NEPA, the ESA, and MMPA.	prohibitions of using explosives below 10,000 ft. altitude (including at the water surface) in the Continental Shelf and Slope Mitigation Area. Expanding the Study Area to the south instead of west is not feasible, because aircraft would expend too much fuel before reaching those areas and would not be able to conduct extended training exercises, and, in the case of helicopters, do not have the fuel capacity to travel that far offshore. Aircraft need to be able to safely access airports and airfields. Airspace located to the south and farther offshore of the TMAA would not be safely accessible for many aircraft. The WMA does not overlap with the continental slope. The WMA begins at the terminus of the continental slope at a depth of 4,000 m and extends seaward over deeper water consistent with abyssal plain habitat and with generally lower densities of marine species. In defining the boundaries of the WMA, the Navy deliberately avoided sensitive marine mammal habitat over the shelf and slope, as shown in Figure 3.8-2 in Section 3.8 (Marine Mammals). As shown in Figure 3.8-2, the WMA does not extend to shore at any location along the Aleutian Islands, including at Dutch Harbor, and is tens of nautical miles away from shore. The reference to Dutch Harbor was only to aid in defining the western extent of the WMA. Refer also to Figure 5.4-2 in Chapter 5 (Mitigation) for a depiction on important habitat areas that the Navy takes into consideration when scheduling and conducting activities. Navy should evaluate alternatives: Please see Chapter 2, Section 2.4 (Action Alternatives Development) and Section 2.5 (Alternatives Eliminated from Further Consideration) for the Navy's analysis of reasonable alternatives. The action alternative and the mitigation measures that are incorporated in the action alternative were developed to meet both the Navy's purpose and need to train. No other action alternative met the purpose and need. The Navy's action alternative incorporates mitigation measures, standard operating procedures, and best management practices. Mitigation measures considered and implemented can be found in Chapter 5 (Mitigation).

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	Similarly, the Navy's proposed WMA borders a long stretch of the BIA for North Pacific right whales, but the 2022 Draft SEIS contains no justification for doing so, never evaluating related impacts or consideration of alternatives. Instead, the 2022 SEIS tries to dispense with these concerns by claiming related impacts will be diluted by being spread over a broader area, but the 2022 Draft SEIS contains no data or analysis to support this claim. In short, the Navy admits "a Supplement to the Draft SEIS/OEIS [is] warranted because of a change in the Study Area that results in an overall change in how the Proposed Action is analyzed or where the activities are conducted,"[21] but the 2022 Draft SEIS contains no analysis of related impacts or alternatives to avoid such impacts, much less give the hard look NEPA requires. Likewise, the Navy acknowledges "[p]hysical disturbance and [ship] strike is a stressor . . . for marine mammals" in the WMA "due to ship maneuvering activities," claiming these "stressors" are "carried forward for analysis;"[22]However, these impacts are hardly discussed or analyzed in the 2022 Draft SEIS, much less given the hard look the National Environmental Policy Act requires. Instead, the Navy dismisses potential impacts by assuming "the probability of a ship strike would remain approximately the same as presented in the 2020 GOA 2020 SEIS/OEIS,"[23] drawing no conclusion that identifies or analyzes the consequences. [1] 2022 Draft SEIS, at 2-1. [2] 2022 Draft SEIS, at 2-1. [3] See 2022 Draft SEIS, at 2-1 ("Training activities proposed to occur in the WMA include Air Combat Maneuver, Air Defense Exercise, Maritime Interdiction, Sea Surface Control, Electronic Warfare Exercise, Surface-to-Surface Gunnery Exercise (non-explosive practice munitions only), and Deck Landing Qualification (Table 2.1-1)). [4] 2022 Draft SEIS, at 1-1.	Clarifying Activity Impacts in the WMA: With reference to the activities identified in footnote #3, the Navy is not aware of any reports that these activities have contributed to harming or killing marine life. All of these activities are analyzed in the SEIS/OEIS and described in detail in Appendix A and have been analyzed in the 2011 EIS/OEIS, reviewed in the 2016 SEIS/OEIS, and repeatedly analyzed in other Navy at-sea environmental planning documents, including in the Northwest Training and Testing (NWTT) EIS/OEIS and Hawaii-Southern California Training and Testing (HSTT) EIS/OEIS. Based on these analyses, no impacts on marine life are anticipated from these activities. Also, no training activities using sonar and other transducers or explosives would occur in the WMA. Unimak Pass and North Pacific right whale BIA: The WMA boundary is located at least 50 NM from Unimak Pass and begins at the termination of the continental slope at a depth of 4,000 m. Marine mammals concentrated on the shelf and slope would not overlap with the WMA. Furthermore, the Navy's activities would take place in the interior of the WMA even farther from Unimak Pass and would primarily involve maneuvering of vessels and aircraft; no sonar or explosives would be used in the WMA. Considering these factors, Navy activities in the WMA would not interfere with marine mammals or other marine species using Unimak Pass or adjacent areas of the shelf and slope. The WMA borders but does not overlap with a portion of the North Pacific right whale feeding BIA, and as Navy activities would take place farther from the BIA in the interior of the WMA, no interaction with or disturbance to right whale feeding behavior is anticipated. The Navy also designated the Continental Shelf and Slope Mitigation Area encompassing the shelf and slope out to the 4,000 m depth contour within the TMAA as an area where use of explosives below 10,000 ft. altitude (including at the water surface) is prohibited. The Continental Shelf and Slope Mitigation Area overlaps with the North Pacific right whale feeding BIA, as well as critical habitat for humpback whales, and will benefit those and other species that use the shelf and slope

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	[5] 2011 Final EIS, at 2-2. [6] 2022 Draft SEIS, at 3-4. [7] Logerwell, E. A., Aydin, K., Barbeaux, S., Brown, E., Conners, M. E., Lowe, S., . . & Spencer, P. (2005). Geographic patterns in the demersal ichthyofauna of the Aleutian Islands. Fisheries Oceanography, 14 (Suppl. 1), 93–112. [8] Zimmermann, M., & Prescott, M. M. (2021). Passes of the Aleutian Islands: First detailed description. Fisheries Oceanography, 30(3), 280–299. [9] Stabeno, P. J., Reed, R. K., & Napp, J. M. (2002). Transport through Unimak Pass, Alaska. Deep Sea Research Part II: Topical Studies in Oceanography, 49(26), 5919–5930. [10] Stabeno et al. 2002. [11] Springer, A. M., McRoy, C. P., & Flint, M. V. (1996). The Bering Sea Green Belt: shelf‐edge processes and ecosystem production. Fisheries Oceanography, 5(3‐4), 205–223. [12] Village of False Pass v. Watt, 565 F. Supp. 1123, 1130 (D. Alaska 1983); Stabeno, P. J., Schumacher, J. D., & Ohtani, K. (1999). The physical oceanography of the Bering Sea. Dynamics of the Bering Sea, 1–28, at 3. (citing Walsh et al. 1989); LGL Alaska Research Associates, Marine Birds and Mammals of the Unimak Pass Area: Abundance, Habitat Use and Vulnerability. MMS Contract 14-35-0001-3056 (Aug. 1991), at 6-6 (citing Brahan et al 1982). [13] Truett, J. C., & Craig, P. C. (1986). Final Report: Evaluation of Environmental Information for the Unimak Pass Area, Alaska. LGL Ecological Research Associates, at 23 (citations omitted). [14] Truett & Craig1986, at 54 (“The abundance of birds in the Unimak area is so large and regionally important that potential impacts of ocean transportation in this area are listed as being of concern for [oil and gas] developments as far away as the Navarin	within the TMAA. Refer to Figure 3.8-2 in Section 3.8 (Marine Mammals) for a depiction of the WMA in proximity to the Alaska coastline and important marine mammal habitat. Within the TMAA, the Navy will continue to prohibit the use surface ship hull-mounted MF1 mid-frequency active sonar from June 1 to September 30 in the North Pacific Right Whale Mitigation Area to reduce potential impacts on foraging.

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	Basin. An estimate of 1.1 million shearwaters has been recorded in the pass in the fall. The mean density of all species using the pass in summer was estimated by Strauch and Hunt (1982) to be 224 birds/km2 or 720,000 birds in the pass area." (citations omitted)) [15] Truett & Craig 1986, at 3–5, 89. [16] See, e.g., Truett & Craig 1986, at 28 ("[T]his species may still use the Unimak Pass area during migration"); LGL 1991, at 6-16 (same). [17] LGL 1991, at 6-16. [18] Wright et al. (2018), at 78. [19] Wright et al. 2018, at 85. [20] Wright, D. L., Castellote, M., Berchok, C. L., Ponirakis, D., Crance, J. L., & Clapham, P. J. (2018). Acoustic detection of North Pacific right whales in a high-traffic Aleutian Pass, 2009–2015. Endangered Species Research, 37, 77–90, at 88; see Muto, M., Helker, V., Delean, B., Angliss, R., Boveng, P., Breiwick, J., Brost, B., Cameron, M., Clapham, P., Dahle, S., Dahlheim, M., Fadely, B., Ferguson, M., Fritz, L., Hobbs, R., Ivashchenko, Y., Kennedy, A., London, J., Mizroch, S., . . . Zerbini, A. (2020). Alaska marine mammal stock assessments, 2019. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-TM-AFSC-404, at 251 [2019 Stock Assessment] ("Given the very small estimate of abundance, any mortality or serious injury incidental to commercial fisheries would be considered significant.") [21] 2022 Draft SEIS, at ES-1. [22] 2022 Draft SEIS, at 3-1. See also id. at 3-4 (Vessel maneuvering activities in the WMA would introduce the risk of a ship strike, primarily for large cetaceans, in a region where training activities were not initially proposed in the 2020 GOA Draft SEIS/OEIS). [23] 2022 Draft SEIS, at 3-4.	

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
CBD - 02	**Continental Shelf and Slope Mitigation Area** The Center supports the Navy's creation of a Continental Shelf and Slope Mitigation Area, but we urge the Navy to include stronger protections for the vital habitat it contains. The Navy currently proposes to only exclude explosives from the mitigation area, while all other military activities could occur, within its boundaries, including the use of active sonar; air and surface warfare training; and non-explosive practice munitions and ordnance. Meanwhile, the Navy summarily dismisses related impacts, simply claiming these impacts will be less than those evaluated in its 2020 SEIS. And in turn, the 2022 Draft SEIS fails to include or analyze reasonable alternatives to the Navy's proposed action, failing to consider, for example, alternatives that prohibit or suspend military activities within and within a buffer of (1) the North Pacific right whale BIA and/or (2) humpback whale critical habitat. These alternatives should be evaluated and considered.	The Navy appreciates the Center's support for the development of the Continental Shelf and Slope Mitigation Area. The mitigation area will further reduce or avoid impacts on humpback whales, gray whales, North Pacific right whales, ESA listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA. The Navy is aware that a portion of humpback whale critical habitat and the North Pacific right whale feeding BIA overlap with the TMAA. Both habitat areas occur over the continental shelf and not over the slope within the TMAA, and historically, the Navy has conducted few activities over the continental shelf. The TMAA overlaps approximately 10 percent of the total combined area of Units 5 and 8 (86 FR 21082). While some vessel and aircraft maneuvering activities and activities using non-explosive ordnance could occur over the shelf and slope, some of those activities will now occur in the WMA, far from designated critical habitat and BIAs. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA. The Navy will continue prohibiting MF1 hull-mounted mid-frequency active sonar during training from June 1 to September 30 within the North Pacific Right Whale Mitigation Area, which will increase the separation of this type of training and associated acoustic stressors from Kodiak Island and the North Pacific right whale feeding BIA. Additional geographic mitigation measures that the Navy will continue as describe in Section 5.4 (Geographic Mitigation to be Implemented) in Chapter 5 (Mitigation) and, in addition to the North

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		Pacific Right Whale Mitigation Area and the Continental Shelf and Slope Mitigation Area, the Navy implements a number of mitigation measures for activities occurring in the TMAA. The Navy needs the flexibility to conduct activities, including activities using sonar, in the shallower depths over the shelf and slope to create a realistic training environment. The Navy will encounter changes in bathymetry along continental margins around the world, and these changes can affect operational factors for many activities. For example, anti-submarine warfare activities rely on the propagation of sound from sonar, which can be affected by changes in bathymetry and bottom composition of the seafloor.
CBD - 03	**Lookout Effectiveness Study** Lastly, the Center reiterates concerns regarding the Navy's "lookouts, for marine life" which ostensibly monitor for the presence of marine animals, and we note the absence of related reports in the Draft SEIS. Agencies have criticized the effectiveness of the Navy's "lookouts" for numerous years, which culminated in a requirement for "a statistical assessment . . . characterizing the effectiveness of Navy lookouts relative to trained marine mammal observers for the purposes of implementing the mitigation measures," with a related report due by April 1, 2022. (85 Fed. Reg. 72,350). This "lookout" report is past due, but the 2022 Draft SEIS makes no mention of it. Results of this study should be, but are not, considered and incorporated in the 2022 Draft SEIS. In sum, the Center urges the Navy to (1) redo and revise its impacts analysis on marine animals in the affected areas of the Gulf of Alaska, and, (2), consider new information and impose stronger mitigation to protect its array of life. Sincerely, Cynthia Elkins celkins@biologicaldivesity.org	As noted in the comment, the Navy has been conducting a Lookout Effectiveness Study in association with the University of St. Andrews for several years to assess the ability of shipboard Lookouts to observe marine mammals while conducting hull-mounted sonar training activities at sea. The University of St. Andrews' report was provided to NMFS on April 1, 2022 as required by existing ESA authorizations. Following a review and discussion period with NMFS, the study was publicly posted on the U.S. Navy's Marine Species Monitoring Program website in July 2022 (https://www.navymarinespeciesmonitoring.us). Overall, the report provides the Navy with valuable contextual information, but does require some level of interpretation with regard to the numerical results. For instance, the study's statistical model assumed that Navy ships moved in a straight line at a set speed for the duration of the field trials, and that animals could not move in a direction perpendicular to a ship. Violation of this model assumption would underestimate Lookout effectiveness for some data points. The Navy and NMFS determined that the Lookout Effectiveness Study results would not alter the acoustic effects quantitative analysis of potential impacts on marine mammals due to the Proposed Action. It was concluded that the acoustic effects quantitative analyses included in this Final SEIS/OEIS and in the regulatory consultation documents did not underestimate the number or extent of marine mammal takes

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		due to the conservative approach already taken by the Navy in its quantitative analysis process. The Navy is currently working with NMFS to determine how and to what extent the study's results should be incorporated into future environmental analyses. The Navy is also working internally and with NMFS through the adaptive management process to determine if there are additional measures that would be practical to implement that would improve effectiveness of Lookouts, such as through enhanced personnel training. Chapter 5 (Mitigation) of the Final SEIS/OEIS has been updated to reflect this information.
Eyak Preservation Council		
EPC - 1	The Eyak Preservation Council is a 501(c)(3) organization based in Cordova, Alaska. EPC's mission is to honor Eyak heritage and to conserve wild salmon habitat and culture through education, awareness and promotion of sustainable lifeways for all peoples. EPC represents the public interest with a regional and national constituency, including Indigenous and Eyak lineal descendants, for the preservation of wild salmon habitat and the sustainable communities and cultures that benefit from pristine ecosystems that benefit from and support returning wild salmon. We appreciate this opportunity to submit our comment, although, the Northern Edge Gulf of Alaska trainings are returning in 2023 despite years of public opposition including press and news commentaries, community resolutions opposing (12 City Councils), public and official comments (e.g. NOAA, NMFS and more), and a major 2015 demonstration by Cordova fisherman against both the spring timing and location of the war games. It is with great dismay that we send these comment statements to you. We know that all of our supported comments will again be completely sidestepped and ignored. Thousands of representatives from communities all over the entire Gulf of Alaska communities, and from Alaska and the nation - including scientists, Indigenous Peoples, fishermen, community legislatures and more, have spoken out against the timing of the Northern Edge Trainings.	Northern Edge is a U.S. Indo-Pacific Command (USINDOPACOM) sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on a number of factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region, and important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in the SEIS/OEIS. The Navy will continue implementing a number of mitigation measures designed to avoid or reduce potential impacts on marine species, including fish, birds, and marine mammals. To further protect these species within key habitat areas, for this Final SEIS/OEIS, the

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	Yet the no-names Navy military command and all of the additional military top command that are involved in the planning of these Northern Edge military Arctic trainings have not listened to our requests, nor have observed the now science backed research and reasoning for the good of our beloved communities, our economic welfare and community subsistence values, to change the timing of the military now-enhanced wargame training exercises. Possibly you (when the word "you" is used in this communication it is in the collective sense for "all of you") do not know what subsistence values mean. Or truly get that this region is deeply loved, needed and historical for its pristine richness and productivity. It is WRONG to conduct these military wargame trainings in May, in the spring in the Gulf of Alaska. Dead wrong. This bad timing is in ignorance and regardless of the spring awakenings in the entire Gulf of Alaska for breeding and migration times of all GOA animals – mammal and marine – whales, fish, salmon, seals, turtles, krill, shellfish, birds...This is horrifying, and also, stupid. Here is a quote from April 25, 2022 regarding information we received, from John G. Mosher, firmly stating that trainings will very likely take place again in May: The actual scheduling of each exercise is determined by U.S. Indo-Pacific Command. For Exercise Northern Edge 2023, it is still early in the planning cycle, but I understand it is tentatively planned for the May time frame, with specific dates to be determined and released. These wargames, after all, are said to be military trainings for Arctic warfare. Military spokespeople have admitted that they want to do the trainings when there is more light, and it is less likely for storms in the GOA. With a war going on with Russia plundering Ukraine, we would advise that truly Arctic trainings take place in the fall or	Navy newly developed the Continental Shelf and Slope Mitigation Area. As detailed in Section 5.4 (Geographic Mitigation to be Implemented), the Continental Shelf and Slope Mitigation Area extends across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA (see Figure 3.8-2 in Section 3.8, Marine Mammals). The Navy will prohibit the detonation of explosives below 10,000 ft. altitude (including at the water surface) in this mitigation area during training. The mitigation is intended to help the Navy further avoid impacts on species that use the shelf and slope as habitat, including humpback whales, gray whales, North Pacific right whales, ESA listed salmonids (e.g., Chinook, coho, chum, and sockeye salmon, and steelhead) and green sturgeon, ESA-listed short-tailed albatross, and fishery resources in important foraging, migration, and maturation habitats. In addition, some vessel and aircraft maneuvering activities and non-explosive gunnery activities that would have been conducted in the TMAA, potentially over the continental shelf and slope, would now be conducted in the deeper, less productive waters in the WMA, which does not overlap the continental shelf and slope habitat used by many marine species. Activities that use sonar and other transducers or explosives would occur only in the TMAA and would not take place in the WMA. The Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence (“rec” in the chart on the site), the data also appear to show more records of

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	winter, when your military performance can really be tested and trained. The Eyak Preservation Council has been attuned to these sidesteps and refusal to take into account the wisdom and sage advice of the multicultural individuals and communities; multigenerational Americans, Indigenous and Elder Alaskans, Russian fishermen, fishermen from all across the nation, multi-national scientists (American and foreign), NOAA, multitudes of "environmental" organizations and FISHERPEOPLE - saying "NO - May is WRONG". Yet, "your" overriding decision is: From the Record of Decision (pg. 9): "The Navy has no existing procedural protective measures in place specifically for fish..." Oh, great. Rear Admiral Christopher Scott Gray, asked Eyak Preservation Council Executive Director Carol Hoover in Cordova at a meet and greet at a bar restaurant (The Reluctant Fisherman) after a training in May of 2019: "Do the salmon really come back every May?" In diplomatic tones, she described in summary detail to the very congenial Rear Admiral Gray the differences between amazing wild salmon, Alaska hatchery salmon, and the fact that farmed salmon are illegal in Alaska. He did not know that wild salmon have to travel sometime many hundreds of miles (over 300 miles up the Copper River) to the fresh water streams where they return for meeting and carousing with mates for spawning. The tiny hatched wild salmon grow for about 3 to 5 years in clean ancient fresh waters, before their bodies go through the amazing transformation	occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS.

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	to travel out of fresh water into the saltwater of the ocean, to grow and feed, until nature calls them back to transform into the exact fresh waters where they were spawned, so many years ago. And they do this traveling, for instance in the Copper River Delta, and arrive, for the first large commercial and subsistence fishery wild run, in mid-May. The first in Alaska. The salmon, and the salmon return has been less in size, and in smaller numbers, year by year. Do "you" care? So many possible reasons, yet, this one, since 2015, is particularly questionable. And we would say, has evidence and is surrounded with ignorance. All military personnel that have come here to Cordova, and we get direct comments and information from many communities including the Kodiak region, speak to how courteous and personable the military spokesperson have been. Yet may this not be a guise, for the truth of the matter: the military will not acknowledge nor "can" it care. This organization, our Eyak Preservation Council, wants and requests a vibrant, ready, trained military. But not at the expense of a precious and priceless resource. Evidence shows, doing these trainings in May is an attack on this entire GOA region's safety and lively hoods. I have copied and included scientific study, in addition to our comments, recently released. I pray you will review it. We wish you safety, and thank you for your commitment to the United States of America. Our kindest regards, Carol Hoover Executive Director	
Oasis Earth		
OE - 1	We are a marine science/conservation NGO in Alaska, and we have been commenting on the Navy's GOA EIS processes for well over a decade.	Thank you for your comment. Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	See: https://www.adn.com/commentary/article/navy-should-either-kill-alaska-war-games-or-take-them-farther-out-sea/2014/09/18/ However, the Navy continues to ignore our respectful, reasonable, science-based comments. Again for the record, our comments have been, and continue, as follows: 1. Change the timing of the training exercise from summer to winter (November-March) in order to minimize effects on migratory whales, fish, and seabirds in the area in summer;	participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS.
OE - 2	2. Restrict the training area only to areas far offshore, (away from the continental shelf and slope), east of 143 W. Longitude (and at least 100 miles from the nearest seamount);	The newly developed Continental Shelf and Slope Mitigation Area prohibits the detonation of explosives below 10,000 ft. altitude (including at the water surface) across the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. There are no in-water explosives planned under the Proposed Action. The Navy will continue prohibiting MF1 hull-mounted mid-frequency active sonar during training from June 1 to September 30 within the North Pacific Right Whale Mitigation Area, which will increase the separation of this type of training and associated acoustic stressors from Kodiak Island and the North Pacific right whale feeding BIA.
OE - 3	3. Accommodate independent scientific observers during the exercises to confirm effectiveness of mitigations (the Navy objects to independent observers, asserting they are not necessary, and would present “security” concerns, which is nonsense);	Section 5.5.5 (Third-Party Observers) of this SEIS/OEIS provides details on the reasons why proposed use of third-party observers is not practicable.
OE - 4	4. Conduct real-time scientific monitoring of impacts from the exercises including sampling immediately before, during, and after impactful activities are conducted.	Chapter 5 (Mitigation) presents the U.S. Navy's protective measures, outlining steps that would be implemented to protect marine mammals and federally listed species during training events at sea in the GOA Study Area. Mitigation includes the use of trained Lookouts positioned to observe in real-time for marine species prior to and

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
	The Navy has no reasonable, science-based, operational objection to these public interest suggestions.	during training events. The Navy also conducts post-event monitoring after the use of explosives when practical. Mitigation was developed in coordination with NMFS and USFWS scientists to determine which mitigation measures would be both effective and still allow the Navy to meet its operational needs for realistic training in the GOA. As discussed in Section 5.1.2 (Compliance Initiatives)of the EIS/OEIS, through its marine species research and monitoring programs, the Navy is one of the nation's largest sponsors of scientific research on and monitoring of marine species. Navy research programs focus on investments in basic and applied research that increase fundamental knowledge and advance naval technological capabilities. Navy monitoring programs focus on the potential impacts of military readiness activities on biological resources, including marine mammals, sea turtles, diving sea birds, and fish.
Prince William Sound Audubon Society		
PWAS - 1	The Prince William Sound Audubon Society strongly requests that the Navy employ the "Precautionary Principle" regarding all aspects of the Northern Edge military trainings in the Gulf of Alaska. The Precautionary Principle, respected by a wide array of scientists and explained well by Kriebel et al., (2000), "has four central components: taking preventive action in the face of uncertainty; shifting the burden of proof to the proponents of an activity; exploring a wide range of alternatives to possibly harmful actions; and increasing public participation in decision making". Specifically, we request that the Navy not use active sonar in their trainings. There is substantial evidence of mid-frequency active sonar physically harming and causing strandings of beaked whales as well as altering foraging and feeding behaviors in endangered sperm whales (Fernandez et al., 2015; Isojunno et al.,2016). There have been very few empirical, peer-reviewed studies on the impacts of mid-frequency active sonar on fish. These impacts deserve more critical investigation in the DSEIS.	Application of the Precautionary Principle is not required by law. Nevertheless, the Navy has adopted a prudent approach using conservative assumptions for identifying and analyzing potential impacts to the environment. The Navy continues to rely on best available science to assess potential effects from sonar. When assessing and developing mitigation, the Navy considered reducing active sonar training hours, modifying active sonar sound sources, implementing time-of-day restrictions and restrictions during surface ducting conditions, replacing active sonar training with synthetic activities (e.g., computer simulated training), and implementing active sonar ramp-up procedures. The Navy determined that it would be practical to implement certain restrictions on the use of active sonar in the TMAA, as detailed in Section 5.3.2.1 (Active Sonar) and Section 5.4 (Geographic Mitigation to be Implemented). However, it would be impractical for the Navy to limit all active sonar use due to implications for safety and mission success. Information on why training with active sonar is essential to national security is presented in Section 5.3.2.1 (Active Sonar). For example, the ability to effectively operate active sonar is a highly

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		perishable skill that must be repeatedly practiced during realistic training. The Navy uses active sonar during military readiness activities only when it is essential to training missions. Passive sonar and other available sensors are used in concert with active sonar to the maximum extent practicable. As shown in Figure 3.6-4 in the SEIS/OEIS, all ESA-listed salmonids are capable of detecting sound produced by some mid-frequency sonars and other transducers. Specifically, ESA-listed salmonids may be able to detect some mid-frequency sources operating below 2 kHz, but they are not particularly sensitive to these frequencies. In addition, there are only a few sources utilized within the TMAA that would potentially overlap frequencies ESA-listed salmonids could detect, limiting the overall impact from exposure. Furthermore, due to the short-term, infrequent, and localized nature of these activities, ESA-listed salmonids are unlikely to be exposed multiple times within a short period.
PWAS - 2	We also request that the Navy study alternative sites that are further offshore and away from high concentrations of fish and whales. An alternative would be to rotate the locations of the training exercises. Not only would this disperse the negative impacts, it would also allow the Navy to train in a greater variety of sub-arctic environments, which is the stated point of the trainings. If the exercises must be done in the Gulf of Alaska, we request a return to pre-2010 training levels. In addition, we ask that the Navy analyze in detail the possibility of meeting the purpose and need of these training exercises without using anti-submarine warfare activities and without using active mid-frequency sonar. We suggest an alternative with a reduced amount of allowable ammunitions – no more than the amount used in 2017. Northern Edge could be equally effective with a lesser number of unretrieved expendables. Northern Edge exercises must eliminate the use of chaff, plastics, and all toxic materials that would simply be left on the seafloor or suspended in the water column.	Please refer to Section 2.4 (Action Alternatives Development) for details on alternatives considered in this SEIS/OEIS. The Navy developed a new mitigation area known as the Continental Shelf and Slope Mitigation Area, which will prohibit explosive detonations below 10,000 ft. altitude (including at the water surface) over the entire continental shelf and slope out to the 4,000 m depth contour within the TMAA. As described in Section 5.4.2.2 (Continental Shelf and Slope Mitigation Area), the new mitigation area overlaps important fishery habitats, North Pacific right whale feeding habitat, gray whale migration habitat, NMFS-designated critical habitat for humpback whale feeding, migration, maturation, and foraging habitat for juvenile, immature, or maturing adult salmonids (Chinook salmon, coho, chum, green sturgeon, sockeye, and steelhead), and foraging habitat for ESA-listed short-tailed albatross. Regarding the comment's request that the Navy return to pre-2010 training levels, those training levels prior to the 2011 EIS/OEIS would not support current or future Navy training requirements in the Gulf

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		of Alaska. While the level of training activity has fluctuated over the past two decades as the Navy's needs have changed, the levels proposed in this SEIS/OEIS are those required to meet the Navy's purpose and need as stated in Section 1.4 of this EIS/OEIS. Proposed levels are the same or slightly more than pre-2010 levels and they reflect an across-the-board 50 percent reduction from the 2011 to 2016 preferred alternative proposed level of activities (Alternative 2 from the 2016 Final SEIS/OEIS Record of Decision), when the Navy's training requirements were at their highest. Additionally, the sinking exercise, the largest single event conducted by the Navy, has been eliminated since 2016.
PWAS - 3	The U.S. Navy has the power and responsibility to minimize the stress on mammals, fish, invertebrates, and the entire GOA ecosystem and needs to consider in detail an alternative for moving the timing and locations of Northern Edge. Moving military trainings to a zone that is 300 miles south of the shelf break, conducting exercises in late fall or winter, and refraining from MFAS, SINK-EX, torpedoes, and explosives represent a reasonable alternative. The Navy could still meet its need for fleet readiness and reduce the negative impacts to a system full of marine life that is already in peril. Submitted by Mary Anne Bishop, President, Prince William Sound Audubon Society	Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS. The Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider.

Table G-6: Responses to Comments from Nongovernmental Organizations (continued)

Commenter	*Comment*	*Navy Response*
		Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS.

G.2.3 Individuals

Table G-7 contains comments on the GOA Supplement to the Draft SEIS/OEIS from individual members of the public.

Table G-7: Responses to Comments from Individual Members of the Public

Commenter	*Comment*	*Navy Response*
A		
Americus, E.	Please do not practice your naval exercises in the Gulf of Alaska. Fish and marine mammals are already threatened by rising water temperatures and over fishing. Your timing is also bad due to salmon migration and economic livelihood of Alaskan coastal communities. It is bad to fire off bombs in the ocean, it scares the whales fish and other marine life., Like having Ptsd. Even the microscopic life. Any did this bomb exercises result in reported whale beachings.so sad and unnecessary. We must protect the earth and oceans, and not by firing off bombs in them. Thank you.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
Axelrod, E.	Request strongly that the GOA trainings be held in the fall months - NOT in May.	Northern Edge is a U.S. Indo-Pacific Command (USINDOPACOM) sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on a number of factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region, and important environmental considerations.

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
B		
Bear, D.	Thank you for the opportunity to comment. While I obviously do not live in Alaska, I have visited it in several times and hope to do so again in the future. I am writing to ask the Department of the Navy to supplement this supplement with an alternative relating to the time frame for this training activities. The Draft SEIS/OEIS issued in 12/2020 rejected alternate time frames, stating that an alternate period "such as in the winter months would not be feasible". (p. 2-B) While a rationale was given for rejecting winter as a time period, there was no explanation at all for not analyzing the possibility of these exercises taking place during summer and fall. Given the critical breeding and spawning that takes place during May, actual analysis of these two other seasons needs to be undertaken. Analysis of reasonable alternatives the essential heart of the NEPA process. Failure to explain why undertaking these exercises in summer or fall is a fatal flaw. See, for example, Southeast Alaska Conservation Council v. FHWA, 649 F.3d 1050 (9th Cir. 2011), Center for Biological Diversity v. U.S. Dept. of the Interior, 581 F.3d 1063 (9th Cir. 2009), NRDC v. US Forest Service, 421 F.3d 797 (9th Cir. 2005), Muckleshoot Indian Tribe v. Forest Service, 177 F.3d 800 (9th Cir., 1999). Thank you for your consideration.	Given the significant investment in resources associated with bringing military forces to Alaska, the exercises are scheduled for periods with the greatest chance for favorable weather. Northern Edge is a U.S. Indo-Pacific Command (USINDOPACOM) sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on a number of factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region, and important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in the SEIS/OEIS. Specifically regarding marine temporal occurrence in the Gulf of Alaska, the Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS.
C		
Cain, H.	Please use no live ordinance during these exercises. There are far to many fragile ecosystems in jeopardy during this time of year. If live ordinance must be used do it in the winter.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
Christiansen, S.	Over the years of ever increasing munition allowances - the Navy Training Activities held in the Gulf of Alaska - have been the demise of our fisheries. They have contributed more to the decimation of sea birds and marine mammals and overall ocean life than all other factors combined. Ocean acidification and the red blob that these war games have created make war on the very people they portend to protect by destroying the ocean habitat The Navy refuses to fess up to this with statistics colored and stacked to show a different picture. The cry of ''we must practice in order to protect our country, now more than ever', is like saying "we have to destroy our farmland to protect our people" when in reality you are causing them to starve to death. To continue and now expand the boundaries is cutting off our nose thinking it will help our face. These war games are waging war on the people of the United States by destroying our ocean habitat. NO! Do not extend the boundaries!! NO! These activities are not the highest good for the United States or the planet. We have 1 ocean and the US Navy has done more to destroy it then any other factor on earth. Please put your glasses on to the future. Extending the boundaries is reckless, war mongering and unnecessary. Our ocean is in big trouble and this proposal significantly worsens the situation. Games in the middle of bird, fish and marine mammal migration? You folks certainly do not have our best interest at stake. There is a oneness of life (the trees just happen to give off oxygen that we just happen to need…) and we need to respect that oneness when it comes to the ocean habitat. Do not move forward with these plans.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. Use of munitions by the Navy within the GOA Study Area have declined from 2011 levels. The Navy is not proposing an increase in the use of munitions.

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
Courtney, R.	Expanding the area for the training of USN ships is very good and largely overdue. USN Battlegroups composed of aviation, surface and amphibious warfare ships need an expanded area for realistic training in a challenging cold weather environment. Maneuver warfare is the most successful form of warfare. Putting a CVBG/ESG into a small box and pretending to do so, only trains our sailors to not take full advantage of their capabilities. In addition, by working with USAF assets we will provide them with a better threat scenario to allow them to know how to respond. This area of the world is also known for some of the worst weather in the world. Our forces need realistic training conditions to work around this and other uncontrollable events on training. A person cannot respond appropriately unless they know what to expect. Knowing what to expect allows us to build responses to these uncontrolled events. WRT impact upon animal and plant populations, we have substantial knowledge and mitigations in place to reduce our impacts on these populations. Our fisheries in the area are recognized as the best managed in the world and this allows our CVBG/ESGs to avoid the most productive areas. The US Navy has spent over a century of time working in and transiting other areas of the globe with little or no impacts on them. We would have a similar, if not no impact on these areas in the polar latitudes. V/r, Rich Courtney CWO3 USN(ret)	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
D - F		
Franke, K.	As these training activities are disruptive to marine life the area in which they are conducted should not be increased and use of sonar, live fire and detonations should be minimized.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
G		
Griswold, S.	Dear Project Manager:	Thank you for your participation in the National Environmental Policy

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	I have reviewed the Supplement to the 2020 Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement and would like to offer the following comments on the proposed WMA addition to the TMAA. The proposed addition shown in the map on ES-1 blocks a large section of the southern coast of Alaska. In terms of the training value of the added area, "currently, the TMAA allows for a single, predictable air and surface axis of approach to the Study Area, which does not replicate real-world conditions or scenarios, which are unpredictable" (ES-1). I wholeheartedly agree that an expanded area is critical for more realistic, and therefore more valuable, training, but I wonder if the same purpose could not be accomplished with an addition to the TMAA extending more south than west, as a consideration for the federally-endangered Short-tailed Albatross population. The USFWS Spotlight Species Action Plan, published in 2010 following the initiation of a five-year reclassification review in 2009, notes that population goals for reclassification are unlikely to happen before 2033. I am concerned that the proposed addition will further hinder the recovery of this species. The Navy claims that the added area "may benefit fisheries and commercial fishing" since socioeconomic activities "would no longer be impacted by potential conflicts with Navy vessels using explosives during training activities over the [continental] shelf and slope", however, the use of explosives in the WMA is likely to drive many juvenile seabirds into already densely populated coastal areas, where they will increase competition with commercial fisheries and experience higher death rates as a result (3-12). According to one of the sources cited in your EIS, "the productive waters off Alaska also support large-scale commercial fisheries that have historically caused seabird mortalities ranging from 10,000 to over 25,000 birds in some years (Stehn et al. 2001, NMFS 2006). Albatrosses are particularly vulnerable to mortality in fisheries because they are natural scavengers taking advantage of food made available at the sea surface. Albatrosses are in most danger when	Act process. Your comment is part of the official project record. The expanded GOA Study Area, which includes both the TMAA and the WMA, provides the estimated area necessary for air, surface and sub-surface units to freely maneuver during training exercises, duplicating the scale of area U.S forces may be required to operate in during potential scenarios around the world. Following Exercise Northern Edge 2021, it was determined that the previous Study Area, which included only the TMAA, allowed for a single, predictable air and surface axis of movement to and from land-based areas, which is unrealistic and limiting in preparing for a broad range of possible military actions. Though the proposed Study Area of approximately 227,952 square nautical miles is large, it is representative of the broad areas that current military tactics, technologies, and scenarios dictates. As in potential real-world responses, it is not expected that Navy platforms would need to utilize all portions of the Study Area at any one time or even during every exercise. However, the broad Study Area allows for a thorough environmental analysis of the full volume of area which may be necessary in which to maneuver during future exercises. In addition to improving the realism of training, the broader area would maximize options for airfield diverts available for Navy aircrew. Depending on unit qualification levels in deployment training cycles, aircraft carriers must conduct training in proximity to a diversion airfield when conducting flight operations at-sea, thus limiting where the ship must operate. The TMAA only allows for emergency aircraft diverts to military and civilian airfields in the Anchorage area. By expanding the Study Area to the west to include the WMA, airfields located in Cold Bay, King Salmon, and Dutch Harbor can also be used for emergency aircraft diverts. Additionally, the broader Study Area would improve exercise efficiency by increasing access for commercially based vessels used to simulate opposition forces, historically contracted out of Kodiak, AK. Using only the TMAA requires long transits for these vessels to exercise areas located further to the south, with lost training time and

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	they attempt to scavenge bait off the hooks as the longline is deployed (Melvin et al. 2001, Dietrich et al. 2009). Albatrosses are long-lived, have a low reproductive rate (maximum of 1 offspring per year) and can therefore suffer population level effects from incidental mortality (Weimerskirch et al. 2000a)" (Suryan and Kuletz 2). The researchers also note that "the short-tailed albatross is the largest, but also the least abundant (ca. 860 breeding pairs in 2013; USFWS 2014) after commercial harvesting led to near extinction by the middle of the 20th century" (Suryan and Kuletz 2). This is far below the minimum viable population threshold. If coastal waters could support this subpopulation of albatrosses better than the deep offshore waters of the WMA, those birds would have already shifted their habitat. Although the Navy has proposed a prohibition on detonating explosives below 10,000' over areas with <4000m depth, the albatross population appears to be evenly dispersed over the entire WMA and is not concentrated in those areas of the WMA that are explosive-restricted. Given the low reproductive rate and the fact that the juvenile population greatly outnumbers the adult and sub-adult population together, it is of critical importance that naval activities do not unnecessarily drive juvenile birds into the more dangerous coastal waters, as it is very likely that short-tailed albatross populations do not traditionally prefer coastal or shallow waters but are drawn there by commercial fishing activities. The removal of the western half in favor of a southern expansion would also remove naval activities from a large area used for shellfish harvesting, and improve access to deep waters from the marked sections of critical whale habitat (3-5). For example, the proposed WMA could be cut in half vertically (loosely along the 155°0'0"W line) and the southern border of the eastern half expanded until the area is 185,806 square nautical miles. This would greatly improve access to the Alaska Peninsula and is unlikely to adversely affect coastal access on the eastern side since the border angles away from the strip containing Juneau, and western Canada. This would allow greater coastal access for and	increased fuel usage. Lastly, explosives would not be used in the WMA. The WMA would primarily be used for vessel and aircraft maneuvering activities, with one activity potentially using non-explosive projectiles. Therefore, the activities in the WMA, which would occur over no more than a 21 day period is isolated locations within the WMA would not result in widespread disturbance of the short-tailed albatross, as described in the comment. The Navy did consider the data and information presented in (Suryan & Kuletz, 2018) in analyzing potential impacts on short-tailed albatross. Figure 2 in the paper shows the highest densities of the short-tailed albatross occur in the Bering sea and not in the Gulf of Alaska. Figure 3 plots the locations of tagged short-tailed albatrosses in the North Pacific. While juveniles do occur in the Gulf of Alaska, adult albatrosses tend to remain west of the GOA Study Area, including west of the WMA. As noted in the comment, the albatross prefers habitat over the continental shelf and slope. The WMA does not overlap with the continental shelf and slope and would not impact the preferred habitat of short-tailed albatrosses, and the portion of the TMAA that overlaps the continental shelf and slope has been designated by the Navy as a geographic mitigation area (the Continental Shelf and Slope Mitigation Area) where the use of explosives is prohibited. The Navy's proposed activities generally would not overlap with the preferred habitat of the short-tailed albatross, and, therefore, are unlikely to impact individual albatrosses and would not impact the population. On June 1, 2021, the Navy requested reinitiation of consultation with USFWS regarding the Proposed Action. Informal consultation was completed with USFWS on March 29, 2022, with the Service concurring with the Navy's determination that the Proposed Action is not likely to adversely affect listed species (including the Short-tailed Albatross) that fall under the Service's management authority, or their designated critical habitats (refer to Appendix E, Correspondence). As shown in Figure 3.11-2 of Section 3.11 (Socioeconomic Resources and Environmental Justice) in the 2022 Final SEIS/OEIS, the WMA

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	dispersion of the federally-endangered Short-Tailed Albatross population, which already competes with, and is threatened by, commercial fishing activities. Overall, the EIS was written in a misleading manner, with many repetitions of the proposed restrictions on detonations. The restricted areas are not clearly marked on the map, and readers are left to deduce that the sections within thin, squiggly blue lines on a blue background are where detonations will not occur. I am quite disappointed that one of the sources cited (Suryan and Kuletz's 2018 Alaskan albatross population study) clearly would not support the current proposal, yet their findings are glossed over. Readers are told that the short-tailed albatrosses' main breeding colony is in Japan, which is intentionally misleading because it paints the Alaskan population as biologically insignificant when that is clearly not the case. Albatrosses are known for flying great distances; the low number of breeding pairs and your admission that "short-tailed albatross occur in the highest densities at the outer continental shelf-slope regions" means that the Alaskan population are the same birds that breed in Japan (3-7). If the short-tailed albatross is to survive well into this century and beyond, the proposed training area must be changed. Thank you for your attention, Sarah J. P. Griswold References Suryan, R. M. and K. J. Kuletz. "Distribution, Habitat Use, and Conservation of Albatrosses in Alaska." Oregon State University, Iden 72 pp. 156-164, 2018, hmsc.oregonstate.edu/sites/hmsc.oregonstate.edu/files/seabird-oceanography-lab/suryan_and_kuletz_2018_iden_english.pdf. US Fish and Wildlife Service. "Spotlight Species Action Plan: Short-tailed Albatross." Alaska Department of Fish and Game, 2010, www.adfg.alaska.gov/static/species/specialstatus/pdfs/sta_action_	overlaps with very little commercial shellfish harvest areas. The vast majority of shellfish harvest areas are located over the continental shelf, which is located inshore of the WMA.

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	plan.pdf.	
H - J		
Harper, T.	I am 61 years old and a former USCG Health Services Tech. Currently an RN for 24 years. I have 3 grown sons who commercially fish in Kodiak waters. I applaud the U.S. Naval security forces who guard these waters and lands from unfriendlies and encourage real event training in Alaskan waters. Only the Navy has the horsepower to defend this huge area and I appreciate their attempts to minimize fisheries disruption. I realize that this care cannot be perfect but appreciate the work to protect fisheries while having meaningful training. On another note, I look forward to seeing Naval assets based out of Kodiak and the reactivation of Adak Naval Air Station. Thankyou	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
Harrison, R.	I oppose this expansion of Naval exercise area as it will harm our fisheries at a very critical time of the year.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
Hutchinson, R.	I am adamantly opposed to the Navy holding Training Activities in the Gulf of Alaska and the proposed expansion. The disruption to marine life is catastrophic. Alternative methods need to be employed for this training.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
K		
Kazdan, B.	I strongly urge you to schedule Navy training activities in the Fall. Scheduling the war games in May is bad timing for all of the animals and lifeforms that migrate, breed and spawn in the Gulf of Alaska – whales, groundfish, salmon, shark, seals, krill, shellfish, birds and other wildlife. The training activities would disrupt the cycles that are crucial to the environmental balance and vital products of the Arctic.	Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS.
Kogl, D.	The U.S. should promote peace, not war. The military produces nothing of human value providing you discount jobs for youth and profits for weapons manufacturers. Meanwhile, we put our foreign policy into intimidating our allies, unlawfully invading countries, and subverting those large countries who we consider "outsiders". This is not the U.S.A. for which I signed up. A pernicious change started after WW2 that has carried through to this day. We should shrink our military, invest in infrastructure repairs, provide for Univeral health coverage, and decrease the wealth gap. Instead, we flirt with the nuclear death of our planet. Our environment has always taken a back seat to "progress", i.e., exploitation. The foreign and domestic policy of the USA is like a runaway freight train. Somehow, before it's too late, we need a major about-face if we choose to survive and protect our home planet. Put effort into making peace and protecting our planet and environment. Unfortunately, we have done a poor job of doing those things. Expanding the military, exercises, etc. is antithetical to human survival. Best regards, Dennis Kogl	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
L		
Love, D.	This NEPA document needs to be vetting through the public process in an more open and advertised manner. many people do not know this is planned and need more time to comment. Do NOT expand the areas used for Navy training exercises without significant	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. In accordance with NEPA, the Navy has conducted the appropriate level of public review for the Supplement to the Draft SEIS/OEIS. The

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	comment. Please extend the comment period. Thanks for the opportunity to comment	public had an opportunity to review the 38-page document via the website at goaeis.com and public repositories from March 18, 2022 to May 2, 2022.
M		
Mandelstam Balzer, M.	Request strongly that the GOA trainings be held in the fall months - NOT in May in Eyak territory.	Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS. Specifically regarding marine temporal occurrence in the Gulf of Alaska, the Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS.
Morse, D.	As a life resident of Alaska, a citizen of the United States, and an inhabitant of Earth, I want to be clear that the US military has no need to expand these war maneuvers . They are anything but games. They bring unnecessary violence to our oceans, hurt our marine life, and are using huge sums of money, including my taxes, that should be used instead to heal. I do not want the violence. I do not want the pollution. I do not want the noise. Do not expand. Instead, retract. Stop the puffery. My voice is not large. But you should listen. Because I am right. And I am standing on the side of making things better. Violence and practicing violence does not make things better. It exacerbates the pain and brings more violence. Stop wasting our funding. Cultivate peace. Provide excellent health care. Bring goodness to our world. Hear me. Act to make a better world. A peaceful world. Do your best.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
O		
O'Brien, J.	Hello, Thanks for the opportunity to comment. The U.S. Navy protects the nation. Training is critical to performance . The U.S. Navy should be given all the training space they ask for. Best Regards. John O'Brien JR. Juneau,AK	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
P - Q		
Padawer, L.	Dear Navy and Department of Defense, I am writing to provide comments about the Northern Edge Gulf of Alaska trainings. Despite years of public opposition including press and news commentaries, community resolutions opposing (12 City Councils), public and official comments (e.g. NOAA, NMFS and more), and a major 2015 demonstration by Cordova fisherman against both the timing and location of the war games, sentiments and science surrounding May trainings have been ignored. As a resident and business owner I beg you to understand the value salmon has to our economy, to each and every Alaskan, as well as food security for the United States. To speak of only practicality, conducting these trainings makes no sense at such a crucial time of year for salmon. I have read the lengthy response and supporting documents provided by Carol Hoover and the Eyak Preservation Council and echo her comments. I can accept the importance of Arctic defense training for National security, but this location at this time of year is such a devastating reality and a death wish for salmon and countless other species impacted.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS. Specifically regarding marine temporal occurrence in the Gulf of Alaska, the Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	Please, please consider the immeasurable value of these fish and fauna resources for this and future generations. While the world is too busy for most to make comments on this proposal, and my voice may be mute, let my comments stand for a thousand thousand Alaskans. I can't think of one Alaskan who would think this a wise plan, especially given the alternatives to train in less sensitive months, such as the fall/winter. With deep heart, Lauren Padawer	occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS.
Phenix, A.	Please schedule these training exercises in the fall, not in May, when all of the mammals, fish and bird populations migrate, breed and spawn in the Gulf of Alaska. A quote from the Record of Decision (pg. 9): "The Navy has no existing procedural protective measures in place specifically for fish..." Please don't use active sonar until you do.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS. Specifically regarding marine temporal occurrence in the Gulf of Alaska, the Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence ("rec" in the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider.

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS.
R		
Rawlins, J.	Please, please do not hold Gulf of Alaska Navy training in the months of May and June. It is severely impacting the Copper River salmon runs. The salmon return through the Gulf of Alaska to the Copper River and tributaries. The commercial fishermen of Cordova rely on these fish to support their families and community, which helps feed the world with this wonderful, healthy wild salmon. The native peoples of the Copper River territory rely on these fish to feed their families. I know the Navy training is important to our safety in this world, but please consider doing it in the fall of the year. Weather isn't much different than in the spring. Thank you for listening.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. Regarding scheduling, Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS. Regarding potential impacts to Gulf of Alaska salmonids, to understand where salmonids were captured as bycatch within the groundfish fisheries, the Navy reviewed corresponding NMFS bycatch

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		reports (e.g., (Balsiger, 2021; Masuda, 2019) and research trawl surveys (e.g., Beamish and Riddell 2020). To advance the knowledge of fishery-independent knowledge of the marine distribution of Chinook salmon in the northern GOA region, since 2020, the Navy has funded the University of Alaska Fairbanks to conduct a satellite tag survey of large immature Chinook salmon caught near Chignik, Kodiak, and Yakutat, Alaska. The ongoing surveys are tracking Chinook salmon utilization of on-shelf and off-shelf habitats in the GOA, as well as their relative occurrence in the TMAA. The preliminary findings show the vast majority of large immature Chinook salmon occur over the continental shelf and slope. These findings in conjunction with past literature helped lead to the development of the Continental Shelf and Slope Mitigation Area. This mitigation prohibits the detonation of explosives below 10,000 ft. altitude (including at the water surface) over the continental shelf and slope out to the 4,000 m depth contour within the TMAA, which will dramatically reduce potential exposure of explosive impacts to fish occurring over the shelf and slope. The study was designed to avoid the inherent bias of salmonids caught by vessels as either bycatch or research trawl vessels. Preliminary findings for Chinook salmon tagging at the first three locations have been presented in at the 2021 and 2022 Alaska Marine Science Symposiums, the 2021 and 2022 American Fisheries Society Alaska Chapter Meeting, and the fall, 2021 North Pacific Fishery Management Council meetings. The Navy also produced summaries of this data available for review at the March, 2022 ComFish event in Kodiak. The preliminary report and updated findings are included in this SEIS/OEIS. This is an ongoing study, with two additional sites selected for tagging in spring/summer of 2022.
S - U		
Schumm, M.	I am concerned that not enough time has been taken to properly analyze the negative impact increased range of sonar use would have on wild salmon stocks due to this increase in testing area.	When assessing and developing mitigation, the Navy considered reducing active sonar training hours, modifying active sonar sound sources, implementing time-of-day restrictions and restrictions during surface ducting conditions, replacing active sonar training with synthetic activities (e.g., computer simulated training), and

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		implementing active sonar ramp-up procedures. The Navy determined that it would be practical to implement certain restrictions on the use of active sonar in the TMAA, as detailed in Section 5.3.2.1 (Active Sonar) and Section 5.4 (Geographic Mitigation to be Implemented). However, it would be impractical for the Navy to limit all active sonar use due to implications for safety and mission success. Information on why training with active sonar is essential to national security is presented in Section 5.3.2.1 (Active Sonar). For example, the ability to effectively operate active sonar is a highly perishable skill that must be repeatedly practiced during realistic training. The Navy uses active sonar during military readiness activities only when it is essential to training missions. Passive sonar and other available sensors are used in concert with active sonar to the maximum extent practicable. As shown in Figure 3.6-4 in the SEIS/OEIS, all ESA-listed salmonids are capable of detecting sound produced by some mid-frequency sonars and other transducers. Specifically, ESA-listed salmonids may be able to detect some mid-frequency sources operating below 2 kHz, but they are not particularly sensitive to these frequencies. In addition, there are only a few sources utilized within the TMAA that would potentially overlap frequencies ESA-listed salmonids could detect, limiting the overall impact from exposure. Furthermore, due to the short-term, infrequent, and localized nature of these activities, ESA-listed salmonids are unlikely to be exposed multiple times within a short period.
Songer, J.	Explosives being used in the pathway to northward salmon migration especially in May are detrimental to salmon migration!!! While training is necessary for the military, better planning should precede this endeavor! You are killing our salmon and therefore our livelihood!! My husband has been a commercial salmon fisherman for 50 years. I mend gillnets for the fishermen. Our livelihood depends on fishing for salmon. It is obvious you do not understand salmon migration. Please reconsider either your training area or the	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. The Navy continues to review NMFS salmon bycatch reports (e.g., (Balsiger, 2021; Masuda, 2019) to understand where salmonids occurred as bycatch within the groundfish fisheries, and where they were captured in direct research trawl surveys to understand where salmonids may occur, but not necessarily overlap with a commercial fishery (e.g., Beamish and Riddell 2020). The Navy reviewed Alaska Fishery Management Plans, including the *Salmon Fisheries in the EEZ*

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	season!!!! Please!!! I totally love and support the military, but don't become our enemy! We rely on salmon for our living! Joan Songer	*off the Coast of Alaska* (North Pacific Fishery Management Council et al., 2021). The Navy also coordinated with NMFS regarding the GIS layers showing where GOA Essential Fish Habitat (EFH) was designated. The Navy has attended North Pacific Fishery Management Council and other similar meetings to remain current on management decisions and sport, commercial, and subsistence community concerns, as well as attended regional science conferences presenting studies on salmonids, such as Alaska Marine Science Symposium and American Fisheries Society – Alaska Chapter meetings. The Navy also sponsors a booth ComFish in Kodiak, to communicate with, and listen to, the public and commercial fishing communities. To advance the knowledge of fishery-independent knowledge of the marine distribution of Chinook salmon in the northern GOA region, since 2020, the Navy has funded the University of Alaska Fairbanks to conduct a satellite tag survey of large immature Chinook salmon caught near Chignik, Kodiak, and Yakutat, Alaska. The ongoing surveys are tracking Chinook salmon utilization of on-shelf and off-shelf habitats in the GOA, as well as their relative occurrence in the TMAA. The preliminary findings show the vast majority of large immature Chinook salmon occur over the continental shelf and slope (Seitz & Courtney, 2022). The University of Alaska Fairbanks research findings, in conjunction with NPFMC, and NMFS meetings, communication received during Navy outreach efforts, public involvement during the NEPA process, EFH map reviews, and an extensive literature review helped lead to the development of the Continental Shelf and Slope Mitigation Area. As a result, the Navy will not detonate explosives below 10,000 ft. altitude (including at the water surface) during training within the Continental Shelf and Slope Mitigation Area, which extends across the entire continental shelf (including Portlock Bank) and continental slope out to the 4,000 m depth contour within the TMAA. This mitigation area will reduce potential exposure of explosives on salmonids that predominantly occur over the continental shelf and slope.

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
Stark, J.	All I can say is that it really doesn't sound like a good idea to use these types of sonar wave equipment. If it is going to disrupt the creature in the ecosystem. Not Just one or two creatures either! Salmon being at the top of that list. 'The earth does not belong to us. We belong to the earth. In the web of life, what we do to the web, we do to ourselves." Chief Joseph of the Nez Perse Something to think about.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
V		
Vernon, R.	Sirs: I know your job is to kill, but do you have to kill the planet in the process? And to call it a game? Listen, with the amount of fuel the military uses, it alone is provoking global warming. Then to interfere with the reproduction of the ocean, to introduce sonar and explosions in an already stressed marine environment is simply put - stupid! Now you want to quadruple the area that you damage? You want to burn up fuel strutting and bluffing. Say why don't you go practice where the real threat is? Why not put Vladimir a bit back on his heels by taking the bluffs and threats of these war games closer to where the "game" actually is going to occur? That's right the Bering Sea is the most likely area of confrontation. What? You don't want to provoke Putin? You don't want to train in seas where the game will be played. Listen for a branch of the government that is trained to kill, that is twisting the tourniquet tighter with every thousand gallons an aircraft carrier burns, you sure seem to be scared of death. Stop pussyfooting around Putin. If you're going to kill the planet, play the game right.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.
W - Z		
Wilkerson, S.	Holding/conducting/ creating/ having “war games” in or about the Gulf of Alaska during May is extremely counter productive to the Earth’s environment. It is also counter productive to have	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record.

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
	meaningful training because war is never about warm, sunny weather.	Northern Edge is a USINDOPACOM sponsored exercise, led by Headquarters Pacific Air Forces. The joint service training exercise typically occurs every other year during odd number years for approximately a two-week period. The Navy has participated in this or its predecessor exercises for decades and, although naval warships and planes play a vital role in Northern Edge, the Navy does not determine the specific dates for conducting each exercise. USINDOPACOM determines exercise dates based on several factors, to include weather conditions, safety of personnel and equipment, effectiveness of training, availability of forces, deployment schedules, maintenance periods, other exercise schedules within the Pacific region as well as important environmental considerations. The analysis included in the SEIS/OEIS is based upon a determination that exercises will occur at some point during the April through October timeframe. It has been determined that conducting the exercise during the months of November through March would not support safe completion of training objectives, due to weather and oceanic conditions and, therefore, would not meet the purpose and need addressed in this SEIS/OEIS.
Williamson, K.	There is an error in analysis which underestimates the devastation the oceanic fish life will suffer if the military exercises contemplated in this EIS are undertaken. The harm is bad for the Gulf of Alaska ocean fish and mammals, however, having the exercises in the spring, rather than fall, exacerbates the damage. We only have this environment for ourselves, future generations and other creatures. We can't destroy it in the name of protecting ourselves from enemies; if we do, then we are doing to ourselves what the enemy wants to do to us. Killing us and our beautiful world.	Thank you for your participation in the National Environmental Policy Act process. Your comment is part of the official project record. Specifically regarding marine temporal occurrence in the Gulf of Alaska, the Navy cited Rice et al. (2021) in Section 3.8 (Marine Mammals) of the Draft SEIS/OEIS. The paper reports on the seasonal occurrence of cetacean species in the Gulf of Alaska using passive acoustic monitoring. The paper shows that there were more acoustic detections of marine mammals in summer and fall than in spring indicating that the detected species are at least as common, if not more common, in fall and summer than spring and that moving the Northern Edge exercise into fall or summer would not reduce impacts on marine mammals, and may affect more animals. The Cetacean and Sound Mapping (Cetmap) site (https://cetsound.noaa.gov/cda) also reports information on the seasonal occurrence of marine mammals in the Gulf of Alaska. For species with records of occurrence (“rec” in

Table G-7: Responses to Comments from Individual Members of the Public (continued)

Commenter	*Comment*	*Navy Response*
		the chart on the site), the data also appear to show more records of occurrence in fall than in spring. Similar to the results presented in Rice et al. (2021), the Cetmap data would not support the assertion that fewer marine mammal species would be impacted if the Northern Edge exercise were to occur in fall. Lastly, NMFS Alaska Region 2020 marine mammal stranding report (Savage, 2021) shows that, on average, the highest number of reported marine mammals strandings occurs in summer (June–August), and the number of strandings in May and April, when the Northern Edge exercise historically occurs, are approximately the same as the number of strandings that occur in September and October, respectively. The long-term (2000 through 2019) average of stranding records are consistent with the passive acoustic monitoring results from the TMAA reported by Rice et al. (2021) and do not support the assertion that conducting Navy training activities in fall or summer instead of spring would reduce potential impacts on marine mammals. The temporal occurrence of salmon species in the Gulf of Alaska is dependent on lifestage (e.g., adult, juvenile) and season. As summarized in Table 3.6-2 of the SEIS/OEIS, many salmon species are present in summer and fall while others occur year round. For example, juvenile Chinook salmon occur in or adjacent to the Study Area from mid-summer to early fall, and immature adults occur year round. Juvenile Chum salmon are distributed throughout the inner and middle shelf. By the end of their first fall, most fish have moved into offshore waters, which could include the TMAA. The spatial distribution of salmon species is also an important factor to consider. Many species occur predominantly over the continental shelf and slope. The Navy's WMA occurs farther offshore than the continental slope and does not overlap with important marine species habitats on the shelf and slope. The newly developed Continental Shelf and Slope Mitigation Area will avoid potential impacts from explosives on marine species that inhabit waters of the TMAA out to the 4,000 m depth contour, as discussed in Section 5.4 (Geographic Mitigation to be Implemented) of the Final EIS/OEIS.

REFERENCES

Balsiger, J. W. (2021). *2020 Annual Report for the Alaska Groundfish Fisheries Chinook Salmon Coded Wire Tag and Recovery Data for Endangered Species Act Consultation*. Juneau, AK: National Marine Fisheries Service.

Beamish, R. J. and B. E. Riddell. (2020, October 14, 2020). *Gulf of Alaska Expeditions, 2019 and 2020*. Presented at the Pices. Qingdao, China.

Benoit-Bird, K. J., B. L. Southall, M. A. Moline, D. E. Claridge, C. A. Dunn, K. A. Dolan, and D. J. Moretti. (2020). Critical threshold identified in the functional relationship between beaked whales and their prey. *Marine Ecology Progress Series, 654*, 1–16.

Boveng, P. L., J. M. London, and J. M. V. Hoef. (2012). *Distribution and Abundance of Harbor Seals in Cook Inlet, Alaska. Task III: Movements, Marine Habitat Use, Diving Behavior, and Population Structure, 2004-2006* (Final Report. BOEM Report 2012-065). Anchorage, AK: Bureau of Ocean Energy Management, Alaska Outer Continental Shelf Region.

Call, K. A., R. R. Ream, D. Johnson, J. T. Sterling, and R. G. Towell. (2008). Foraging route tactics and site fidelity of adult female northern fur seal (*Callorhinus ursinus*) around the Pribilof Islands. *Deep-Sea Research Part II-Topical Studies in Oceanography, 55*(16–17), 1883–1896.

Carretta, J. V., M. S. Lowry, C. E. Stinchcomb, M. S. Lynn, and R. E. Cosgrove. (2000). *Distribution and abundance of marine mammals at San Clemente Island and surrounding offshore waters: Results from aerial and ground surveys in 1998 and 1999*. La Jolla, CA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Science Center.

Carretta, J. V., B. L. Taylor, and S. J. Chivers. (2001). Abundance and depth distribution of harbor porpoise (*Phocoena phocoena*) in northern California determined from a 1995 ship survey. *Fishery Bulletin, 99*, 29–39.

Danil, K. and J. A. St Leger. (2011). Seabird and dolphin mortality associated with underwater detonation exercises. *Marine Technology Society Journal, 45*(6), 89–95.

DeAngelis, M., L. Saez, J. MacNeil, B. Mate, T. Moore, D. Weller, and W. Perryman. (2011). Spatio-temporal Modeling of the Eastern Pacific Gray Whale's (*Eschrichtius robustus*) Migration Through California, Oregon, and Washington. La Jolla, CA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Science Center.

DeRuiter, S. L., R. Langrock, T. Skirbutas, J. A. Goldbogen, J. Calambokidis, A. S. Friedlaender, and B. L. Southall. (2017). A multivariate mixed hidden Markov model for blue whale behaviour and responses to sound exposure. *The Annals of Applied Statistics, 11*(1), 362–392. DOI:10.1214/16-aoas1008

Doksaeter, L., O. R. Godo, N. O. Handegard, P. H. Kvadsheim, F. P. A. Lam, C. Donovan, and P. J. O. Miller. (2009). Behavioral responses of herring (*Clupea harengus*) to 1–2 and 6–7 kHz sonar signals and killer whale feeding sounds. *The Journal of the Acoustical Society of America, 125*(1), 554–564.

Doksaeter, L., N. O. Handegard, O. R. Godo, P. H. Kvadsheim, and N. Nordlund. (2012). Behavior of captive herring exposed to naval sonar transmissions (1.0–1.6 kHz) throughout a yearly cycle. *The Journal of the Acoustical Society of America, 131*(2), 1632–1642. DOI:10.1121/1.3675944

Dow Piniak, W. E., S. A. Eckert, C. A. Harms, and E. M. Stringer. (2012). *Underwater Hearing Sensitivity of the Leatherback Sea Turtle (Dermochelys coriacea): Assessing the Potential Effect of Anthropogenic Noise* (OCS Study BOEM 2012-01156). Herndon, VA: U.S. Department of the Interior, Bureau of Ocean Energy Management.

Duarte, C. M., L. Chapuis, S. P. Collin, D. P. Costa, R. P. Devassy, V. M. Eguiluz, C. Erbe, T. A. C. Gordon, B. S. Halpern, H. R. Harding, M. N. Havlik, M. Meekan, N. D. Merchant, J. L. Miksis-Olds, M. Parsons, M. Predragovic, A. N. Radford, C. A. Radford, S. D. Simpson, H. Slabbekoorn, E. Staaterman, I. C. V. Opzeeland, J. Winderen, X. Zhang, and F. Juanes. (2021). The soundscape of the Anthropocene ocean. *Science, 5*(371). DOI:10.1126/science.aba4658

Durban, J. W., D. W. Weller, and W. L. Perryman. (2017). *Gray whale abundance estimates from shore-based counts off California in 2014/15 and 2015/16*. Cambridge, United Kingdom: International Whaling Commission.

Falcone, E. A., G. S. Schorr, S. L. Watwood, S. L. DeRuiter, A. N. Zerbini, R. D. Andrews, R. P. Morrissey, and D. J. Moretti. (2017). Diving behaviour of Cuvier's beaked whales exposed to two types of military sonar. *Royal Society Open Science, 4*(170629), 1–21. DOI:10.1098/rsos.170629

Ferguson, M. C., C. Curtice, and J. Harrison. (2015). Biologically important areas for cetaceans within U.S. waters – Gulf of Alaska region. *Aquatic Mammals (Special Issue), 41*(1), 65–78.

Fritz, L., K. Sweeney, R. Towell, and T. Gelatt. (2016). *Aerial and Ship-Based Surveys of Stellar Sea Lions (Eumetopias jubatus) Conducted in Alaska in June–July 2013 through 2015, and an Update on the Status and Trend of the Western Distinct Population Segment in Alaska* (National Oceanic and Atmospheric Administration Technical Memorandum NMFS-AFSC-321). Seattle, WA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.

Goertner, J. F., M. L. Wiley, G. A. Young, and W. W. McDonald. (1994). *Effects of Underwater Explosions on Fish Without Swimbladders*. Silver Spring, MD: Naval Surface Warfare Center.

Goldbogen, J. A., B. L. Southall, S. L. DeRuiter, J. Calambokidis, A. S. Friedlaender, E. L. Hazen, E. A. Falcone, G. S. Schorr, A. Douglas, D. J. Moretti, C. Kyburg, M. F. McKenna, and P. L. Tyack. (2013). Blue whales respond to simulated mid-frequency military sonar. *Proceedings of the Royal Society B: Biological Sciences, 280*(1765), 20130657. DOI:10.1098/rspb.2013.0657

Hansen, K. A., A. Hernandez, T. A. Mooney, M. H. Rasmussen, K. Sorensen, and M. Whalberg. (2020). The common murre (*Uria aalge*), an auk seabird, reacts to underwater sound. *The Journal of the Acoustical Society of America, 147*(6), 4069–4074.

Harris, C. M., L. Thomas, E. A. Falcone, J. Hildebrand, D. Houser, P. H. Kvadsheim, F.-P. A. Lam, P. J. O. Miller, D. J. Moretti, A. J. Read, H. Slabbekoorn, B. L. Southall, P. L. Tyack, D. Wartzok, V. M. Janik, and J. Blanchard. (2018). Marine mammals and sonar: Dose-response studies, the risk-disturbance hypothesis and the role of exposure context. *Journal of Applied Ecology, 55*(1), 396–404. DOI:10.1111/1365-2664.12955

Hobbs, R. C. and J. M. Waite. (2010). Abundance of harbor porpoise (*Phocoena phocoena*) in three Alaskan regions, corrected for observer errors due to perception bias and species misidentification, and corrected for animals submerged from view. *Fishery Bulletin, 108*(3), 251–267.

International Year of the Salmon. (2019). *International Gulf of Alaska Expedition*. Vancouver, Canada: North Pacific Anadromous Fish Commission.

Jefferson, T. A., M. A. Webber, and R. L. Pitman. (2008). *Marine Mammals of the World: A Comprehensive Guide to Their Identification*. London, United Kingdom: Elsevier.

Jones, M. L. and S. L. Swartz. (2002). Gray whale, *Eschrichtius robustus*. In W. F. Perrin, B. (Ed.), *Encyclopedia of Marine Mammals* (pp. 524-536). San Diego, CA: Academic Press.

Jorgensen, R., K. K. Olsen, I. B. Falk-Petersen, and P. Kanapthippilai. (2005). *Investigations of Potential Effects of Low Frequency Sonar Signals on Survival, Development and Behaviour of Fish Larvae and Juveniles*. Tromsø, Norway: University of Tromsø, The Norwegian College of Fishery Science.

Kastelein, R. A., L. Helder-Hoek, S. Cornelisse, L. A. E. Huijser, and R. Gransier. (2019a). Temporary hearing threshold shift in harbor porpoises (*Phocoena phocoena*) due to one-sixth octave noise band at 32 kHz. *Aquatic Mammals, 45*(5), 549–562. DOI:10.1578/am.45.5.2019.549

Kastelein, R. A., L. Helder-Hoek, S. A. Cornelisse, L. N. Defillet, L. A. E. Huijser, and J. M. Terhune. (2020a). Temporary hearing threshold shift in harbor seals (*Phoca vitulina*) due to one-sixth-octave noise bands centered at 0.5, 1, and 2 kHz. *The Journal of the Acoustical Society of America, 148*(6), 3873–3885. DOI:10.1121/10.0002781

Kastelein, R. A., L. Helder-Hoek, S. A. Cornelisse, L. A. E. Huijser, and J. M. Terhune. (2020b). Temporary hearing threshold shift in harbor seals (*Phoca vitulina*) due to a one-sixth-octave noise band centered at 32 kHz. *The Journal of the Acoustical Society of America, 147*(3). DOI:10.1121/10.0000889

Kastelein, R. A., L. Helder-Hoek, S. A. Cornelisse, A. M. von Benda-Beckmann, F. A. Lam, C. A. F. de Jong, and D. R. Ketten. (2020c). Lack of reproducibility of temporary hearing threshold shifts in a harbor porpoise after exposure to repeated airgun sounds. *The Journal of the Acoustical Society of America, 148*(2). DOI:10.1121/10.0001668

Kastelein, R. A., L. Helder-Hoek, R. van Kester, R. Huisman, and R. Gransier. (2019b). Temporary hearing threshold shift in harbor porpoises (*Phocoena phocoena*) due to one-sixth octave noise band at 16 kHz. *Aquatic Mammals, 45*(3), 280–292. DOI:10.1578/am.45.3.2019.280

Kastelein, R. A., L. Hoek, R. Gransier, M. Rambags, and N. Claeys. (2014). Effect of level, duration, and inter-pulse interval of 1–2 kHz sonar signal exposures on harbor porpoise hearing. *The Journal of the Acoustical Society of America, 136*(1), 412–422.

Kuehne, L. M., C. Erbe, E. Ashe, L. T. Bogaard, M. S. Collins, and R. Williams. (2020). Above and below: Military aircraft noise in air and under water at Whidbey Island, Washington. *Journal of Marine Science and Engineering, 8*. DOI:10.3390/jmse8110923

Kvadsheim, P. H. and E. M. Sevaldsen. (2005). *The Potential Impact of 1-8 kHz Active Sonar on Stocks of Juvenile Fish During Sonar Exercises*. Kjeller, Norway: Norwegian Defence Research Establishment.

Masuda, M. M. (2019). *2018 Coded-wire tagged Chinook salmon recoveries in the Gulf of Alaska and Bering Sea-Aleutian Islands (Including 2017 recoveries from U.S. Research)*. Seattle, WA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

McCauley, R. D., R. D. Day, K. M. Swadling, Q. P. Fitzgibbon, R. A. Watson, and J. M. Semmens. (2017). Widely used marine seismic survey air gun operations negatively impact zooplankton. *Nature, 1*(0195). DOI:10.1038/s41559-017-0195

Miller, P. J., R. N. Antunes, P. J. Wensveen, F. I. Samarra, A. C. Alves, P. L. Tyack, P. H. Kvadsheim, L. Kleivane, F. P. Lam, M. A. Ainslie, and L. Thomas. (2014). Dose-response relationships for the

onset of avoidance of sonar by free-ranging killer whales. *The Journal of the Acoustical Society of America, 135*(2), 975–993. DOI:10.1121/1.4861346

Muto, M. M., V. T. Helker, B. J. Delean, R. P. Angliss, P. L. Boveng, J. M. Breiwick, B. M. Brost, M. F. Cameron, P. J. Clapham, S. P. Dahle, M. E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, R. C. Hobbs, Y. V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Shelden, K. L. Sweeney, R. G. Towell, P. R. Wade, J. M. Waite, and A. N. Zerbini. (2019). *Alaska Marine Mammal Stock Assessments, 2019*. Seattle, WA: National Oceanic and Atmospheric Administration, Alaska Fisheries Science Center, Marine Mammal Laboratory.

Muto, M. M., V. T. Helker, B. J. Delean, R. P. Angliss, P. L. Boveng, J. M. Breiwick, B. M. Brost, M. F. Cameron, P. J. Clapham, S. P. Dahle, M. E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, R. C. Hobbs, Y. V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Shelden, K. L. Sweeney, R. G. Towell, P. R. Wade, J. M. Waite, and A. N. Zerbini. (2020a). *Alaska Marine Mammal Stock Assessments, 2019* (NOAA Technical Memorandum NMFS-AFSC-404). Juneau, AK: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.

Muto, M. M., V. T. Helker, B. J. Delean, N. C. Young, J. C. Freed, R. P. Angliss, P. L. Boveng, J. M. Breiwick, B. M. Brost, M. F. Cameron, P. J. Clapham, J. L. Crance, S. P. Dahle, M. E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, K. T. Goetz, R. C. Hobbs, Y. V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Shelden, K. L. Sweeney, R. G. Towell, P. R. Wade, J. M. Waite, and A. N. Zerbini. (2020b). *Draft Alaska Marine Mammal Stock Assessments, 2020* (NOAA Technical Memorandum NMFS-AFSC-XXX). Seattle, WA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.

Neo, Y. Y., J. Seitz, R. A. Kastelein, H. V. Winter, C. Ten Cate, and H. Slabbekoorn. (2014). Temporal structure of sound affects behavioural recovery from noise impact in European seabass. *Biological Conservation, 178*, 65–73. DOI:10.1016/j.biocon.2014.07.012

North Pacific Fishery Management Council. (2014). *Fishery Management Plan for the Scallop Fishery off Alaska*. Anchorage, AK: North Pacific Fishery Management Council.

North Pacific Fishery Management Council. (2019). *Fishery Management Plan for Groundfish of the Gulf of Alaska*. Anchorage, AK: NPFMC.

North Pacific Fishery Management Council, National Marine Fisheries Service, and Alaska Department of Fish and Game. (2021). *Fishery Management Plan for the Salmon Fisheries in the EEZ Off Alaska*. Anchorage, AK: North Pacific Fishery Management Council.

North Pacific Fishery Management Council, National Marine Fisheries Service Alaska Region, and State of Alaska Department of Fish and Game. (2018). *Fishery Management Plan for the Salmon Fisheries in the EEZ Off Alaska*. Anchorage, AK: North Pacific Fishery Management Council.

Nowacek, D., M. Johnson, and P. Tyack. (2004). North Atlantic right whales (*Eubalaena glacialis*) ignore ships but respond to alerting stimuli. *Proceedings of the Royal Society of London, 271*(B), 227–231. DOI:10.1098/rspb.2003.2570

Pakhomov, E. A., C. Deeg, S. Esenkulova, G. Foley, B. P. V. Hunt, A. Ivanov, H. K. Jung, G. Kantakov, A. Kanzeparova, A. Khleborodov, C. Neville, V. Radchenko, I. Shurpa, A. Slabinsky, A. Somov, S. Urawa, A. Vazhova, P. S. Vishnu, C. Waters, L. Weitkamp, M. Zuev, and R. Beamish. (2019). *Summary of Preliminary Findings of the International Gulf of Alaska Expedition Onboard the R/V*

Professor Kaganovskiy During February 16–March 18, 2019. Vancouver, Canada: North Pacific Anadromous Fish Commission.

Peterson, S. H., J. T. Ackerman, and D. P. Costa. (2015). Marine foraging ecology influences mercury bioaccumulation in deep-diving northern elephant seals. *Proceedings of the Royal Society B: Biological Sciences, 282*(20150710), 10. DOI:10.1098/rspb.2015.0710

Pitcher, K. W. and D. C. McAllister. (1981). Movements and haulout behavior of radio-tagged harbor seals, *Phoca vitulina*. *Canadian Field-Naturalist, 95*(3), 292–297.

Popper, A. N. and M. C. Hastings. (2009). The effects of human-generated sound on fish. *Integrative Zoology, 4*, 43–52. DOI:10.1111/j.1749-4877.2008.00134.x

Racca, R., M. Austin, A. Rutenko, and K. Bröker. (2015). Monitoring the gray whale sound exposure mitigation zone and estimating acoustic transmission during a 4-D seismic survey, Sakhalin Island, Russia. *Endangered Species Research, 29*(2), 131–146. DOI:10.3354/esr00703

Rice, A., A. Sirovic, J. Trickey, J. Hildebrand, and S. Baumann-Pickering. (2021, January 26). *Cetacean occurrence in the Gulf of Alaska from long-term passive acoustic monitoring*. Presented at the Alaska Marine Science Symposium. Oral presentation; virtual conference online. Retrieved from https://amss2021.conferencespot.org/event-data/video/026/vid022.

Richmond, D. R., J. T. Yelverton, and E. R. Fletcher. (1973). *Far-Field Underwater-Blast Injuries Produced by Small Charges*. Washington, DC: Lovelace Foundation for Medical Education and Research, Defense Nuclear Agency.

Robinson, P. W., D. P. Costa, D. E. Crocker, J. P. Gallo-Reynoso, C. D. Champagne, M. A. Fowler, C. Goetsch, K. T. Goetz, J. L. Hassrick, L. A. Huckstadt, C. E. Kuhn, J. L. Maresh, S. M. Maxwell, B. I. McDonald, S. H. Peterson, S. E. Simmons, N. M. Teutschel, S. Villegas-Amtmann, and K. Yoda. (2012). Foraging behavior and success of a mesopelagic predator in the northeast Pacific Ocean: Insights from a data-rich species, the northern elephant seal. *PLoS ONE, 7*(5), e36728. DOI:10.1371/journal.pone.0036728

Rone, B. K., A. B. Douglas, T. M. Yack, A. N. Zerbini, T. N. Norris, E. Ferguson, and J. Calambokidis. (2014). *Report for the Gulf of Alaska Line-Transect Survey (GOALS) II: Marine Mammal Occurrence in the Temporary Maritime Activities Area (TMAA)*. Olympia, WA: Cascadia Research Collective.

Rone, B. K., A. N. Zerbini, A. B. Douglas, D. W. Weller, and P. J. Clapham. (2017). Abundance and distribution of cetaceans in the Gulf of Alaska. *Marine Biology, 164*(23), 1–23. DOI:10.1007/s00227-016-3052-2

Savage, K. (2021). *2020 Alaska Region Marine Mammal Stranding Summary.* Juneau, AK: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Region.

Schorr, G. S., E. A. Falcone, D. J. Moretti, and R. D. Andrews. (2014). First long-term behavioral records from Cuvier's beaked whales (*Ziphius cavirostris*) reveal record-breaking dives. *PLoS ONE, 9*(3), e92633. DOI:10.1371/journal.pone.0092633

Seitz, A. C. and M. B. Courtney. (2022). *Telemetry and Genetic Identity of Chinook Salmon in Alaska: Preliminary Report of Satellite Tags Deployed in 2020-2021*. Fairbanks, AK: University of Alaska Fairbanks, College of Fisheries and Ocean Sciences.

Shelden, K. E. W. and J. L. Laake. (2002). Comparison of the offshore distribution of southbound migrating gray whales from aerial survey data collected off Granite Canyon, California, 1976–96. *Journal of Cetacean Research and Management, 4*(1), 53–56.

Simonis, A. E., R. L. Brownell, B. J. Thayre, J. S. Trickey, E. M. Oleson, R. Huntington, and S. Baumann-Pickering. (2020). Co-occurrence of beaked whale strandings and naval sonar in the Mariana Islands, Western Pacific. *Proceedings of the Royal Society, 287*. DOI:10.1098/rspb.2020.0070

Sivle, L. D., P. H. Kvadsheim, and M. A. Ainslie. (2014). Potential for population-level disturbance by active sonar in herring. *ICES Journal of Marine Science, 72*(2), 558–567. DOI:10.1093/icesjms/fsu154

Sivle, L. D., P. H. Kvadsheim, M. A. Ainslie, A. Solow, N. O. Handegard, N. Nordlund, and F. P. A. Lam. (2012). Impact of naval sonar signals on Atlantic herring (*Clupea harengus*) during summer feeding. *ICES Journal of Marine Science, 69*(6), 1078–1085. DOI:10.1093/icesjms/fss080

Slabbekoorn, H., N. Bouton, I. van Opzeeland, A. Coers, C. ten Cate, and A. N. Popper. (2010). A noisy spring: The impact of globally rising underwater sound levels on fish. *Trends in Ecology and Evolution, 25*(7), 419–427. DOI:10.1016/j.tree.2010.04.005

Suryan, R. M. and K. J. Kuletz. (2018). Distribution, habitat use, conservation of albatrosses in Alaska. *Iden, 72*, 156–164.

Sweeney, K., L. Fritz, R. Towell, and T. Gelatt. (2017). *Results of Steller Sea Lion Surveys in Alaska, June-July 2017*. Seattle, WA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center, Marine Mammal Laboratory.

Sweeney, K., R. Towell, and T. Gelatt. (2018). *Results of Steller Sea Lion Surveys in Alaska, June–July 2018*. Seattle, WA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center, Marine Mammal Laboratory.

Towell, R. G., R. R. Ream, and A. E. York. (2006). Decline in northern fur seal (*Callorhinus ursinus*) pup production on the Pribilof Islands. *Marine Mammal Science, 22*(2), 486–491.

Tyack, P. L. and L. Thomas. (2019). Using dose–response functions to improve calculations of the impact of anthropogenic noise. *Aquatic Conservation: Marine and Freshwater Ecosystems, 29*(S1), 242–253.

U.S. Department of the Navy. (2017a). *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)*. San Diego, CA: Space and Naval Warfare Systems Command, Pacific.

U.S. Department of the Navy. (2017b). *Marine Mammal Strandings Associated with U.S. Navy Sonar Activities*. San Diego, CA: U.S. Navy Marine Mammal Program and SPAWAR Naval Facilities Engineering Command.

U.S. Department of the Navy. (2017c). *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (Technical Report prepared by Space and Naval Warfare Systems Center Pacific). San Diego, CA: Naval Undersea Warfare Center.

U.S. Department of the Navy. (2018). *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (Technical Report prepared by NUWC Division Newport, Space and Naval Warfare Systems Center Pacific, G2 Software Systems, and the National Marine Mammal Foundation). Newport, RI: Naval Undersea Warfare Center.

U.S. Department of the Navy. (2020). *U.S. Navy Marine Species Density Database Phase III for the Gulf of Alaska Temporary Maritime Activities Area. NAVFAC Pacific Technical Report*. Pearl Harbor, HI: Naval Facalities Engineering Command Pacific.

U.S. Fish and Wildlife Service. (2008). *Short-Tailed Albatross Recovery Plan*. Anchorage, AK: U.S. Fish and Wildlife Service.

Verfuss, U. K., D. Gillespie, J. Gordon, T. A. Marques, B. Miller, R. Plunkett, J. A. Theriault, D. J. Tollit, D. P. Zitterbart, P. Hubert, and L. Thomas. (2018). Comparing methods suitable for monitoring marine mammals in low visibiity conditions during seismic surveys. *Marine Pollution Bulletin, 126*, 1–18. DOI:10.1016/j.marpolbul.2017.10.034

Withrow, D. E., J. C. Cesarone, and J. L. Bengtson. (1999). Abundance and distribution of harbor seals (*Phoca vitulina richardsi*) for southern Southeast Alaska from Frederick Sound to the US/Canada border in 1998. In A. L. Lopez & D. P. DeMaster (Eds.), *Marine Mammal Protection Act and Endangered Species Act Implementation Program 1998*. Silver Spring, MD: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.

Withrow, D. E. and T. R. Loughlin. (1995). *Haulout Behavior and Method to Estimate the Proportion of Harbor Seals Missed During Molt Census Surveys in Alaska*. Seattle, WA: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.

Wright, A. J. (2015). Sound science: Maintaining numerical and statistical standards in the pursuit of noise exposure criteria for marine mammals. *Frontiers in Marine Science, 2*(99), 1–6. DOI:10.3389/fmars.2015.00099

Yochem, P. K., B. S. Stewart, R. L. DeLong, and D. P. DeMaster. (1987). Diel haul-out patterns and site fidelity of harbor seals (*Phoca vitulina richardsi*) on San Miguel Island, California, in autumn. *Marine Mammal Science, 3*(4), 323–332.

Zeppelin, T., N. Pelland, J. Sterling, B. Brost, S. Melin, D. Johnson, M. A. Lea, and R. Ream. (2019). Migratory strategies of juvenile northern fur seals (*Callorhinus ursinus*): Bridging the gap between pups and adults. *Scientific Reports, 9*. DOI:10.1038/s41598-019-50230-z

Zeppelin, T. K. and R. R. Ream. (2006). Foraging habitats based on the diet of female northern fur seals (*Callorhinus ursinus*) on the Pribilof Islands, Alaska. *Journal of Zoology, 270*(4), 565–576.