DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 224

[Docket No. 141216999–8702–02]

RIN 0648–XD669

Endangered and Threatened Wildlife and Plants; Endangered Status of the Gulf of Mexico Bryde's Whale

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: We (NMFS) issue a final rule to list the Gulf of Mexico Bryde's whale (*Balaenoptera edeni*) (hereafter GOMx Bryde's whale) as endangered under the Endangered Species Act (ESA). We have completed a status review of the GOMx Bryde's whale in response to a petition submitted by the Natural Resource Defense Council. After reviewing the best scientific and commercial data available, including the status review and comments received on the proposed rule, we have determined that the GOMx Bryde's whale is a subspecies of *B. edeni* and warrants listing as endangered. The GOMx Bryde's whale is presently in danger of extinction (*i.e.,* meets the definition of endangered) throughout all of its range due to its small population size and restricted range, and the threats of energy exploration, development and production, oil spills and oil spill response, vessel collision, fishing gear entanglement, and anthropogenic noise. Critical habitat is not determinable at this time but will be proposed in a future rulemaking.

DATES: This final rule is effective on May 15, 2019.

ADDRESSES: Public comments are available at *www.regulations.gov* identified by docket number NOAA–NMFS–2014–0157. A list of references cited in this final rule and other supporting materials are available at: *http://sero.nmfs.noaa.gov/protected_resources/brydes_whale/index.html,* or by submitting a request to the National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, 263 13th Avenue South, St. Petersburg, Florida 33701.

FOR FURTHER INFORMATION CONTACT: Laura Engleby or Calusa Horn, NMFS, Southeast Regional Office, (727) 824–5312, or email: *laura.engleby@noaa.gov* or *calusa.horn@noaa.gov;* or Lisa Manning, NMFS, Office of Protected Resources, (301) 427–8466, or email: *lisa.manning@noaa.gov.* If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Background

On September 18, 2014, we received a petition from the Natural Resources Defense Council to list the Gulf of Mexico population of Bryde's whale (*Balaenoptera edeni*) as an endangered species. The petition stated that the GOMx Bryde's whale is endangered based on at least three of the five section 4(a)(1) factors: Present or threatened destruction, modification, or curtailment of habitat or range; inadequacy of existing regulatory mechanisms; and other natural or manmade factors affecting its continued existence. The petitioner also requested that critical habitat be designated concurrent with listing under the ESA.

On April 6, 2015, we published a 90-day finding in the **Federal Register** that the petition presented substantial scientific and commercial information indicating that the petitioned action may be warranted (80 FR 18343). At that time, we announced the initiation of a formal status review and requested scientific and commercial information from the public, government agencies, scientific community, industry, and any other interested parties on the delineation of, threats to, and the status of the GOMx Bryde's whale. We received eight public comments in response to the 90-day finding, with the majority of comments in support of the petition. The public provided scientific literature, including a recently developed density model and abundance estimate, which was considered in the status review.

To help determine whether the Bryde's whale population in the Gulf of Mexico warrants listing under the ESA, we formed a Status Review Team (SRT) of seven biologists, including six biologists from NOAA Fisheries Science Centers (Southeast, Southwest, and Northeast) and Southeast Regional Office, and one from the Bureau of Safety and Environmental Enforcement—Gulf of Mexico Region, to compile and review the best available scientific and commercial information on Bryde's whales in the Gulf of Mexico and assess their extinction risk. The status review prepared by the SRT summarizes GOMx Bryde's whale taxonomy, distribution, abundance, and life history; identifies threats affecting the status of the species; and describes existing regulatory mechanisms and conservation efforts that affect the species (Rosel *et al.* 2016). The status review incorporates information received in response to our request for information (80 FR 18343; April 6, 2015), and was peer reviewed by three independent scientists with expertise in marine mammal biology, ecology, acoustics, genetics, management and policy, or related fields. Peer reviewer comments were addressed and incorporated, as appropriate, prior to dissemination of the final status review (Rosel *et al.* 2016).

On December 8, 2016, we published a proposed rule to list the GOMx Bryde's whale as endangered (81 FR 88639). We solicited comments on our proposed rule from the public for 75 days (81 FR 88639, December 8, 2016; 81 FR 92760, December 20, 2016; 82 FR 9707, February 8, 2017) and held a public hearing on January 19, 2017, at which we also accepted public comments. We are basing our listing determination on information in the status review, information received from the public, and additional materials cited in this final rule, which comprise the best available scientific and commercial information.

Listing Determinations Under the ESA

We are responsible for determining whether the GOMx Bryde's whale is threatened or endangered under the ESA (16 U.S.C. 1531 *et seq.*). Section 4(b)(1)(A) of the ESA requires us to make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and after taking into account efforts being made by any state or foreign nation to protect the species. To be considered for listing under the ESA, a group of organisms must constitute a ''species,'' which is defined in section 3 of the ESA to include taxonomic species and any subspecies of fish, or wildlife, or plants, and any distinct population segment (DPS) of any species of vertebrate fish or wildlife which interbreeds when mature (section 3(16)). Under our joint regulations with the United States Fish and Wildlife Service (collectively, the Services), we must rely not only on standard taxonomic distinctions, but also on the biological expertise of the agency and the scientific community, to determine if the relevant taxonomic group is a ''species'' for purposes of the ESA (see 50 CFR 424.11(a)). Under section 4(a)(1) of the ESA, we must determine whether any species is endangered or threatened due to any of the following five section 4(a)(1) factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B)

overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence (sections 4(a)(1)(A) through (E)).

Section 3 of the ESA defines an endangered species as ''any species which is in danger of extinction throughout all or a significant portion of its range'' and a threatened species as one ''which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' (sections 3(6) and 3(20)). Thus, we interpret an ''endangered species'' to be one that is presently in danger of extinction. A ''threatened species,'' on the other hand, is not currently at risk of extinction but is likely to become so in the foreseeable future. In other words, the primary statutory difference between a threatened and endangered species is the timing of when a species may be in danger of extinction, either presently (endangered) or in the foreseeable future (threatened).

In determining whether the Gulf of Mexico population of Bryde's whale meets the definition of an endangered or threatened species under the ESA, we first determined that, based on the best scientific data available, the GOMx Bryde's whale is a subspecies of the globally distributed Bryde's whale, and thus eligible for listing under the ESA. We then considered the information on the specific life history and ecology of the species, the nature of threats, the species' response to those threats, and population numbers based on information included in the status review and any additional materials cited in this final rule, as well as the results of the Extinction Risk Assessment (ERA) in the status review. In determining whether the GOMx Bryde's whale is endangered or threatened, the mere identification of factors that could impact a species negatively is not sufficient to compel a finding that ESA listing is appropriate. In considering those factors that might constitute threats, we looked beyond the species' mere exposure to the factor to determine whether the species responds, either to a single threat or multiple threats, in a way that causes actual impacts at the species level. Once we evaluated the threats, we assessed the efforts being made to protect the species to determine if these conservation efforts are adequate to mitigate the existing threats and alter extinction risk. We also considered the public comments received in response to the proposed rule. In making this finding, we have relied on the best available scientific and commercial information.

Public Comments and Our Responses

We requested comments on the proposed rule to list the GOMx Bryde's whale as endangered for an extended 60-day period (81 FR 88639, December 8, 2016; see also 81 FR 92760, December 20, 2016, which corrected the deadline for comment submissions published in the proposed rule). In response to a request to extend the public comment period, we re-opened the public comment period for an additional 15 days (82 FR 9707; February 8, 2017), for a total comment period of 75 days. One public hearing was also held on January 19, 2017, at NOAA Fisheries Southeast Regional Office, in St. Petersburg, Florida.

To facilitate public participation, the proposed rule was made available on our regional web page and comments were accepted via standard mail and through the Federal eRulemaking portal. In addition to the proposed rule, the correction notice, the notice of the re-opening of the comment period, and the status review were also made publically available.

Four people attended the public hearing, three of whom offered oral comments that were similar to their written comments. We received 956 public comments on the proposed rule and supporting documents. We received four sets of comments from groups that were opposed to listing the GOMx Bryde's whale as endangered under the ESA. All other comments supported listing the GOMx Bryde's whale as endangered under the ESA. One commenter attached a form letter that was signed by 11,690 members, as well as an additional 661 letters that were slightly modified versions of the same form letter. Another commenter submitted a letter including signatures from 102,702 members; 2,760 individuals included a unique supportive statement with their signature.

We reviewed all comments received for information relevant to the proposed listing rule. We did not propose to designate critical habitat for the GOMx Bryde's whale in the proposed listing rule, but we requested information on the physical or biological features and areas that may support the life-history needs of the species and that may be designated as critical habitat. The few comments received concerning critical habitat are not germane to this action and will not be addressed in this final rule. However, such comments will be considered and addressed during subsequent rulemaking on critical habitat for the GOMx Bryde's whale. All relevant public comments are addressed in the following summary below. We have categorized comments under major issues and, where appropriate, have combined similar comments from multiple groups or members of the public and addressed them together.

Comments on NMFS' Use of Best Available Science

Comment 1: Joint industry commenters stated that NMFS did not consider information they submitted in response to the request for public comment on the 90-day finding on the petition to list the GOMx Bryde's whale. They stated that the text of the status review suggests the SRT did not review their comments on the 90-day finding, and expressed concern that NMFS did not provide a response to their comment. Thus, the commenters stated that the 12-month finding is not based on the best scientific information available.

Response: As described in the 90-day finding (80 FR 18343; April 6, 2015), and as set forth in the ESA, because we made a positive finding on the petition to list the species, we were required to conduct a review of the status of the species. To that end, we requested information from the public on the GOMx Bryde's whale to inform our review of the status of the species and our determination on whether the petitioned action is warranted. All information received on the 90-day finding, including information the commenters submitted, was considered and relevant information was incorporated into the status review and the proposed rule. We accepted comments on the proposed rule and are responding to those comments at this time.

Comment 2: Several commenters expressed support for the proposed listing determination and agreed that the findings in the proposed rule and status review are consistent with the best available science. One commenter stated that NMFS complied with the ESA requirement to base our listing decision solely on the basis of the best scientific and commercial data available.

Response: We appreciate the commenters' support. Section 4(b)(1)(A) of the ESA requires that listing decisions be made using the best scientific and commercial data available, after conducting a review of the status of the species and considering certain conservation efforts. We relied on the best available scientific and

commercial information contained within the status review and any additional materials cited in this final rule in forming our determination to list the GOMx Bryde's whale as endangered.

Comments on the Extinction Risk Assessment in the Status Review

Comment 3: Joint industry group commenters stated that the SRT's extinction risk assessment was too narrow and biased in favor of finding the species was at a high risk of extinction, and therefore not based on the best scientific information available. The ''severity'' and ''certainty'' ranking systems only allowed the SRT to rank the severity of a threat as low, medium, or high, and only allowed them to find that the amount of the data supporting the conclusions (the certainty) was small, medium, or large. This system did not allow the SRT to determine that a factor does not threaten the species or that certain factors or conditions might benefit the species' abundance. With respect to the certainty ranking, the SRT members could not find that a threat had no scientific support or that a small, medium, or large amount of data disproved the threat. This system also did not allow the SRT to evaluate population stability or persistence. Further, the SRT did not assess the severity and certainty of the Inadequacy of Existing Regulatory Mechanisms. Lastly, the SRT did not analyze whether threats were occurring now or in the future.

Response: We disagree that the SRT's extinction risk assessment was biased in favor of listing. The SRT could have found that a factor did not threaten the species. To inform the extinction risk assessment, the SRT gathered information on threats to the species. Threats are those specific human or natural events or actions that have the potential to impact the species presently or in the future. Thus, if events or actions (hereafter referred to as activities) did not have the potential to impact the species now or in the future, they were not identified as threats and were not considered in the extinction risk analysis. Furthermore, even when an activity was identified as a threat, that did not mean the SRT concluded it was threatening the species, *i.e.,* contributing to the population decline, in its extinction risk assessment. The SRT could conclude an activity was a threat with only low severity and/or a low certainty, and that those threats are unlikely to contribute to population decline. In fact, the SRT found that several activities categorized under section 4(a)(1) factor B were not likely contributing to GOMx Bryde's whale's population decline and, therefore, were not a significant contributing factor in the species' extinction risk. Further, the SRT did evaluate population stability and persistence by means of their demographic risk analysis because a species' continued persistence is directly linked to demographic processes. In particular, demographic risks associated with abundance, population growth rate, spatial structure, and genetic diversity are particularly useful for evaluating extinction risk (McElhany *et al.,* 2000). The SRT evaluated each of these demographic risks.

Further, the SRT did consider actions that may benefit the species, as the SRT reviewed the best scientific and commercial information to determine whether any current or future actions may benefit the GOMx Bryde's whale. The SRT identified two conservation efforts that have the potential to benefit the GOMx Bryde's whale, the Deepwater Horizon Oil Spill Final Programmatic Damage Assessment and Restoration Plan (DWH PDARP) and the Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) (see Conservation Efforts section, Rosel *et al.,* 2016). In the proposed rule, we also evaluated these conservation efforts and determined that the conservation benefits that would be expected from these efforts would not be expected to reduce the extinction risk of the GOMx Bryde's whale. Beyond what we considered in the proposed rule and status review, the commenter did not provide any new information on the conditions that they believed might benefit the species' abundance. Further, as explained in the proposed rule, we summarized existing regulatory mechanisms relevant to threats to the GOMx Bryde's whale generally, and assessed their adequacy for controlling the primary threats identified. While the SRT did not rank the severity and certainty for Inadequacy of Existing Regulatory Mechanisms in its extinction risk assessment, we do not believe that this undermines the SRT's analysis or our reliance on the information in the status review for our listing determination. The SRT assessed the impacts on the species resulting from the underlying unregulated or inadequately regulated threats.

Additionally, the SRT did evaluate whether the threats were occurring now or in the future. In its extinction risk assessment, the SRT stated that current threats are those that are occurring now and that future threats are those that are likely to result in a mounting risk to the species in the next 55 years. The SRT noted that these future threats may or may not be occurring now as well.

Lastly, convening the SRT to compile the best available information about the species' status is an optional process that helps inform, and does not supersede, the agency's listing determination. The SRT does not make listing decisions in its status review. We take into consideration the information provided by the SRT in the status review, but also independently evaluate that information in light of all the factors that govern listing. We thus evaluated the information in the status review and other information that became available to us and, after considering ongoing conservation efforts, we developed our listing determination. The commenters have provided no information on which to base a change to our listing determination.

Comment 4: Joint industry group commenters stated that small population size alone is not an indicator of extinction risk. This is particularly true when a species does not occupy a high trophic level and is not constrained to a small geographic range. In addition, the SRT never compared the population estimate of 100 to 250 mature individuals to Franklin's (1980) rule of thumb to evaluate the risk of inbreeding depression. Conversely, several other commenters believed that the need for protection under the ESA is immediate, due to the GOMx Bryde's whale small population size, restricted range, and exposure to several significant threats.

Response: The status review included a detailed discussion of how small population effects increase extinction risk. The SRT determined, and we agree, that the small size of the GOMx Bryde's whale's population makes it vulnerable to Allee effects, genetic and demographic stochasticity, and stochastic and catastrophic events (*e.g.,* oil spills). The k-selected life history strategy and thus slower population growth rate also reduces the ability of the GOMx Bryde's whale population to recover from low abundance and its ability to withstand additional sources of mortality. Thus, this small population currently faces a host of risks intrinsic to its low abundance that places the GOMx Bryde's whale at greater risk of extinction than if its population were larger. Further, while small population size alone in this instance indicates a high extinction risk, the SRT also relied on other factors in evaluating the GOMx Bryde's whale's extinction risk. In the proposed rule, we summarized the SRT's extinction risk assessment, and explained our determination that the GOMx Bryde's whale is presently in

endanger of extinction (*i.e.,* meets the definition of endangered) throughout all of its range due to multiple threats including energy exploration, development, and production, oil spills and oil spill response, vessel collision, fishing gear entanglement, and anthropogenic noise. We also noted that due to this species' small population size and restricted range, it is particularly susceptible to those threats, and explained the risks inherent to a small population size. Thus, we agree with the commenters who stated that the need for protection under the ESA is immediate.

The SRT considered Franklin's (1980) rule of thumb in evaluating the species' extinction risk. Franklin (1980) proposed the ''50/500'' rule that populations with an effective population size under 50 are near extinction and that populations with an effective size of fewer than 500 are at long-term risk of extinction. As explained in the status review, Franklin also suggested that populations with fewer than 250 mature individuals are at a level where genetic diversity will erode due to genetic drift, leaving the species less fit through time and at long-term risk of extinction (Franklin 1980). The SRT determined that a dangerously small population for GOMx Bryde's whales would be defined as a population either having equal to or fewer than 250 mature individuals or a population found in a spatial configuration vulnerable to a single catastrophic event that could drive the taxon to near extinction (*i.e.,* ≤ 50 mature individuals) in a very short time (for more discussion see Rosel *et al.* 2016). All recent studies have provided estimates that indicate the total abundance of the GOMx Bryde's whale is fewer than 100 individuals, with 50 or fewer being mature. These low numbers support our listing determination for the Bryde's whale.

Comments on Identification of the GOMx Bryde's Whale as a Subspecies

Comment 5: Joint industry commenters stated that NMFS improperly ''created'' a subspecies for the purpose of this listing and that NMFS does not have the authority under the ESA to create a subspecies for listing before independent scientific organizations have officially recognized the classification. The commenters suggest that the Services' joint regulations implementing the ESA at 50 CFR 424.11(a), which provide standards for the Services to apply when recognizing taxonomic groups eligible for listing under the ESA, are outside the Services' authority under the ESA. The commenters stated that NMFS' ability to create taxonomic units for purpose of listing under the ESA is largely limited to the creation of DPSs, and in addition to reliance on the best available scientific information, the factors used to recognize a DPS are the minimal criteria that should guide NMFS' recognition of taxonomic classifications, to the extent the agency has the authority to make such a recognition.

Response: The ESA defines ''species'' as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature. Section 3(16); *see also* 50 CFR 424.02 (defining species). Under the Services' joint regulations implementing the ESA, in determining whether a particular taxon or population is a species for the purposes of the Act, the Secretary shall rely on standard taxonomic distinctions and the biological expertise of the Department and the scientific community concerning the relevant taxonomic group. 50 CFR 424.11(a). The Services issued this regulation based on their authority under the ESA. The regulation does not impermissibly expand the Services' authority to list species, but rather explains how the Services will exercise their discretion to determine whether an entity qualifies as a ''species'' as defined in the ESA and is thus eligible for listing. *See, e.g., Am. Wildlands* v. *Kempthorne,* 478 F. Supp. 2d 92 (D.D.C. 2007).

Under the regulations, we can rely on ''standard taxonomic distinctions'' as well as our biological expertise and that of the scientific community in determining whether a taxon is a species eligible for listing under the ESA. Thus, neither the statute nor the Services' regulations require formal recognition by independent scientific organizations before we can classify a group of individuals as a subspecies eligible for listing. Instead, such ''standard taxonomic distinctions'' are just one basis for our classification, and should be relied upon only when they represent the best available scientific information. Likewise, we need not await scientific ''consensus'' before we can recognize a population as a species eligible for listing. *Alabama-Tombigbee Rivers Coalition* v. *Kempthorne,* 477 F.3d 1250, 1260 (11th Cir. 2007) (''Given the nature of taxonomy, it would be surprising if there were not some disagreement about the proper classification of the Alabama sturgeon, but disagreement in the field does not preclude agency decision making.''); *cf. Nw. Ecosystem Alliance* v. *U.S. Fish & Wildlife Serv.,* 475 F.3d 1136, 1147 (9th Cir. 2007); *Defenders of Wildlife* v. *Babbitt,* 958 F. Supp. 670, 679 (D.D.C. 1997).

For the same reasons, we also disagree with commenters that identifying a DPS pursuant to the DPS Policy is the only means by which we can recognize a taxonomic unit eligible for listing, or that the policy provides the required minimum criteria for determining whether a group of individuals are a ''species'' eligible for listing under the ESA. Moreover, after determining that the GOMx Bryde's whale should be considered a species under the ESA based on the best available scientific and commercial information, the SRT did consider the relevant factors under the DPS Policy (Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the ESA, 61 FR 4722, February 7, 1996). Under that policy, to identify a DPS, NMFS evaluates the discreteness of the population segment in relation to the remainder of the species to which it belongs and the significance of the population segment to the species to which it belongs (61 FR 4722, 4725, February 7, 1996). The SRT explained that although the GOMx Bryde's whales would meet the discreteness and significance criteria for a DPS, the best available scientific and commercial information indicates the GOMx Bryde's whale is a taxonomically distinct subspecies. Because we determined the GOMx Bryde's whale is a taxonomically distinct subspecies, we did not further consider whether the GOMx Bryde's whale population is a DPS.

Comment 6: Joint industry commenters stated that the proposed rule is invalid because there is no scientific consensus that the GOMx Bryde's whale is a subspecies. NMFS has not presented evidence that any scientific organization has adopted or is considering adopting the classification. The commenters noted that the Society of Marine Mammalogy Committee on Taxonomy (SMM Committee) does not include GOMx Bryde's whale on its list of species and subspecies, which confirms they do not view the GOMx Bryde's whale as a subspecies. The commenters also noted that the International Whaling Commission (IWC) and the International Union for Conservation of Nature do not recognize the GOMx Bryde's whale as a subspecies. NMFS has previously appropriately recognized and relied on a subspecies classification before it was adopted by the larger scientific community in other listing rules, but in those cases, NMFS' view of the taxonomy mirrored scientific consensus.

Therefore, the commenters concluded, the best available scientific information is that the GOMx Bryde's whale is not a subspecies. The State of Louisiana commented that they could not support the proposed rule because the subspecies determination is based in a single publication (referring to Rosel and Wilcox (2014)).

Response: We find that the best scientific and commercial information available demonstrates that the GOMx Bryde's whale is a taxonomically distinct subspecies from other Bryde's whales worldwide and that we need not await further confirmation from other scientific organizations before recognizing the population as a subspecies and listing it as an endangered species under the ESA. As we explained in the proposed rule, at the request of the SRT, the SMM Committee provided their scientific opinion that it is highly likely that the Bryde's whales in the Gulf of Mexico are at least an undescribed subspecies of what is currently recognized as *B. edeni.* In May 2016, the SMM Committee updated its list of marine mammal species and subspecies and stated that a new subspecies-level taxonomic action for Bryde's whale based on Rosel and Wilcox (2014) may be proposed and addressed in a future update to the Society of Marine Mammalogy list of marine mammal species and subspecies. The most recent update from July 2017 continues to note that the action is forthcoming (Society for Marine Mammalogy, Committee on Taxonomy, List of Marine Mammal Species and Subspecies, 2017, *https://www.marinemammalscience.org/species-information/list-marine-mammal-species-subspecies/*). In the report from their recent meeting in May 2017, the IWC Scientific Committee agreed that GOMx Bryde's whale ranked as at least a separate subspecies, and possibly a species, and stated their concern about its continued survival. Further, the IWC recommended that ''U.S. authorities use all available legal and regulatory tools to provide the maximum protection for this population'' (IWC, Report of the Scientific Committee, 2017, available at *https://iwc.int/scientific-committee-report-published*). Although we do not need to await scientific consensus to validate our view of the best available scientific information, nor does the ESA require us to delay a listing determination for such consensus (see also response to Comment 5), we find that there is substantial support within the scientific community that the GOMx Bryde's whale is at least a subspecies. Furthermore, as the commenters noted, NMFS has previously recognized subspecies classifications before their formal adoption by the larger scientific community—for example in identifying the appropriate reference taxon for completing a DPS analysis for Southern Resident killer whales (70 FR 69903, Nov. 18, 2005) and humpback whales (81 FR 62260, Sept. 8, 2016). In these cases, we listed DPSs of unrecognized subspecies of Resident killer whales in the North Pacific and several unrecognized subspecies of humpback whales.

Finally, we did not base our determination that the GOMx Bryde's whale is a subspecies solely on Rosel and Wilcox (2014); we also considered the opinion of scientific experts, including the SMM Committee, as discussed above. In addition, we disagree that the mtDNA evidence in Rosel and Wilcox (2014) is insufficient to use in establishing that the GOMx Bryde's whale is a subspecies. Rosel and Wilcox (2014) found that GOMx Bryde's whales exhibited very low levels of genetic diversity and are evolutionarily distinct from all other members of the Bryde's whale complex based on mtDNA and phylogenetic (evolutionary) analyses. As we explained in the proposed rule, Rosel and Wilcox (2014) concluded that this suggests a unique evolutionary trajectory for the Gulf of Mexico population of Bryde's whale, worthy of its own taxonomic standing, and we agree. We conclude the best scientific and commercial information available demonstrates that the Bryde's whale in the Gulf of Mexico is a subspecies.

Comment 7: Joint industry commenters stated that the SRT's request to the SMM Committee was too narrow to generate a response that could validate the SRT's conclusion that the GOMx Bryde's whale was a new subspecies. In particular, the commenters asserted that the SRT should have requested that the SMM Committee consider the taxonomic status of Bryde's whales in the Gulf of Mexico and officially recognize the GOMx Bryde's whale as a separate subspecies. In addition, the commenters stated that the SRT provided irrelevant background information and omitted additional relevant information such as the population estimate in Roberts *et al.,* (2016), or evidence of Bryde's whales in the Atlantic. Finally, given the overlap between members of the SRT and the SMM Committee, any opinion from the SMM Committee could not validate the SRT's conclusion or be used to demonstrate that the conclusion was shared among multiple, independent sources.

Response: We disagree and find that the question was appropriately posed to the SMM Committee. The SRT asked the SMM Committee whether the Bryde's whales in the Gulf of Mexico are ''likely to belong to at least an undescribed subspecies of what is currently recognized as *Balaenoptera edeni.*'' The SRT also asked the SMM Committee to rate the likelihood of subspecies status as high or low based on their expert opinion (see Appendix 1, Rosel *et al.,* (2016), containing the document sent to the SMM Committee). The SRT sought an additional expert opinion on the taxonomic status of the GOMx Bryde's whale to inform their conclusions, which were not yet finalized. Thus, the SRT posed the general question seeking the SMM Committee's view of the taxonomic status and the certainty in their conclusion. The SMM Committee could decide to update their list after reviewing the request, and have indicated that they intend to do so, based on the findings in Rosel and Wilcox (2014).

The request to the SMM Committee included relevant information and omitted no key information necessary to assess the taxonomic status of the GOMx Bryde's whale. The request contained the relevant background on the ESA listing petition that initiated the species status review, a summary of information on the species, including population estimates, and presented the genetic evidence, with a list of references, including Rosel and Wilcox (2014), required to assess the taxonomic status of those Bryde's whales in the Gulf of Mexico relative to Bryde's whales worldwide. The document sent to the SMM Committee noted the strandings in the Atlantic when discussing Rosel and Wilcox (2014). Thus, the SMM Committee was provided evidence of Bryde's whales in the Atlantic.

Species, subspecies, and DPSs can be delineated based on morphological traits, behavior, and genetics; such lines of evidence are not mutually exclusive. We do not agree that it was necessary for the SRT to provide the SMM the Roberts *et al.* (2016) abundance estimates for Bryde's whales from their U.S. East Coast or Gulf of Mexico models. First, subspecies delineation is not contingent upon abundance estimates or population size. Secondly, NMFS has records of six stranded Bryde's whales along the U.S. East Coast from 1923 to present, but considers these extralimital occurrences. Comparisons of mtDNA from available U.S. East Coast strandings (n=2)

matched that of Bryde's whales found in the Gulf of Mexico. Last, no Bryde's whales have been definitively recorded in the U.S. Atlantic during aerial and shipboard surveys conducted between 1994 and 2016, nor have any Bryde's whales been definitively detected by acoustic surveys conducted along the U.S. Atlantic Coast. While Roberts *et al.* (2016) treated unidentified sightings of baleen whales in the U.S. Atlantic as possibly Bryde's whales or sei whales, there is no definitive evidence that those sightings might be Bryde's whales, much less that they form a Atlantic population. For these reasons, we conclude that the Robert's *et al.* (2016) abundance estimates were not relevant to the question of whether Bryde's whales in the Gulf of Mexico are likely to belong to an undescribed subspecies.

Finally, as explained in the proposed rule, nine SMM Committee members, none of whom were on the SRT, provided their independent opinion. Thus, we find that the SRT's conclusions and the basis for our listing determination are shared among different experts in the field.

Comment 8: Joint industry commenters stated that NMFS improperly relied on Rosel and Wilcox (2014) to determine that the GOMx Bryde's whale is a genetically distinct subspecies, given commenters' concerns with the potential for misidentification of whales and samples within the Bryde's whale complex. According to the commenters, Rosel and Wilcox (2014) based their conclusion on a comparison of samples from 23 individuals assumed to be GOMx Bryde's whales, including 21 individual Bryde's whales sampled in the Gulf of Mexico and two individuals stranded in the North Atlantic, to samples from four whales encountered off the coast of Japan. According to the commenters, the authors analyzed three new DNA samples obtained from individuals stranded in the Gulf of Mexico and two new samples from individuals stranded in the Northwest Atlantic, but the source for the remaining samples of whales from the Gulf of Mexico population was not identified. The commenters stated that the samples may have been taken from GenBank, which they stated increases the likelihood of misidentification due to the contradictory nomenclature used to identify species samples suspected to be in the Bryde's whale complex. In addition, the commenters state that the reference whales sampled from the waters surrounding Japan were assigned their classifications based on the disputed morphological analysis proposed in Wada *et al.* (2003), and this is not an appropriate reference set. Commenters also stated that Rosel and Wilcox (2014) indicate that *B. e. brydei* is more closely related to sei whales than to *B. e. edeni.*

Response: We disagree with the commenters' characterization of the samples used in Rosel and Wilcox (2014) and statement that we improperly relied on this study in determining that the GOMx Bryde's whale is a subspecies. In making our determination, we are relying on the best available scientific information, including Rosel and Wilcox (2014) and the SMM Committee's expert opinion on the taxonomic status, and the commenters have not identified any additional or superior scientific information. As stated in Rosel and Wilcox (2014), the authors originally extracted and sequenced DNA from 23 Bryde's whales encountered and sampled in the Gulf of Mexico (including three stranded whales) and two whales that stranded in the western North Atlantic. Regarding the whales encountered and sampled in the Gulf of Mexico, they identified two sets of duplicates, indicating that two whales had been sampled twice. After excluding these duplicates, the authors analyzed 23 samples representing 23 individuals from the Gulf of Mexico population—*i.e.,* the 21 unique individuals sampled in the Gulf of Mexico and the two individuals stranded in the western North Atlantic —to determine genetic similarity among those whales and to compare DNA sequence data collected from individuals encountered worldwide. In particular, they compared the 23 samples of the Gulf of Mexico population to data from 472 individuals representing Bryde's whale complex samples worldwide, not just four from the coast of Japan (see Rosel and Wilcox, 2014, supplement at: *www.int-res.com/articles/suppl/n025p019_supp.pdf*). The worldwide scope of samples used in the analyses is illustrated in Figure 4 of Rosel and Wilcox (2014). The authors determined that mtDNA diversity was very low among the Gulf of Mexico whales and that the Gulf of Mexico whales were phylogenetically distinct from all other Bryde's whales that have been examined, and we agree with this analysis.

With respect to the origin of the samples from the whales encountered in the Gulf of Mexico (not the individuals that stranded in the Gulf of Mexico and North Atlantic), as stated in the Results section of Rosel and Wilcox (2014), the samples were obtained by scientists during field surveys and the genetic data from those samples was later submitted to GenBank. The worldwide samples were obtained from GenBank, however, we do not agree with the commenters that the samples were misidentified in Rosel and Wilcox (2014). Samples from species within the Bryde's whale complex in GenBank may be labeled based on evolving taxonomy. For example, in 2003, Wada *et al.* (2003) identified another species in the Bryde's complex, *B. omurai.* Therefore, prior to 2003, samples could not be submitted to GenBank under that name. Furthermore, GenBank currently only recognizes the two species within the complex, *B. edeni* and *B. omurai,* and does not have an option to submit samples under the subspecies of *B. edeni, B. edeni edeni* or *B. edeni brydei,* even though the scientific community recognizes that these are two taxonomically distinct subspecies of *B. edeni.*

Rosel and Wilcox (2014) noted the evolving taxonomy. To assign names to the different groupings identified in their phylogenetic analysis (*i.e.,* to assign a taxonomic classification to each clade or grouping of the phylogenetic tree), Rosel and Wilcox (2014) used the DNA sequences from Sasaki *et al.* (2006); they did not rely on how the samples were labeled in GenBank or otherwise identified. Sasaki *et al.* (2006) sequenced 4 samples from whales encountered off Japan, meaning they identified a genetic sequence applicable to each. These whales were morphologically identified as *B. edeni edeni, B. edeni brydei,* and *B. omurai* following Wada *et al.* (2003). The phylogenetic analysis in Rosel and Wilcox (2014) consistently showed that GOMx Bryde's whales grouped together as a separate clade (or group) on the phylogenetic tree, regardless of how those clades would be taxonomically identified or named. This illustrates their phylogenetic distinctiveness. Rosel and Wilcox (2014) also performed a character attributes analysis on the samples, and this analysis illustrated that there are multiple diagnostic differences in mtDNA control region sequences among members of the Bryde's whale complex (*i.e., B. omurai, B. edeni edeni,* and *B. edeni brydei*), making correct identification of sequences straightforward. Therefore, we find that the information from the GenBank samples as applied by Rosel and Wilcox (2014) is reliable.

We also disagree that the analysis in Rosel and Wilcox (2014) is flawed because of its reliance on Wada *et al.* (2003) and Sasaki *et al.,* (2006). As noted in Rosel and Wilcox (2014), taxonomic uncertainties exist as to whether the *B. e. edeni* and *B. e. brydei,*

the two recognized subspecies of *B.edeni,* should be recognized as full species, not subspecies, as suggested in Wada *et al.* (2003). The ongoing discussion within the taxonomic community as to the number of species and subspecies within the Bryde's whale complex is not directly relevant to our listing determination for the GOMx Bryde's whale. Until that issue is resolved, the accepted taxonomy is that there are two species in the complex, *B. edeni* and *B. omurai,* and two subspecies of *B. edeni, B.e. edeni* and *B.e. brydei.* The best available scientific information establishes that the GOMx Bryde's whale is a genetically isolated unit and is distinct from other whales within the Bryde's whale complex (*B.e. edeni, B.e. brydei,* and *B. omurai*). Thus, based on the current recognized taxonomic standing, we determined it is appropriate to list the GOMx Bryde's whales as a subspecies of *B. edeni.* Rosel and Wilcox (2014) did not indicate that *B. edeni brydei* is more closely related to sei whales than to *B. e. edeni.* This study found significant differences between GOMx Bryde's whale haplotypes and those from sei whales and the two recognized Bryde's whale subspecies (*B. edeni edeni* and *B. edeni brydei*).

Comment 9: Industry commenters stated that the disputed taxonomic status of the Bryde's whale complex casts doubt on the decision to recognize the GOMx Bryde's whale as a genetically distinct subspecies. In support, the commenters stated that Wada *et al.* (2003) concluded that *B. e. brydei, B. e. edeni, and B. omurai* are three species based on morphology; that Sazaki (2006) used genetic data to confirm those results, but suggested that *B. e. edeni* and *B. e. brydei* may be in the same genetic complex as the sei whale (*Balaenoptera borealis*); and that Kato and Perrin (2009) evaluated Wada *et al.* (2003) and Sazaki (2006) and questioned the suggestion that *B. e. edeni* and *B. e. brydei* should be considered full species. The commenters stated that Kato and Perrin (2009) noted that these studies are based on discrete regions and that global studies have to be undertaken. The commenters stated that the Rosel and Wilcox (2014) study does not settle this taxonomic question.

Response: As explained in the status review, the scientific community has been considering whether the two recognized subspecies of Bryde's whales, Eden's whales (*B. e. edeni*) and Bryde's whales (*B. e. brydei*), should be categorized as two different species. In a morphological comparison of Omura's whale (*B. omurai*) with other members of the Bryde's whale complex, Wada *et al.* (2003) suggested that *B. omurai* and the recognized subspecies (*i.e., B. e. edeni* and *B. e. brydei*) should be considered three distinct species: *B. omurai, B. edeni,* and *B. brydei.* The morphological work of Wada *et al.* (2003) is not disputed. That work resulted in the naming of a new species, Omura's whale, *B. omurai,* that has been well accepted by the cetacean research community, including the IWC. Omura's whale, *B. omurai,* is on the official list of marine mammal species curated by the SMM. Sasaki's *et al.* (2006) genetic analysis supported the morphological findings in Wada *et al.* (2003), which indicated that Omura's whale (*B. omurai*) is a distinct species, and together these analyses suggest that the species has long been on a separate evolutionary pathway. The SMM Committee currently recognizes Omura's whale species, *B. omurai,* and a single Bryde's whale species, *B. edeni,* and is awaiting further analysis of the two Bryde's whale subspecies (*i.e., B. e. edeni* and *B. e. brydei*) to determine whether these two recognized subspecies are actually two separate species. We reviewed Kato and Perrin (2009), and we conclude that it continues the discussions related to how many species, not subspecies, are recognized within the complex. However, we do not believe Kato and Perrin (2009) call into question our determination that the GOMx Bryde's whale is a subspecies of Bryde's whales (*B. edeni*). As explained in response to Comment 8, Rosel and Wilcox (2014) relied on the accepted taxonomy—that there are two species in the complex, *B. edeni* and *B. omurai,* and two subspecies of *B. edeni, B.e. edeni* and *B.e. brydei*—and found that the GOMx Bryde's whale is genetically isolated and is distinct from other whales within the Bryde's whale complex such that it should be classified as a subspecies of *B. edeni.*

Comment 10: Joint industry commenters stated that the best scientific information, including Rosel and Wilcox (2014), shows that GOMx Bryde's whales are genetically indistinct from whales in the North Atlantic Ocean and possibly elsewhere and thus may be part of a larger, discontinuous population, with population connectivity aligning with ocean currents. Commenters stated that Rosel and Wilcox (2014) should not have relied on samples from GenBank because those samples may be mislabeled or misidentified, and that without the samples, the study is an evaluation of five samples, three from individuals stranded in the Gulf of Mexico and two from individuals stranded in the North Atlantic. Because two of the five samples (40 percent) used in Rosel and Wilcox (2014) were from whales in the North Atlantic that were found to be genetically identical to those in the Gulf of Mexico, the study suggests there is a discontinuous population across the Gulf of Mexico and North Atlantic. The commenters do not agree that the two North Atlantic samples were stray Bryde's whales from the Gulf of Mexico that had stranded in the Atlantic. In addition, studies published since 2014 identifying the presence of subspecies *B.e. brydei* in the southern Caribbean and southern Brazil, and observations of *B. omurai* in northern Brazil, West Africa, and off Madagascar, establish that the GOMx Bryde's whales could be connected to a larger, unidentified discontinuous population.

Response: As described herein, the total number of unique genetic samples of GOMx Bryde's whales used in Rosel and Wilcox (2014) was 23; of which 20 were from skin biopsies obtained during NMFS cetacean surveys in the Gulf of Mexico and three were tissue samples from stranded animals (one from the Gulf of Mexico and two from the Southeast U.S. Atlantic coast). Less than nine percent of the samples from the Gulf of Mexico population were from the Atlantic, not 40 percent. The sequences from these samples were submitted to GenBank as part of the publication process for Rosel and Wilcox (2014). We disagree that these samples need to be disregarded.

We do not believe that the GOMx Bryde's whales are part of a larger group of interconnected populations. If that were the case, genetic diversity would be expected to be much higher than what was found because there would be genetic exchange between populations. The two stranded animals from the Southeast U.S. Atlantic coast had identical DNA sequences to all the Bryde's whales from the Gulf of Mexico over the 375 base pair (bp) fragment that was the primary alignment used for all analyses, and this sequence differed from the worldwide samples. Therefore, NMFS concurs with Rosel and Wilcox (2014) that the two stranded whales from North Carolina and South Carolina are GOMx Bryde's whales. Rosel and Wilcox (2014) also examined genetic samples from other regions in the Atlantic, including the Azores and Canary Islands, and more recently the southern Caribbean and Brazil, and found that these samples were clearly genetically distinct from the whales from the Gulf of Mexico, including the

two North Atlantic strandings. Thus, we disagree that the GOMx Bryde's whale could be part of a much larger population existing elsewhere. Nor do we find that the genetic similarity of the whales stranded on the east coast of the United States suggests there is a discontinuous population of Bryde's whales across the Gulf of Mexico and North Atlantic. Species resident in the Gulf of Mexico may strand in the Atlantic. Equally plausible is that the individuals were sick and/or injured, but alive, and swam out of the Gulf of Mexico, with the currents, and stranded along the east coast of the United States. The most recent recorded stranding of a GOMx Bryde's whale along the east coast was a whale that stranded in North Carolina in 2003. It was entangled in black polypropylene line and was extremely emaciated. The cause of stranding for other whales is unavailable. Extralimital strandings on the Atlantic Coast of whales from the Gulf of Mexico and other areas are possible (Mead 1977). Similarly, strandings in the Gulf of Mexico have been documented for several individuals of multiple baleen whale species not routinely seen there (Jefferson and Schiro 1997). In addition, north Atlantic right whales are typically found in the western North Atlantic; however, a few extralimital sightings have occurred in the Gulf of Mexico (Ward *et al.* 2011). For all of these reasons, NMFS believes the best available information suggests the two GOMx Bryde's whales that stranded along the Southeast U.S. Atlantic represent extralimital occurrences.

Commenters presented no additional information on GOMx Bryde's whale distribution that casts doubt on our findings. The studies related to *B.e. brydei* (Luksenburg *et al.,* 2015; Pastene *et al.,* 2015) were considered in the status review. The SRT included these studies, among others, in the description of the distribution and habitat use of *B.e. brydei* in the Atlantic Ocean in the status review (Rosel *et al.,* 2016). The studies the commenter cites on *B. omurai* (Cypriano-Souza, 2016; Jung 2016; Cerchio *et al.,* 2015) are not part of the status review or proposed rule because *B. omurai* is recognized as an entirely different species and thus this information does not add to our understanding of the distribution of the GOMx Bryde's whale or whales within *B. edeni.*

Comment 11: Joint industry commenters questioned NMFS' reliance on Rosel and Wilcox (2014) because of its reliance on differences in mtDNA between species from the Gulf of Mexico and elsewhere. The commenters stated that genetic data alone are rarely sufficient to make a taxonomic distinction and are insufficient in this instance. The commenters stated that subspecies are traditionally defined by morphological traits, color variation, or behavior differences and that GOMx Bryde's whales are morphologically identical to Bryde's whales worldwide. Even if the mtDNA patterns showed a statistically significant differentiation between oceans, mtDNA, which is maternally inherited, cannot alone describe population structure without additional information on male and female movement patterns. The commenters stated that NMFS recognized this fact in its ''Not Warranted'' 12-month Finding on a Petition to List Sperm Whales in the Gulf of Mexico as a Distinct Population Segment (79 FR 68032). The commenters further stated that the difference in mtDNA may indicate discreteness in populations where movement patterns of male and female are the same, but these patterns are not known for Bryde's whales. According to the commenter, the limited Bryde's whale tagging data and migratory patterns are disputed, but commenters state that recent satellite tracking data of two *B. edeni* whales in the North Pacific travelling longer distances than previously known demonstrates an increased potential for population connectivity over long distances. Thus, the commenters stated that a comprehensive analysis of genetic differentiation requires more extensive evaluation of paternally inherited genes.

Response: We find that reliance on mtDNA evaluation to support the listing is appropriate. Rosel and Wilcox (2014) looked at differences among mtDNA samples in a control region as well as differences in other markers (nuclear microsatellite loci) to evaluate the genetic diversity of Bryde's whales in the Gulf of Mexico and concluded that the low level of differentiation, as well as the differences between of those Gulf of Mexico whales and other members of the Bryde's whale complex, suggest they are an isolated unit. We agree with those findings. In this case, it is appropriate to look at the differences in mtDNA to determine the genetic distinctiveness of the Gulf of Mexico Bryde's whales relative to each other, and to the worldwide complex. As we explained in our determination concerning sperm whales in the Gulf of Mexico (61 FR 4722; February 7, 1996), mtDNA may indicate that populations are discrete (as that term is used in our DPS Policy) where male and female movement patterns are the same. However, because mtDNA information is maternally inherited, in species where female and male movement patterns differ, as in the case of sperm whales for example, analysis of nuclear DNA (nDNA), which is inherited from both parents, may indicate that the populations are not discrete (see *e.g.,* loggerhead sea turtle, 68 FR 53947, September 15, 2003, at 53950–51 and Conant *et al.,* 2009, at 18, 22, 25–28; southern resident killer whale, Krahn *et al.,* 2002, at 23–30). Thus, for species in which male and female movement patterns differ, mtDNA is not likely to be sufficient to evaluate the discreteness of the population or to determine their degree of genetic differentiation. In our determination concerning sperm whales, we found that male and female movement patterns differ. Due to the wide ranging nature of male sperm whales, males from one population may breed with females from other populations. Thus, in the case of sperm whales, we concluded that maternally-inherited mtDNA was not sufficient to indicate populations are discrete. Unlike the sperm whales in the Gulf of Mexico, visual surveys (Waring *et al.,* 2013) and acoustic (Rice *et al.,* 2014) data indicate that GOMx Bryde's whales are year-round residents within the Gulf of Mexico. Available evidence indicates that, excluding a few extralimital occurrences into the Atlantic from the Gulf of Mexico, the population is primarily distributed within the northeastern Gulf of Mexico and distinct from other Bryde's whale populations (Rosel *et al.,* 2016). Extralimital occurrences have been observed in other marine mammal species. For example, the North Atlantic right whales are typically found in the western North Atlantic; however, a few extralimital occurrences have been recorded in the Gulf of Mexico (Ward *et al.* 2011). We agree that GOMx Bryde's whales may strand dead in the U.S. Atlantic; however, we do not have, nor have the commenters presented, evidence to support the claim that GOMx Bryde's whales are interbreeding with other populations of Bryde's whales. In addition, Bryde's whales have not been sighted in the U.S. Atlantic during aerial and shipboard surveys conducted from 1994 to present, nor have we documented any definitive acoustic detection of Bryde's whales along the U.S. Atlantic Coast. Furthermore, the extremely high number of fixed genetic differences between the GOMx Bryde's whales and all other Bryde's whales sampled worldwide is indicative of an isolated unit. If male Bryde's whales were entering the Gulf of Mexico from

nearby populations, they would be expected to bring the mtDNA haplotypes of that population. The dataset in Rosel and Wilcox (2014) consisted of a near equal mix of males and females with both sexes collected across seasons indicating there is not a bias against males in the dataset that might arise if males were only present in the Gulf of Mexico during the breeding season. If the Bryde's whales in the Gulf of Mexico were part of a larger more broadly distributed population, the haplotype diversity would be expected to be larger and the nuclear microsatellite diversity would also be expected to be higher. Thus, mtDNA, without additional information from nDNA, can be used to evaluate their genetic distinctiveness. Further, the high level of genetic divergence of GOMx Bryde's whales when compared with the two recognized Bryde's whale subspecies and sei whales suggests that GOMx Bryde's whales have been isolated for a relatively long period of time and are not interbreeding with other Bryde's whale populations. Species, subspecies, and DPSs can be delineated based on morphological traits, behavior, and genetics; such lines of evidence are not mutually exclusive. Thus, it is appropriate to rely on genetic data, including mtDNA information, to support our subspecies determination.

The commenters also state that knowledge of the Bryde's whale movement patterns is evolving, and reference Murase *et al.* (2015). Murase *et al.* (2015) found that North Pacific Bryde's whales may transition from one known feeding area to another known feeding area during the summer months. The distance traveled between the known feeding areas is consistent with the known movements of the North Pacific Bryde's whale population. Murase *et al.* (2015) indicates that the timing of those movements may differ from what was previously believed, but it does not report longer distance movements than what was already known. This study is not relevant to our understanding of movement patterns for the GOMx Bryde's whale. We find that the evidence supports the determination that the GOMx Bryde's whales are a resident population that inhabits the northeastern Gulf of Mexico year round.

Comment 12: Joint industry commenters stated that NMFS should not rely on Rosel and Wilcox (2014) because the study did not establish that the GOMx Bryde's whale is a subspecies because it does not have the requisite marked distinction. Further, commenters state that Rosel and Wilcox (2014) did not identify what the Gulf of Mexico population is distinct from.

Response: Commenters appear to be referring to the Services' joint DPS Policy (61 FR 4722, February 7, 1996) when stating that there is a need for a population to exhibit some amount of ''marked distinction.'' we determined that the GOMx Bryde's whale is a subspecies of the globally distributed Bryde's whale, based on the genetic analyses in Rosel and Wilcox (2014), the conclusions in the status review, and the expert opinion of the SMM Committee. As we explained in response to Comment 5, because we determined the GOMx Bryde's whale is a subspecies of *B. edeni,* we did not further analyze whether it would qualify as a DPS. Thus, the commenters are incorrect in their assertion that NMFS did not meet the requisite criteria of our DPS policy as we did not conduct a DPS analysis.

Comments on Bryde's Whale Distribution and Abundance

Comment 13: Joint industry commenters stated that an increase in ocean temperatures could substantially expand the Bryde's whale's global range. The commenters discussed that globally, Bryde's whales are most frequently found in warm temperate waters and intermittent sightings of the Bryde's whales outside areas where these whales are frequently observed (between 40°N and 40°S) either indicates a broader distribution than what has been described or that distribution is connected to larger-scale climate variability and trends.

Response: Based on the best available commercial and scientific information as summarized in Rosel *et al.* (2016), we have determined that Bryde's whales in the Gulf of Mexico are distinct from the globally distributed Bryde's whale, and that those whales in the Gulf of Mexico are limited to the Biological Important Area (BIA) (see the Distribution section for a full description of the BIA). The best available scientific information suggests that the GOMx Bryde's whale has been isolated for some time from other Bryde's whale populations so their ability to disperse to or colonize new habitats in response to increasing ocean temperatures may be limited, irrespective of whether other members of the global Bryde's whale complex may be able to do so. We do not have any evidence to suggest that the GOMx Bryde's whale's distribution or range is shifting or expanding in response to climate change or that this population's distribution is connected to larger scale climate variability. In addition, we cannot predict whether or how the GOMx Bryde's whale's range may shift in response to climate change or whether new threats may arise resulting from climate change. Therefore, we have no basis to change our determination that the GOMx Bryde's whale is not presently endangered based on possible future range shifts in the GOMx Bryde's whale's distribution or possible future threats from climate change.

Comment 14: Joint industry commenters stated that NMFS did not have sufficient evidence on which to assess the species' abundance and identify population trends. The commenters stated that NMFS relied on limited survey data, including surveys for other species (bluefin tuna and ichthyoplankton surveys), but information from these surveys is of limited applicability as those surveys may have been conducted at times or in locations or depths when GOMx Bryde's whales are not frequently observed, or may have proceeded without the proper equipment (*e.g.,* acoustic tracking equipment) needed to locate the GOMx Bryde's whale.

Response: We disagree and find that we do have sufficient information to assess the GOMx Bryde's whale's abundance. As the SRT explained in the status review, 25 years of dedicated cetacean survey effort (shipboard and aerial surveys during 1991–2015) has been developed covering both the continental shelf and oceanic waters of the Gulf of Mexico and U.S. Atlantic east coast (see Figure 3 in Rosel *et al.* 2016). These surveys, which are ongoing, cover a broad area, are conducted in all seasons and at various depths, and employ appropriate techniques for observing cetaceans, including Bryde's whales. The SRT considered the information from the dedicated cetacean survey effort, which covered appropriate habitats and employed appropriate techniques for observing Bryde's whales. GOMx Bryde's whale sightings have occurred in all seasons in the northeastern Gulf of Mexico. We did not rely on surveys for other species, including bluefin tuna and ichthyoplankton surveys, to estimate GOMx Bryde's whale abundance. In estimating abundance, the status review discusses the limited number of cetacean surveys in Mexican waters and the southern Gulf of Mexico. The SRT's conclusion that the population size is most likely fewer than 250 mature individuals, and more likely fewer than 100 whales, with 50 or fewer at maturity, accounts for an unknown level of negative bias due to the low survey effort in Mexican and southern Gulf of Mexico waters. We agree with this conclusion. As stated in the status review, population trend data are not available for the GOMx Bryde's

whale, and the SRT did not estimate population trends.

Comment 15: Joint industry commenters stated that it is unlikely that the De Soto Canyon area is the geographic extent of the GOMx Bryde's whale range. Instead, the commenters stated that the De Soto Canyon is likely a prime observational area among a number of other areas in the Gulf of Mexico and western Atlantic where Bryde's whales are found due to the area's high but unpredictable concentrations of food. In addition, commenters stated that (a) Bryde's whale strandings have occurred throughout the Gulf of Mexico and on the Atlantic Coast as far north as the Chesapeake Bay; (b) Bryde's whale are sighted on and off the continental shelf during surveys of North Carolina and Florida, and throughout the Gulf of Mexico in waters off the coast of Texas and Louisiana; and (c) Bryde's whales have been sighted in Brazil, the Caribbean Sea, and elsewhere. Thus, the commenters stated that concerted survey efforts elsewhere in the world have found Bryde's whales in areas where they were thought not to exist. The commenters stated that the SRT did not address the fact that survey effort outside the De Soto Canyon area, in the U.S. Atlantic and Mexican waters, and outside the De Soto Canyon is limited, and that as a result NMFS did not have sufficient information to conclude the species is absent from those areas.

Response: We considered and cited the stranding and sighting information that the commenters reference in evaluating the species' distribution and range, which is described in more detail in the status review. The commenters have not provided any new or additional stranding or sighting information that we have not already considered. There has been a concerted survey effort for marine mammals along the U.S. Atlantic coast and in the Gulf of Mexico. We find that the best scientific and commercial information demonstrates that over the past 25 years, the GOMx Bryde's whale has been consistently located along a very narrow depth corridor in the northeastern Gulf of Mexico. There are no confirmed sightings outside of this area, despite a large amount of dedicated marine mammal survey effort that has covered both continental shelf and oceanic waters of the Atlantic Ocean off the southeastern United States and the northern Gulf of Mexico.

In the proposed rule, we acknowledged, as did the SRT, that a small number of unidentified baleen whales were sighted in the north-central and western Gulf of Mexico, and explained that we do not know if those unidentified whales are Bryde's whales. For example, in 1992, a fin whale was identified during an aerial survey off Texas, and in 1992 and 1994, a single baleen whale was sighted along the shelf break in the western Gulf of Mexico during GulfCet surveys. These latter sightings were recorded as Bryde's/sei whale (Rosel *et al.,* 2016). In addition, we are aware of five other ''baleen whale'' reported sightings west of the BIA to the longitude of western Louisiana, from reports from protected species observers and a single citizen sighting (Rosel *et al.,* 2016).The SRT noted, and we agree, that these sighting, are difficult to interpret because the information collected during those sightings is insufficient to identify the species. Consequently, we are unable to draw conclusions about the GOMx Bryde's whale's distribution from this information. Thus, we find that the best available scientific evidence indicates that the BIA, located in the De Soto Canyon area of the northeastern Gulf of Mexico, encompasses the current range of GOMx Bryde's whale. We agree with the commenter's observation that the waters in the De Soto Canyon are nutrient rich, productive waters, which contain sources of prey for the GOMx Bryde's whale. However, for the reasons just discussed we do not agree that the De Soto Canyon is merely a prime observational area.

Comment 16: Joint industry commenters stated that the SRT selectively accounted for estimates of the Bryde's whale population size and that the estimates upon which the SRT relied do not appear to be the best available scientific information. The commenters stated that the SRT relied on population estimates in NMFS' Stock Assessment Reports, which underestimate abundance because they assume all whales in the vicinity of the survey were counted. The commenters stated that the reliability of the estimates in the Stock Assessment Reports are in question given the variation in the population estimates in the reports over time, and the variability cannot be attributed to mortality and reproduction in the population. The commenters stated that the SRT did not take into account the estimate published in Roberts *et al.* (2016), although the commenters do not necessarily endorse the conclusions of those authors. The commenters also stated that it is unclear how the SRT extrapolated and estimated the Gulf-wide population (*i.e.,* likely fewer than 250 mature individuals, and more likely fewer than 100 individuals, with 50 or fewer being mature).

Response: We find that the population abundance estimates are based on the best available scientific information. The SRT considered abundance estimates contained in published reports of surveys conducted from the early 1990s to 2012; these estimates ranged from 15–44 Bryde's whales in the northern Gulf of Mexico (see Table 2, Rosel *et al.* 2016). These abundance estimates were based on data collected through NMFS' cetacean research surveys and by other researchers (*e.g.,* Roberts *et al.* 2015a). The proposed rule and status review also discussed other papers by Roberts *et al.* (Roberts *et al.* (2016, 2015a, 2015b) in evaluating the population abundance. As discussed in the status review, the SRT recognized that the most recent abundance estimate in 2015 NMFS Stock Assessment Report (33 individuals, CV = 1.07) was likely negatively biased because it assumed all whales on the track line were sighted. The SRT explained that Roberts *et al.* (2015a and 2016) averaged years of survey data and accounted for not meeting the assumption of sighting all whales on the track lines and concluded that the population was higher—*i.e.,* 44 whales (CV = 0.27). Thus, the SRT considered potential bias in abundance estimates that may have contributed to variability in the estimates. The SRT did not attribute variability among the available abundance estimates solely to individuals entering or leaving the population.

Regarding the SRT's extrapolation of a Gulf of Mexico-wide population estimate, the status review, in its discussion of Population Status, stated ''the population size is most likely fewer than 100 whales.'' The SRT made a conclusion regarding the likely size of the GOMx Bryde's whale's population size after considering all previous abundance estimates, which have ranged from 15 (CV = 1.98) to 44 (CV = 0.27) whales. The SRT noted potential bias in some of the estimates, and did not rely on a single abundance estimate or survey. In developing their conclusions regarding abundance, the SRT considered several elements including previous abundance estimates, available survey information, historical range and current range, and the limited survey effort outside the U.S. Gulf of Mexico. The SRT reached consensus, based on the best available information and their professional expert opinion, that there are fewer than 250 mature individuals, and more than likely the population contains fewer than 100 individuals, with 50 or fewer being mature. We agreed with the SRT's assessment.

Comment 17: Joint industry commenters stated that other available data, including recent passive acoustic surveys conducted in the De Soto Canyon and carcass recovery rates indicate that GOMx Bryde's whale populations may be higher than NMFS and the SRT have estimated. The commenters stated that acoustic surveys target GOMx Bryde's whales and capture subsurface GOMx Bryde's whales that visual surveys may miss and the relatively high GOMx Bryde's whale acoustic activity seems to be in disagreement with the low number of visual observations made during surveys. Call rates of the GOMx Bryde's cited in Rice *et al.* (2014) and Sirovic *et al.* (2014) are higher when compared to call rates of Bryde's whales in the ''Gulf of California'' cited in Kerosky *et al.* (2012). The commenters stated that Bryde's whales are considered abundant in the Gulf of California, and higher call rates in the Gulf of Mexico could suggest a higher abundance of the Bryde's whales than in the Gulf of California, or than NMFS assumed in the proposed listing. The commenters also stated that the carcass recovery rates the SRT used to estimate the threat of vessel collisions are likely too high and, when considering the observed stranding rates, cast doubt on the abundance estimates.

Response: We disagree that the available acoustic data can be compared to, or conflicts with, the visual observations, and that it should be used to estimate abundance. Estimating call rates (*i.e.,* calls per animal, per time period—typically per hour) for baleen whales requires either extended simultaneous visual and acoustic localization studies or multi-day acoustic tag deployments. Using call rates to estimate abundance of a particular population (for example, GOMx Bryde's whales) requires information on the density of the species in the measured area as well as on the location where the measurements were taken and on the sex, age group, behavior state, time of day, and season in which the measurements were taken (Heinemann *et al.,* 2016; Marques *et al.,* 2013). The acoustic activity of Bryde's whales in the Gulf of Mexico referred to by the commenter (*i.e.,* Rice *et al.,*2014 and Sirovic *et al.,* 2014) does not provide this level of information, thus it would not be appropriate to use those data to estimate abundance of the GOMx Bryde's whales. For example, Rice *et al.* (2014) identified Bryde's whale vocalizations to understand spatial and temporal distribution patterns of GOMx Bryde's whales, but this study did not quantify the number of whales in an area or determine whether the calls represented a single or multiple individuals. Sirovic *et al.* (2014) described one call type that was recorded in the presence of GOMx Bryde's whales and produced a time series of the presence of that call in long-term autonomous recordings from the De Soto Canyon in the northern Gulf of Mexico. This study recorded a few tens to just over a hundred calls a week, which is a reasonable number for a small population size and relatively small area of monitoring. However, Sirovic *et al.* (2014) concluded that more targeted recordings are necessary to obtain a call production rate, and additional measurements of call source levels are needed to estimate population size. Kerosky *et al.* (2012) studied the seasonal and inter-annual changes in Bryde's whale presence within the Southern California Bight (not in the Gulf of California as stated by the commenters), and thus reported the number of hours per day where calls were recorded in that area alongside information on sea surface temperature. Bryde's whales produce different call types in different ocean basins, and likely have differing inter-call intervals in different locations. Without information that would allow us to compare call rate information across ocean basins, such as information on relative densities and inter-calling intervals of the different populations, or information on the different environmental conditions in each region that could affect the ability to record the calls, we cannot readily compare the call information in Kerosky *et al.* (2012) to information we have on calls of GOMx Bryde's whales to estimate the relative population size across these regions.

Lastly, it also is not appropriate to use stranding records in the SRT's carcass recovery rate equation to develop an abundance estimate. First, the actual carcass recovery rate for GOMx Bryde's whales is unknown and likely low. The GOMx Bryde's whale is an offshore species and thus carcasses are unlikely to be detected due to factors such as at-sea scavenging, sinking, wind, currents, and stranding in locations where detection is unlikely. Given these uncertainties, any abundance estimate derived from carcass recovery rates would suffer from both unknown biases and un-quantified uncertainty, and therefore cannot be validly compared to estimates derived from line-transect surveys. Secondly, if the carcass recovery rate is fixed, then only mortality rates and abundance will affect the estimated number of observed strandings. The historical mortality rate and abundance of GOMx Bryde's whale is unknown. Thus, historical stranding information cannot inform our understanding of past population size. Without a mortality rate, we cannot determine what percentage of the entire population a single stranding represents. For these reasons, we believe that the dedicated cetacean survey (shipboard and aerial) methodology that NMFS used to inform the abundance estimates in the Stock Assessment Reports is the best available method to estimate abundance. Researchers regularly use this methodology to assess cetacean populations throughout the United States and other parts of the world.

Comment 18: An industry comment stated that the genetic analysis contained in Rosel and Wilcox (2014) suggests that Bryde's whale abundance in the Gulf of Mexico is underestimated. If the population was as small as we stated, it is unlikely that researchers obtained genetic samples from 23 Bryde's whales and only received two duplicate samples. The low number of duplicate samples suggests that the genetic analysis is flawed because it failed to detect duplicate samples. There is 0.57 percent chance that researchers were able to obtain 23 random samples from a population of 33 whales and have only two duplicates. The commenters calculated a population size between 79 and 125 whales based on 23 random samples containing two duplicates.

Response: We disagree. Rosel and Wilcox (2014) examined a total of 23 samples (3 stranded and 20 biopsy sampled whales) from the Gulf of Mexico. After collecting the genetic data, the researchers determined that two whales had each been biopsied twice over the years. Therefore, the number of individual whales sampled in the Gulf of Mexico and used in Rosel and Wilcox (2014) mtDNA analysis was 21. In addition, the researchers extracted sequence DNA information from 2 animals from the Gulf of Mexico population that stranded in the North Atlantic. To calculate the commenters' suggested probability that there is only a 0.57 percent chance that 23 random samples from a population of 33 whales would result in only two duplicates, one would have to assume that the same 33 whales were present in the ship-surveyed locations during the approximately 19 years over which samples were collected. However, that assumption raises several concerns. First, the researchers screened which whales to sample. At least during a

given survey year, efforts were made to avoid repeated sampling of individual animals. Therefore, biopsies collected during the same survey are not independent sampling events, but were structured in a way to avoid duplicates. Secondly, annual surveys were not random sampling events. Many encounters with Bryde's whales were during opportunistic encounters rather than samples collected across a randomized trackline. This lack of independence and random sampling prevents the interpretation of capture probabilities and the likelihood of repeated events. Finally, it is unreasonable to evaluate the probability of obtaining duplicates from a set of 33 animals, because the population size is not exactly 33 animals. The sample size may be higher or lower, and individuals may enter and leave the population overtime. Therefore, inferences about re-sampling probabilities based upon a fixed estimate of exactly 33 animals are unreliable.

Comments on Existing Regulatory Mechanisms

Comment 19: Joint industry commenters stated that NMFS misapplied the analysis mandated under ESA section 4(a)(1), factor D. According to commenters, NMFS concluded that the existing regulatory mechanisms are inadequate because they have not prevented the current status of the GOMx Bryde's whale, or because the species is threatened under other factors such as low abundance and limited distribution. Commenters state that it is inappropriate to rely on estimates of abundance and distribution as a measure of regulatory efficacy without analyzing population trends over time, and that our analysis offered ''only the cursory conclusion that any evidence of risk is evidence of the inadequacy of existing regulations.''

Response: We did not conclude that evidence of low abundance or limited distribution, or any evidence of risk, is evidence of inadequacy of existing regulations. In agreeing with the SRT's conclusion that existing regulatory measures have not prevented the current status of the GOMx Bryde's whale, we were stating that existing regulatory measures are not adequate to address the threats that are contributing to the species extinction risk. We summarized the regulatory mechanisms relevant to the threats that contribute to the species' extinction risk, and evaluated whether any existing regulatory mechanisms will adequately control those threats.

As we stated in the proposed rule, the relevance of existing regulatory mechanisms to extinction risk for an individual species depends on the vulnerability of that species to each of the threats identified under the other section 4(a)(1) factors, and the extent to which regulatory mechanisms are expected to control the threats that are contributing to the species' extinction risk. If GOMx Bryde's whales were not vulnerable to a specific threat (*i.e.,* risk was low), we did not consider that threat under our analysis of the adequacy of regulatory mechanisms. The best available scientific and commercial information establishes that energy exploration, development, and production, oil spills and oil spill response, vessel collision, fishing gear entanglement, anthropogenic noise, and small population concerns, such as Allee effects, demographic and genetic stochasticity, k-selected life history parameters, and stochastic and catastrophic effects are currently threatening the species and contributing to its extinction risk (ESA section 4(a)(1) factors A and E). Consequently, we assessed the adequacy of regulatory mechanisms relative to those threats and determined that there are no existing regulatory mechanisms in place to control those ongoing threats. Population trend information is not necessary to reach this conclusion.

Comment 20: Joint industry comments stated that existing regulatory mechanisms and industry-driven initiatives sufficiently protect the Bryde's whales because those measures have eliminated the largest historical threat to the species, commercial whaling, and because those measures address each of the threats NMFS identified. In particular, the commenters stated (a) the IWC commercial whaling moratorium prohibits commercial harvest, (b) the Marine Mammal Protection Act (MMPA) prohibits takings, unless NMFS otherwise permits the taking, (c) the Outer Continental Shelf Lands Act (OCSLA) allows the Department of Interior (DOI) to administer mineral exploration, development, and production in a manner that protects natural resources, (d) the Oil Pollution Act (OPA) addresses oil spills (prevention and remediation), (e) the Ports and Waterways Safety Act (PWSA) manages ports and vessel traffic to protect the marine environment, (f) the Clean Water Act (CWA) regulates discharges into U.S. waters and creates pollution control programs, (g) the International Convention for the Regulation of Whaling (ICRW) provides for proper conservation of whale stocks, and (h) the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) provides a framework for ensuring international trade in wild animals does not threaten the survival of species in the wild and establishes lists of species and accords them varying degrees of protection based on the level of their endangerment. The commenters stated that NMFS did not consider these laws collectively, and when the laws are taken as a whole, they address and minimize each threat. The commenters also stated that the threat of energy exploration, development, and production is not likely to arise in the future due to the numerous protections in place to protect marine mammals. The moratorium on new lease sales within the EPA will protect Bryde's whales from oil spills and spill response, and recently developed measures ''including additional subsea blowout preventer testing, required downhole mechanical barriers, well containment systems, and additional regulatory oversight'' make an oil spill event ''less likely than in the past.'' The commenters also stated that the court's opinion in *Oceana* v. *BOEM,* 37 F. Supp. 3d 147 (D.D.C. 2014) confirmed that oil and gas seismic surveys do not injure marine mammals. In addition, industry initiatives prevent oil spills and improve spill responses. A separate commenter stated that existing regulations have been inadequate to protect the GOMx Bryde's whale because, despite general protection under the MMPA, the GOMx Bryde's whale population is estimated at 33 animals, and the MMPA provides no regulatory mechanisms specific to the GOMx Bryde's whale.

Response: We agree that the IWC commercial whaling moratorium provides significant protection for the GOMx Bryde's whale now. However, we do not agree that Bryde's whales in the Gulf of Mexico are sufficiently protected by the MMPA, OCSLA, OPA, PWSA, CWA, ICRW, or CITES, or other regulatory mechanisms addressed in the proposed rule, including the International Maritime Organization (IMO). We assessed the adequacy of regulatory mechanisms, including the MMPA, OCSLA, OPA, ICRW, CITES, and the IMO-related regulatory mechanisms, relative to the identified threats and determined that there are no existing specific regulatory mechanisms in place to control those threats. For example, there are no IMO-related regulatory mechanisms in the Gulf of Mexico to address the threat of vessel collisions to the GOMx Bryde's whale, which has been identified as one of the primary threats facing the species.

The commenters also stated the PWSA or the CWA are adequate at protecting GOMx Bryde's whales from the ongoing threats. Under the PWSA, the U.S. Coast Guard has implemented two mandatory ship reporting systems in 1999 in an effort to reduce the threat of ship strikes to right whales in U.S. waters of the Atlantic Ocean. The Coast Guard noted that the ship reporting systems have the potential to reduce ship strike of the endangered north Atlantic right whale by providing direct communication of current north Atlantic right whale sighting information to ship operators in high risk areas. However, no similar ship reporting system exists that would protect the GOMx Bryde's whale.

Under the CWA, the Environmental Protection Agency has implemented regulations pertaining to pollutant discharges (see generally 40 CFR ch. I, subchapter D, water programs). The commenters state that the CWA regulates discharges of pollutants into U.S. waters and creates pollution control programs, but did not state which threat this would address. If the commenters believe that the CWA adequately controls the threat of oil spills and spill response, we disagree. As we explained in the proposed rule, OPA is the principal statute governing oil spills in the nation's waterways. Even with OPA, there have been multiple large and numerous small scale oil spills in the Gulf of Mexico (Rosel *et al.,* 2016; BSEE accessed November 3, 2017, *https://www.bsee.gov/newsroom*). We found no CWA regulation that would protect the GOMx Bryde's whale from the ongoing threats from oil spills and oil spill response. In addition, we did not identify vessel discharges or discharges from oil and gas activities as a threat that is contributing to the species' extinction risk. We have determined that, taken individually and collectively, the existing regulatory measures discussed or referenced above are inadequate to address the threats to the GOMx Bryde's whale from energy exploration, development, and production, oil spills and oil spill response, fishing gear entanglement, vessel collision, and anthropogenic noise.

We agree with the comment that the moratorium on new lease sales exploration, development, and production in the EPA has provided some level of protection for Bryde's whales by reducing nearby industrialization. However, the moratorium does not adequately address the threat the species' faces from energy exploration, production, and development. The moratorium does not preclude energy exploration (seismic survey activity) and thus seismic survey activity can occur within the EPA and affect the species in their habitat. Moreover, we have found that energy exploration, production, and development in the Gulf of Mexico has broad impacts on the subspecies, through curtailment of its range. The moratorium on activities in the EPA does not affect the energy exploration, production, and development activities in the north-central and southern Gulf of Mexico that likely contributed to the subspecies' range contraction and continues to restrict the whales to the BIA. Further, these activities elsewhere in the Gulf of Mexico have affected the whales. For example, as a result of the 2010 DWH oil spill, an estimated 17 percent of the population of GOMx Bryde's whales was killed, 22 percent of reproductive females experienced reproductive failure, and 18 percent of the population likely suffered adverse health effects due to lung and adrenal disease and poor body condition (DWH MMIQT 2015, DWH Trustees 2016). The activities that led to the DWH oil spill were not subject to the moratorium, and the moratorium thus did not offer the species' protection. In addition, the moratorium expires in 2022. If oil and gas development and production were to move closer to the BIA or expand within the BIA or if seismic survey activity levels near or within the BIA were to increase, extremely detrimental effects on the remaining individuals within the population could result. Exposure to seismic survey noise at energy levels that can cause acute auditory injury may lead to hearing loss and affect individual fitness, and any such effects in a very small population can have significant population level consequences. In addition, chronic noise from seismic survey activity in the species' habitat can mask vocalizations, increase stress, reduce foraging and reproductive success, mask environmental cues, and, at high enough levels, lead to habitat displacement. With regard to the latter, this species appears to have no other available habitat in which to seek refuge. We reached our final listing determination after fully considering existing regulations individually and together and found that existing regulatory mechanisms are not adequately protecting the GOMx Bryde's whale from these threats.

Nothing in the Court's determination that BOEM and NMFS had complied with the ESA with respect to specific lease sales stands for the general proposition that oil and gas seismic surveys do not injure marine mammals.

Finally, we agree with the second commenter that, as we explained in the proposed listing rule, outside of the general protections provided to marine mammals under the MMPA, there are no regulatory mechanisms specific to the GOMx Bryde's whale under the MMPA.

Comment 21: Joint industry commenters stated that numerous vessel strike avoidance measures are in place to protect Bryde's whales from vessel traffic in the Gulf of Mexico. The commenters referenced a notice to lessees and operators that engage in certain oil and gas activities issued by the Bureau of Ocean Energy Management (BOEM) (BOEM NTL No. 2016–G01). They also state that the MMPA and the PWSA provide NMFS ample, adequate authority to implement regulations mitigating the threat from vessel strikes.

Response: We do not find that GOMx Bryde's whales are adequately protected from vessel strike. The notice that commenters' cite includes several recommendations to vessel operators engaging in oil and gas activities to avoid vessel strikes with marine mammals and sea turtles; these recommendations were issued through ESA section 7 consultations with BOEM. The recommendations are specific to particular areas and do not apply to other commercial vessel operators. Furthermore, these vessel strike avoidance measures are recommendations and are not a regulatory mechanism that would be considered under the section 4(a)(1) factor D. The ESA does not allow us to consider speculative future regulatory activities, such as those that may occur under MMPA and PWSA authority, when making a listing determination. There are currently no vessel speed restrictions, routing schemes, or reporting requirements or regulations established that protect GOMx Bryde's whales from vessel strike. The commenters provided no information on regulatory mechanisms that exist that we have not considered and that address the threat of ship strike. For these reasons, we conclude that our determination that there are no existing regulations to control the threat of ship strike for the GOMx Bryde's whale is appropriate and valid.

Comment 22: Joint industry commenters stated that the Magnuson-Steven Fishery Conservation and Management Act (MSA) protects Bryde's whales from prey reduction as a result of overfishing because the MSA has successfully rebuilt overfished

populations and limits future fish stock depletions. Furthermore, Fishery Management Councils are required to consider ecosystem interactions in their management plans.

Response: As we stated in the proposed rule, the relevance of existing regulatory mechanisms to extinction risk for an individual species depends on the vulnerability of that species to each of the threats identified under the other factors of ESA section 4(a)(1), and the extent to which regulatory mechanisms are expected to control the threats that are contributing to the species' extinction risk. The SRT scored the threat from trophic impacts due to commercial harvest of prey as a ''low'' severity threat with ''low'' certainty. NMFS agrees that Bryde's whales are not vulnerable to this particular threat; consequently, we did not evaluate further the adequacy of existing regulatory mechanisms for addressing the threat from trophic impacts.

Comment 23: Joint industry commenters stated that Bryde's whales are protected from entanglement under the Atlantic Tunas Convention Act because NMFS promulgated regulations under this authority that resulted in an area within De Soto Canyon that is closed to pelagic longline fishing. Commenters state that such fishing is not contributing to Bryde's whale entanglement in that area.

Response: Pelagic longlines are a known entanglement threat to baleen whales. Approximately two thirds of the BIA has been closed to commercial pelagic longline fishing year-round since 2000, when the Highly Migratory Species (HMS) Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan (FMP) was amended to close the De Soto Canyon Marine Protected Area (65 FR 47214, August 1, 2000). The longline closure implemented under the Atlantic Tunas Convention Act and HMS Atlantic Tunas, Swordfish, and Sharks FMP provides protection to GOMx Bryde's whales from entanglement in longline gear in the De Soto Canyon Marine Protected Area; however, the species is not protected outside of the closed area, and pelagic longline fishing still occurs in the remaining one third of the BIA (Figure 20B in Rosel *et al.,* 2016). In addition, other fisheries pose an entanglement risk. There are no restrictions on, or areas within the BIA closed to, bottom longline fishing. The bottom longline component of the Gulf of Mexico reef fish fishery and the Gulf of Mexico shark bottom longline fishery overlap with portions of the Bryde's whale BIA, and bottom longline gear is an entanglement risk to bottom-foraging whales, given that the majority of mainline gear is anchored on the seafloor. The closures discussed above do not fully address the threat of entanglement from these fisheries. In addition, given the species' small population, the species is particularly vulnerable to any threat. Consequently, we have determined that existing regulatory mechanisms are not sufficient to protect Bryde's whales from the threat of entanglement from pelagic and bottom longline gears.

Comments on the Threat of Energy Exploration, Development, and Production

Comment 24: Some commenters disagreed with NMFS' conclusion that energy exploration, development, and production presents a current threat to GOMx Bryde's whales. Joint industry commenters stated that oil and gas activities currently do not impact areas that we have identified as being important for Bryde's whale conservation. As support, the commenters stated that ''whales, including Bryde's whales, have been living in close proximity to the offshore oil and gas industry for decades without any evidence that populations in the Gulf of Mexico are declining or that individuals are being harmed,'' citing a 2008 U.S. Department of the Interior Minerals Management Service Sperm Whale Seismic Study in the Gulf of Mexico.

Response: Energy exploration, development, and production presents a current threat to GOMx Bryde's whales. In the proposed rule, we explained that in the area that we have identified as important for GOMx Bryde's whale conservation, there is currently no oil and gas production activity, with most of the area falling under a moratorium on lease sales until 2022. However, energy exploration, development, and production, including noise associated with those activities, and oil spills and spill response contribute to the habitat modification and curtailment of the species' range. Based on sightings data and extensive survey effort over the past 25 years, there appears to be limited current use by Bryde's whales in the north-central and southern Gulf of Mexico where habitat has been significantly modified with the presence of thousands of oil and gas platforms (Rosel *et al.,* 2016). Considering that historical whaling records indicate the GOMx Bryde's whales were distributed more broadly than they are currently, including areas in the north-central and southern Gulf of Mexico, it is likely that this industrialization and associated noise contributed to the range contraction such that their primary habitat is restricted to the BIA within the northeastern Gulf of Mexico. Continued activities and associated noise within the north-central and southern Gulf of Mexico may keep the species limited to this area.

Commenters state that the GOMx Bryde's whale has been living in close proximity to offshore oil and gas for decades without any evidence of harm, based on a 2008 U.S. Department of the Interior Minerals Management Service Sperm Whale Seismic Study in the Gulf of Mexico. In that study, the authors were unable to detect biological effects of seismic activities on sperm whales. However, the authors explain that their study cannot be viewed as conclusive evidence that sperm whales or other ecosystem components have not and are not being affected by oil and gas exploration and production. Further, this reference is entirely related to sperm whales with no mention of Bryde's whales, and did not extrapolate conclusions about the sperm whales to other species. Sperm whales differ from Bryde's whales both acoustically and behaviorally such that their potential for exposure to effects from oil and gas exploration and production are different. Sperm whales are mid-frequency odontocetes, whereas Bryde's whales are low-frequency mysticetes. Oil and gas activities generate low frequency sounds that have a greater potential to overlap with and mask the lower frequency Bryde's whales calls and interfere with the species' communication. Sperm whales also dive to much greater depths than Bryde's whales are known to dive. We do not believe it is appropriate to apply the findings in this study to the GOMx Bryde's whale.

Comment 25: Joint industry commenters disagreed with our conclusion that oil and gas development in the Gulf of Mexico contributed to restricting the GOMx Bryde's whales' range to the De Soto Canyon. The commenters stated that the best available science indicates that Bryde's whales are not limited to the De Soto Canyon, and neither the SRT nor NMFS have provided scientific support for the conclusion that the species' range is limited. According to the commenter, NMFS improperly drew this conclusion despite a peer reviewer comment that expressed concern over the conclusion, and misstated the SRT's conclusion regarding the restriction of the species' range.

Response: Whaling records indicate that Bryde's whales were once distributed more widely in the Gulf of Mexico and that their range included

the north-central and southern Gulf of Mexico (Reeves *et al.,* 2011). The best available scientific information (*e.g.,* Mullin and Hoggard 2000, Maze-Foley and Mullin 2006, Mullin 2007, DWH MMIQT 2015) indicate that Bryde's whales in the Gulf of Mexico are now restricted primarily to a small region along the continental shelf break in the De Soto Canyon area of the northeastern Gulf of Mexico. Surveys throughout U.S. waters of the Gulf of Mexico over the past 25 years have not identified any Bryde's whales outside this region. Available information indicate that interbreeding between GOMx Bryde's whales and other Bryde's whales is not taking place because of substantial genetic differences between GOMx Bryde's whales and other Bryde's whales (see our responses to Comments 10 and 11). Consequently, NMFS believes the stranding reports U.S. Atlantic represent rare, extralimital occurrences of GOMx Bryde's whales and not additional habitat or expanded distribution. Roberts *et al.* (2015a) modeled Bryde's whale density in the Gulf of Mexico is based on sightings, physiographic, physical, oceanographic, and biological covariates obtained from remote sensing and ocean models to develop a spatially-explicit description of Bryde's whale density. The model shows Bryde's whales' mean year-round density extending from the northeastern Gulf of Mexico, where the highest density in the BIA occurs, into a relatively narrow band of depth in the northern Gulf of Mexico, in areas where the species has been historically observed (see Figure 7, Rosel *et al.,* 2016).

As stated in the status review and restated in the proposed rule, the GOMx Bryde's whales habitat in the north-central and southern Gulf of Mexico has been physically modified over time and is highly industrialized as a result of energy exploration, development, and production. We conclude that this modification and industrialization, including associated noise, likely contributed to the GOMx Bryde's whale's range contraction. Peer Reviewer 2 stated that the range contraction may have been due to whaling, in that whaling may have reduced the population and the remaining population may have relocated to the most favorable habitat. The SRT concluded that the GOMx Bryde's whales small population size is not related to historical whaling because the population should have recovered from whaling moralities sustained more than a century ago and we agree. In addition, we do not agree that the proposed rule misstates the conclusions reached by the SRT. The proposed rule is consistent with and directly refers to conclusions in status review regarding the GOMx Bryde's whale's restricted range.

Comment 26: Joint industry commenters stated that the current level of oil and gas activity in the EPA of the Gulf of Mexico is low, and that this threat is not causing GOMx Bryde's whales to approach the brink of extinction. Currently only 0.3 percent of the EPA is leased through 37 active leases, and only 105 wells have been drilled, none of which have been put into production. The commenters state that production is low, likely for market reasons. For example, only natural gas has been discovered in significant quantities, and natural gas prices in 2016 were at a 20-year low, which likely reduces the incentive to produce from the wells. The commenters state that BOEM has conducted only two lease sales (in 2014 and 2016) in a small portion of the EPA that remained open for leasing, and neither received a bid.

Response: We agree that the current level of oil and gas activity in the EPA is low. The majority of active lease sales are located in the Western and Central Planning Areas. However, we find it is likely that the high levels of industrialization associated with oil and gas exploration (seismic surveys), development, and production in parts of the species' historical range have contributed to the curtailment of their range to the area recognized as the GOMx Bryde's whale BIA. The low level of energy production and development activities in the EPA is a potential reason why the GOMx Bryde's whale only occurs in the northeastern Gulf of Mexico (*i.e.,* the species is likely avoiding the more industrialized part of their historical range). The range contraction is a current threat to the species. In addition, we note that seismic survey activity was high in the EPA in 2009 and that the activity may return to those high levels following expiration of the moratorium on lease sales in 2022. At those high levels, individual GOMx Bryde's whales would not be able to hear their closest neighbors. Furthermore, the moratorium on lease sales in the EPA does not preclude seismic survey activity in the EPA now, and such activity could increase before the actual expiration of the moratorium.

Comment 27: Joint industry commenters asserted that NMFS conflated present threats from energy exploration, development, and production with future threats and overestimated the likelihood of oil and gas production activity in the EPA in the future. The commenters stated that EPA is subject to a moratorium on new lease sales that expires in 2022, but even if the lease moratorium in the EPA is lifted in 2022, the future level of energy exploration, development, and production and pipeline activity is largely unknown, and depends on the potential for hydrocarbon discoveries and future market conditions. The commenters stated that most geographically relevant forward-looking analysis is likely BOEM's Environmental Impact Statement (EIS) for multiple lease sales in the Central and Eastern Planning Areas between 2017 and 2022. For areas in the Central and Eastern Planning Areas offered for leasing between 2017 and 2022, BOEM expects that, at most, 67 wells will be drilled, 2 production structures will be installed and removed, and up to 145 miles of pipeline will be laid between 2012 and 2051. The commenters stated all of these activities will take place in waters more than 800 meters (m) deep, which is beyond the depths where Bryde's whales are commonly found. The commenters concluded that even if the moratorium is lifted and the post-2022 lease sales attract bidders and the leases are developed, peak well construction and operation and pipeline development would not occur for many years.

Response: We did not conflate present threats from energy exploration, development, and production with future threats, and we did not overestimate the likelihood of oil and gas production in the future. As we stated in the preceding response, we find that the current level of energy exploration, production, and development elsewhere in the Gulf of Mexico is affecting the species. In addition, the species' exposure to future energy exploration, development, and production are likely to increase in the EPA with expiration of the moratorium on new lease sales in 2022. Some development is already expected in the EPA. As the commenters noted, based on the final supplemental EIS on oil and gas lease sales in 2016 and 2017 in the Central and Eastern Planning areas, which includes one lease sale in the EPA (Lease Sale 226), BOEM expects up to 67 wells will be drilled, up to 2 production structures will be installed, up to 145 miles of pipeline will be laid, 1,000 service-vessel round trips will be made, and 1,000 helicopter operations are expected between 2012 and 2051 in the EPA (BOEM 2015–033). Even if this development occurs in waters deeper than 800 m, the species would likely

still be exposed to noise and vessel strike from service vessels. Due to extended underwater sound propagation of low-frequency noise from well drilling, structure construction, seismic surveys, supporting vessel traffic, etc., we still expect acoustic impacts to the species that typically occur between 100 and 400 m water depths even if activities were to occur in depths greater than 800 m. In addition, in its final programmatic EIS on geological and geophysical activities in the Gulf of Mexico, BOEM estimates that there will be hundreds of instances of GOMx Bryde's whales being injured and thousands of instances of behavior disruptions as a result of noise associated with oil and gas activities, including noise from seismic surveys, from 2016 to 2025 (BOEM 2017–051). These analyses support our concern that future development is a threat to the species that contributes to its extinction risk.

Comments on the Threat of Oil Spills and Spill Response

Comment 28: Joint industry commenters and another commenter disagreed with NMFS' reliance on the DWH Natural Resource Damage Assessment injury estimate to conclude that Bryde's whales experienced significant impacts from the DWH oil spill, and that oil spills and spill responses are a high threat to the species. The commenters stated that models used in the DWH assessment were flawed and have not been validated. In particular, the Marine Mammal Working Group, which evaluated and quantified injury to cetaceans from the DWH oil spill, did not observe any Bryde's whales in oiled waters in 2010, did not identify any Bryde's whale mortalities in 2010 or 2011, and did not observe any Bryde's whale behavioral changes or collect samples showing that whales ingested oil or dispersants. Furthermore, the commenters stated, all exposure risks and impairments were improperly inferred from dolphin studies in other areas. Other commenters agreed with NMFS' reliance on the DWH assessment to conclude that GOMx Bryde's whales were the most impacted shelf and oceanic species as a result of the DWH oil spill.

Response: We disagree and find there is sufficient evidence that the GOMx Bryde's whales were adversely affected by the DWH event and that GOMx Bryde's whales are threatened by oil spills and spill responses. The DWH Trustees undertook a Natural Resource Damage Assessment (NRDA) to evaluate the nature and extent of adverse effects of the DWH incident on natural resources. As a result of the extensive, multi-year NRDA, the Trustees concluded that the DWH oil spill caused a wide array of injuries to species and natural resources in the northern Gulf of Mexico, including to the GOMx Bryde's whale. In particular, the damage assessment estimated that the oil footprint included 48 percent of the BIA, 17 percent of the population was killed, 22 percent of reproductive females experienced reproductive failure, and 18 percent of the population likely suffered adverse health effects due to the spill. Through the Marine Mammal Working Group's analysis in the NRDA, the group estimated the impacts of the DWH oil spill on the GOMx Bryde's whales and other cetaceans based on data from stranded animals, photo-identification surveys, and live dolphin health assessments that together characterized the adverse health effects of the spill on observed populations of dolphins in Barataria Bay and Mississippi Sound. Those assessments extrapolate the magnitude of the injury to other populations present within the oil footprint. The DWH NRDA Marine Mammal Technical Working Group report (DWH MMIQT 2015) explains that due to their narrow distribution and small population size, Bryde's whales are rarely observed during any single line transect study. In addition, the probability is extremely low that animals dying far offshore would eventually strand on beaches, which likely explains why no Bryde's whale strandings were recovered in 2010 or 2011. In order for researchers to collect samples of stomach contents showing that whales ingested oil or dispersants, dead whales would have had to strand ashore, and because the GOMx Bryde's whale is an oceanic animal it is highly unlikely that a carcasses would strand. The commenters provided no new information suggesting that GOMx Bryde's whales were not impacted by the DWH oil spill. For all the foregoing reasons, we believe it is reasonable to rely on NRDA to assess the impacts to the GOMx Bryde's whale resulting from exposure to the DWH oil spill, and to evaluate the threat to the species from oil spills and spill response.

Comment 29: Several commenters stated that GOMx Bryde's whales are more vulnerable to oil spills due to the whale's highly limited range and strong site fidelity, increasing their risk and vulnerability to a single catastrophic event.

Response: We agree. The Bryde's whales' small population size, restricted range, and year-round residency in the northeastern Gulf of Mexico increase the species' vulnerability to stochastic and catastrophic events such as oil spills and spill responses. Moreover, the GOMx Bryde's whale BIA is in close geographic proximity to oil extraction development areas, increasing their risk of exposure to an oil spill event.

Comment 30: Joint industry commenters stated that if a spill was to occur and dispersants were needed for spill response, the dispersants will have minimal impacts to Bryde's whales. The commenters stated that impacts are highly dependent on a number of factors, such as frequency and duration of exposure, the type and mixtures of the chemical/compounds, the route of exposure, and the species' known avoidance of oily water. The commenters also stated that no Bryde's whales were observed within the oil during the DWH oil spill and there were no samples showing that Bryde's whales ingested oil or oil dispersants. Another commenter, however, stated that baleen whales, such as Bryde's whales, are more susceptible to impacts from oil spills and response activities because, as filter feeders, oil may adhere to their baleen plates and result in ingestion of the oil or dispersants used.

Response: We recognize that impacts from dispersants are highly dependent on a number of factors, such as frequency and duration of exposure, the type and mixtures of the chemical/compounds, and the route of exposure. There is no evidence that GOMx Bryde's whales will avoid oiled waters. While previous studies have suggested that marine mammals could detect and avoid oiled waters, recent photographic evidence and field observations gathered following the DWH oil spill documented at least 11 marine mammal species swimming through oil and sheen, with oil adhering to their skin (Dias *et al.,* 2017). This evidence demonstrates that marine mammals do not necessarily avoid oiled waters. In addition, the best available scientific information indicates that dispersants can cause acute or chronic impacts to marine mammals with lethal or sub-lethal effects (*e.g.,* Wise *et al.,* 2014). Oil and other chemicals used as dispersants may impair marine mammals' health and reproduction, and increase their susceptibility to other diseases (DWH Trustees 2016). After active spilling has been stopped, marine mammals may experience continued effects through persistent exposure to oil in the environment, reduction or contamination of prey, direct ingestion of contaminated prey, or displacement from preferred habitat (Schwacke *et al.,* 2014, Bureau of Ocean Energy

Management and Gulf of Mexico OCS Region 2015, DWH Trustees 2016). Thus, based on available information for marine mammals, we cannot conclude that GOMx Bryde's whale would be minimally harmed by oil spills or response activities. Moreover, as described herein, the DWH PDARP determined the Bryde's whale to be the most impacted oceanic marine mammal following the 2010 DWH oil spill. We find that the best available science supports our determination that oil spills and spill responses are a threat to the species. We agree with the other commenter that Bryde's whales are susceptible to impacts from oil spills and response activities and that ingestion of oil or dispersants are likely harmful to GOMx Bryde's whales.

Comment 31: Joint industry commenters stated that the species will not be threatened by oil spills or spill response activities in the future. BOEM's EIS for multiple lease sales in the Central and Eastern Planning Areas between 2017 and 2022 (BOEM 2015–033) recognizes that recently developed measures, ''including additional subsea blowout preventer testing, required downhole mechanical barriers, well containment systems, and additional regulatory oversight'' make an oil spill event ''less likely than in the past,'' and BOEM does not expect spills greater than 150,000 barrels in the Central and Eastern Planning Areas during the 2017 to 2022 period. Commenters also noted industry-driven initiatives to prevent oil spills and improve spill responses, including the formulation of four ''Joint Industry Task Forces ('JITFs') to identify best practices in offshore drilling operations and oil spill response with the aim of enhancing safety and environmental protection,'' American Petroleum Institute's adoption of certain standards applicable to offshore drilling and related operations, and the development of the Center for Offshore Safety, a group whose mission is to promote safety in offshore drilling, completions, and operations by offering information, tools, and opportunities for industry collaboration. The commenter also stated that the federal government has instituted a number of changes by reorganizing the Minerals Management Service and issuing new rules and requirements that make the prospect of future catastrophic spills even more remote.

Response: We recognize the efforts that have been made to reduce the likelihood of future oil spills and improve oil spill response efforts. Federal agencies, including BOEM, and oil and gas industry groups have instituted a number of safeguards, standards, and best practices to help reduce the likelihood of a future spill. The industry is to be commended for their efforts to further reduce the risks of spills. However, these efforts do not eliminate the threat of oil spills and spill response activities to the species. Changes made at the federal level have been to further reduce the likelihood of ''catastrophic spills'' and are likely to be beneficial; however, as described elsewhere in the rule, GOMx Bryde's whales are susceptible to adverse effects from spills regardless of the spill's size. Furthermore, we have found that regulatory mechanisms aimed at reducing the threat of oil spills or spill response activities are inadequate to protect the species, as discussed in more detail under the response to comments on Existing Regulatory Mechanisms. For these reasons, we conclude that we have accurately stated the likelihood of impacts and the risk to the species.

Comments on the Threat of Vessel Collision

Comment 32: We received several comments on the risk of vessel collisions to GOMx Bryde's whales and level of shipping traffic in the BIA. Joint industry commenters stated that vessel collisions have never been a significant source of Bryde's whale mortality in the Gulf of Mexico, or anywhere else in the world, with the exception of the heavily trafficked Hauraki Gulf off New Zealand. Vessel collisions are incredibly rare for Bryde's whales in the Gulf of Mexico and are not a threat to the species. Commenters stated that ship strike mortality is low throughout the Bryde's whale's worldwide range, as shown by two sources which contain three records of ship strike Bryde's whale mortalities occurring in locations other than New Zealand—a 2001 Marine Mammal Commission review of whale strandings and collision reports dating back to the 1800s, and the International Whaling Commission's online ship strike database. The commenters stated that, since the 2001 Marine Mammal Commission review, NMFS has reported only one additional incident of a Bryde's whale being killed as the result of ship strike in the Gulf of Mexico. The commenters also state that vessel traffic in the Bryde's whale BIA is low, as demonstrated by NOAA's tracking of transponder data, and likely is the reason for the relative absence of vessel collisions with Bryde's whales in the Gulf of Mexico. Another commenter stated that there is a high density of vessel traffic in the northern Gulf of Mexico, as well as commercial shipping lanes that transit through the Bryde's whale BIA. Two other commenters stated that vessel collisions with GOMx Bryde's whales might increase after the moratorium on new lease sales in the EPA expires in 2022. If the EPA was open to energy exploration, development, and production, and vessel traffic increased in areas that overlap with Bryde's whale habitat, the risk of vessel collisions may also increase. A commenter stated that the distribution of vessels relative to Bryde's whale distribution, coupled with the species' vulnerability to vessel collisions, suggest this threat needs to be mitigated. Lastly, a commenter stated that vessel collision is a significant threat, considering that mariners have difficulty sighting whales at night which limits their ability to quickly change course and avoid collision.

Response: We find that vessel collisions are a threat to the species. The number of reported vessel collisions with Bryde's whales in the Gulf of Mexico and elsewhere worldwide, with the exception of New Zealand, is likely underestimated because GOMx Bryde's whales are an offshore species and have low carcass detection and recovery rates compared to more coastal species (*e.g.,* New Zealand Bryde's whale, humpback whale, and right whale; Laist *et al.,* 2001; Jensen and Silber 2004; Williams *et al.,* 2011; Waring *et al.,* 2013). In the southern hemisphere, Bryde's whales (*B.edeni*) are the third most commonly reported species struck by ships (Van Waerebeek *et al.,* 2007). One GOMx Bryde's whale (a lactating female) is known to have been struck by a ship in 2009 (Waring *et al.* 2013). Williams *et al.* (2011) estimate that as few as 2 percent of cetacean deaths in the Gulf of Mexico are actually detected. The 2009 ship struck GOMx Bryde's whale was readily documented because the animal was struck, pinned across the ship's bow, and transported on the bow for likely tens or possibly hundreds of miles before it was detected in the Port of Tampa Bay, Florida (Waring *et al.* 2013). Comparatively, in New Zealand, where Bryde's whales occur nearshore and the probability of detecting carcasses is high, six of the seven Bryde's whale carcasses reported in the IWC database washed ashore (IWC ship strike database, accessed June 6, 2017, *https://iwc.int/index.php?cID=872&cType=document*).

The GOMx Bryde's whale population likely numbers fewer than 100 animals (Rosel *et al.* 2016). There are several major shipping lanes cross the GOMx Bryde's whale's BIA, with moderate vessel densities, connecting ports in Mobile, Alabama; Pensacola, Panama City, Tampa Bay, Florida, which increase the risk to vessel collisions.

Given the species' small population and restricted range, the species is particularly vulnerable to threats from vessel collisions. Any human induced mortality can have population-level consequences to small populations of whales (Laist *et al.* 2001, Jensen and Silber 2004). Thus, although the number of reported vessel strikes and mortalities to Bryde's whales outside of New Zealand is low, given the low abundance and the low probabilities of carcass detection and recovery rates for GOMx Bryde's whales, we conclude that vessel strikes and moralities to GOMx Bryde's whales pose significant threat to this subspecies.

Lastly, we agree with the commenters who noted that vessel collisions are a threat to Bryde's whales given the species' vulnerability to vessel collisions and mariner's sighting abilities. The spatial overlap between vessel traffic and GOMx Bryde's whale distribution, the difficulty of sighting a whale at the surface at night, Bryde's whale diving behavior (spending 88 percent of their time at night within 15 m of the surface; Soldevilla *et al.,* 2017), and the limited ability of large ships to change course quickly enough to avoid a whale all contribute to the risk of vessel collisions to GOMx Bryde's whales. We also agree that any increase in the number of vessels in the Bryde's whales' habitat, such as could occur following the expiration of the moratorium on lease sales, would increase the severity of this threat.

Comment 33: Joint industry commenters stated that NMFS incorrectly concluded that the construction of the third lane of the Panama Canal would expand vessel traffic in the Gulf of Mexico and increase the risk of vessel collision with GOMx Bryde's whales. The commenters stated that NMFS relied on a report (Institute for Water Resources, 2012) on port modernization that contained figures regarding increases in cargo tonnage, not increases in vessel traffic, as support for the conclusion that vessel traffic and the associated risk of vessel strike would increase following the canal modernization. The projected increase in the use of post-Panamax vessels could result in decreased vessel traffic, given the larger capacity of these vessels. In addition, shipping between the Panama Canal and two of the Gulf of Mexico's largest ports (Port of South Louisiana and Port of Houston) would likely not traverse the areas where Bryde's whales are most commonly found.

Response: We agree with the SRT's assessment that vessel collisions are a current threat to the GOMx Bryde's whale and that the threat of vessel collisions may increase in the future given the expansion of the Panama Canal (Institute for Water Resources, 2012). The increased use of the larger post-Panamax ships (larger vessels using the canal post-expansion) is just one factor in evaluating the amount of vessel traffic expected in the Gulf of Mexico in the future. As stated in the status review, as a result of the re-inauguration of the Panama Canal, freight transport may be redistributed from the West Coast Pacific ports to southeastern U.S. ports, including those in the Gulf of Mexico. Transshipment service hubs also may arise with the use of these larger vessels. Since not all ports will be able to accommodate the larger, post-Panamax vessels, smaller feeder vessels may be used to deliver cargo received at these hubs from the larger vessels to locations unable to receive the larger vessels directly (Institute for Water Resources 2012). In addition, historical vessel call data available from the Maritime Administration's website (*https://www.marad.dot.gov/resources/data-statistics/*) shows that from 2002 to 2013, vessel calls at the top 20 U.S. Gulf of Mexico ports doubled from 17,200 to 34,700 vessel calls. We expect demand for shipping to continue to increase due to population growth in the south. The U.S. Census Bureau projects a population growth rate of just less than 28 percent between 2015 and 2025. Thus, the best scientific and commercial data available indicate that ship traffic is likely to increase in all of the Gulf of Mexico, including within Bryde's whale habitat, even with the reliance on vessels with larger cargo capacity. We agree with the commenters' observation that vessel traffic from the Panama Canal specifically to the Port of Louisiana and Port of Houston will not likely traverse the GOMx Bryde's whale BIA. However, we conclude that the threat of vessel collisions is a high severity threat to the subspecies and that the threat may increase in the future.

Comments on Exposure to and Effects of Anthropogenic Noise

Comment 34: We received two sets of comments stating that NMFS provided no direct evidence that exposure to anthropogenic noise harms Bryde's whales. Joint industry commenters stated that the studies that NMFS cites in the proposed listing rule regarding impacts of noise pertain to other marine mammals or marine mammals in general, and that NMFS has not provided any direct evidence that there are negative acoustic impacts on Bryde's whales. Another commenter stated that NMFS previously concluded that ''there is no evidence that serious injury, death, or stranding of marine mammals can occur from exposure to airgun pulses, even in the case of large air gun arrays,'' and that we do not have a basis to change our position in this rulemaking. In addition, a BOEM Science Officer has stated that ''there has been no documented scientific evidence of noise from air guns used in geological and geophysical seismic surveys adversely affecting marine mammal populations or coastal communities.'' Another commenter stated that acute or chronic exposure to anthropogenic noise can have direct or indirect impacts to marine mammal species and that there is a substantial body of published scientific literature demonstrating the impacts of noise on baleen whale vital behaviors (Castellote *et al.,* 2012; Cerchio *et al.,* 2014; Blackwell *et al.,* 2015; Nowacek *et al.,* 2015; Shannon *et al.,* 2015).

Response: In the proposed rule, we concluded that Bryde's whales are impacted by anthropogenic noise, and noted the potential for acute and chronic impacts of noise. Acute impacts of noise-producing activities include auditory injuries or behavioral responses and tend to occur relatively nearby the source. Chronic impacts are those caused by long-term elevated ambient noise from multiple noise sources that can occur at extended distances from the sources and include masking, stress, and habitat degradation and associated impacts. Ambient noise is the average background noise level in an environment and is the combination of physical (*e.g.,* wind, waves, earthquakes), biological (*e.g.,* fish calls, mammal calls, snapping shrimp) and anthropogenic (*e.g.,* shipping, seismic surveys, sonars) noise sources present. The studies we relied on represent the best scientific information available from which to evaluate the impacts of noise on the GOMx Bryde's whales. The different sources of anthropogenic noise and their associated impacts are further discussed in the status review (Rosel *et al.,* 2016) and proposed rule (81 FR 88639). Some of the studies were of other baleen whale species, but as we explained in the proposed rule, it is reasonable to expect similar effects on Bryde's whales because the auditory abilities of all baleen whale species are considered to be broadly similar based upon vocalization frequencies and ear anatomy (Ketten *et al.,* 1998). In addition, as we stated above, energy exploration, production, and development in the northern central and western Gulf of Mexico, including the

noise from these activities, likely contributed to the curtailment of the species' range and continued activities constrain the species' range.

We are not changing our position regarding the effect of sound from air gun pulses. In the proposed rule, we noted that seismic surveys have the potential to cause acute auditory injury to marine mammals within 100m—1km of airguns with received levels of 230 dB re 1 μPa (peak) or higher (Southall *et al.,* 2007). In the 2016 Technical Guidance, this threshold was reduced to 219 dB re 1 μPa (peak), which indicates an area of potential acute auditory injury at equal or greater distance from the sound source than that discussed in Southhall *et al.,* 2007. Contrary to the commenter's statement, we did not state that we have direct evidence that serious injury, death, or stranding from airguns has occurred for GOMx Bryde's whales. We also noted that the whales could experience behavioral responses, including strong avoidance, as has been documented in other baleen whale species. In addition, behavior disturbances can cause energetic effects (*e.g.,* through avoidance of preferred feeding habitat, or interruption of feeding) or interfere with critical behaviors (*e.g.,* cow-calf communications or adult mating behaviors) in a manner that may reduce reproductive success or survivorship which can lead to population level effects depending on the scale of the impacts and the status of the population. As indicated in the literature cited in the status review, such behavioral responses can occur if the activity occurs within 8 km of a whale (Rosel *et al.,* 2016). The commenters cite an article by a BOEM Science Officer entitled, *The Science Behind the Decision: Answers to Frequently asked Questions about the Atlantic Geological and Geophysical Activities Programmatic Environmental Impact Statement (PEIS),* to support their statement that noise from airguns does not adversely affect marine mammals. The article suggests there are no population-level effects to marine mammals as none have been documented. However, as BOEM stated in a follow-up to this article, ''[we] should not assume that lack of evidence for adverse population-level effects of airgun surveys means that those effects may not occur'' (BOEM, 2015; *www.boem.gov/BOEM-Science-Note-March-2015/*). In addition, while the article notes that there have been no documented reports of marine mammals being killed, it also states that marine mammals can be injured by noise from airguns, and protection is needed to avoid harm. Thus, the article does not alter our conclusion that Bryde's whales could suffer acute auditory injury or experience behavioral effects if exposed to noise from seismic survey activity. The commenter provided no basis to draw a different conclusion about the impact from noise from seismic surveys and airguns to the GOMx Bryde's whale than we described in our proposed rule. We agree with the commenter who stated that acute or chronic exposure to anthropogenic noise can have direct or indirect adverse physical and behavioral effects on GOMx Bryde's whales, as further described in the status review and proposed rule (Rosel *et al.,* 2016; 81 FR 88639, December 8, 2016).

Comment 35: Joint industry commenters stated that NMFS failed to show that Bryde's whales in the Gulf of Mexico are exposed to marine sound. The commenters stated that, although ship noise likely occurs in the Gulf of Mexico, the noise in the De Soto Canyon is likely less than other areas in the Gulf because commercial fishing vessels, which constitute a large portion of marine traffic in the Gulf, are prohibited from fishing in the De Soto Canyon area. According to the commenter, much of the area where Bryde's whales are found is under speed restrictions contained in the Joint Notice to Lessees and Operators on ''Vessel Strike Avoidance and Injured/Dead Protected Species Reporting'' (BOEM NTL No. 2016–G01), which could reduce noise. Additionally, the commenters stated that oil and gas exploration does not occur in the De Soto Canyon or anywhere else in the EPA and therefore does not provide a meaningful contribution to anthropogenic noise levels. The commenters also stated that one of the peer reviewers agrees that the BIA for the Bryde's whales is an area of relative quiet in the Gulf of Mexico.

Response: We conclude that GOMx Bryde's whales are exposed to and affected by marine sound. Noise from oil and gas activities (*e.g.,* noise generated from vessels and aircraft, oil drilling and production, and seismic surveys) and shipping traffic constitute the primary sources of anthropogenic noise in the Gulf of Mexico. We disagree that Bryde's whales are exposed to less noise due to the prohibition of commercial fishing in the De Soto Canyon area. As described in the status review (Rosel *et al.,* 2016), noise associated with commercial fishing sonars and scientific sonars is ubiquitous, but it is not as pervasive as other sources of noise (*e.g.,* noise associated with shipping and other vessel traffic). In addition, we note that the only commercial fisheries prohibited in the De Soto Canyon Marine Protected Area (MPAs) are those fisheries that use pelagic longline gear as described herein.

The commenters noted that noise levels increase with vessel speed, but states that given the U.S. Department of the Interior, Joint Notice to Lessees and Operators cited in the comment above, much of the area where Bryde's whales are found is under speed restrictions. The Joint Notice applies to existing and future oil and gas operators in the Gulf of Mexico, and contains only recommended measures to reduce the risk associated with vessel strike or disturbance of protected species. One of the recommended measures is to ''Reduce vessel speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near an underway vessel when safety permits.'' However, these recommended measures are only applicable to specific lessees and operators, and are specific to the area where the individual operations occur, not specific to the GOMx Bryde's whale BIA. We disagree that most of the area where Bryde's whales are found is under speed restrictions. Moreover, any recommended measures applicable to oil and gas operations would not apply to commercial shipping or other vessels and thus would not reduce noise from those vessels, which is a primary source of low frequency noise in the Gulf of Mexico.

Oil and gas exploration can occur within the EPA, and we have not received any information to change our conclusion regarding this threat. The current moratorium expires in 2022, and even now only bans oil and gas leasing. The moratorium does not ban exploration activities, which include the use of seismic surveys, which are a primary source of low frequency noise in the Gulf of Mexico.

Comment 36: One commenter presented information from a 2016 acoustic propagation modeling effort, incorporated in BOEM's Gulf of Mexico OCS Proposed Geological and Geophysical Activities Draft (PEIS) (BOEM 2016–049), that estimated the extent of the reduction of listening area and communication space for marine animals due to seismic surveys. The model shows that the shallow waters in the upper De Soto Canyon suffer less habitat degradation due to noise levels than modeled sites to the west, in part due to the bathymetry of the canyon and the low levels of oil and gas activity. The commenter stated that this acoustic modeling information supports NMFS' observation that Bryde's whales may have experienced a range contraction

due to the acoustic habitat degradation from the heavily developed western Gulf of Mexico.

Response: We appreciate the information presented, and note that after the comment was submitted, BOEM published the final EIS (BOEM 2017–051), incorporating this modeling information. We agree with the commenter's characterization that anthropogenic noise may have contributed to the shift in the species' distribution.

Comment 37: Joint industry commenters stated that the threat of noise from oil and gas exploration, development, and production is at most a future risk dependent on the potential opening of the EPA to leasing for energy exploration, development, and production. Even if the EPA were open for leasing, any increase in noise is speculative and depends on future leasing decisions, lease interest, production rate, and presumptions about geology and market speculation. Even if oil and gas activities were to occur in important Bryde's whale habitat either now or in the future, those activities would be conducted pursuant to strict regulatory requirements that minimize the risk of exposure as outlined in BOEM's Notice to Lessees. Another commenter highlighted information from BOEM's Draft EIS on Gulf geophysical and geological surveys (BOEM 2016–049) and stated that over the next 10 years GOMx Bryde's whales would be exposed to noise from oil and gas exploration.

Response: We disagree that the threat of energy exploration and production is a speculative, future threat. The SRT evaluated the threat of anthropogenic noise based on its current threat to the species and the threat it poses over the next 55 years. Although few seismic surveys are currently occurring in the eastern Gulf of Mexico, in other areas in the Gulf of Mexico, outside of the species' currently known range, there are high levels of noise due to seismic surveys. We conclude this noise likely contributed to the species' range contraction. In addition, given the ability of low-frequency sounds to travel substantial distances, sounds from nearby surveys may be impacting the GOMx Bryde's whale within the BIA, contributing to ambient noise levels that have the potential to increase stress, mask vocalizations and environmental cues, and reduce foraging and reproductive success, and have the potential to affect the species' distribution and curtail the species' range. The highest levels of exploration activity (seismic surveys) are in the CPA, and the northwestern extent of the BIA is near the EPA/CPA boundary. We note that the species could suffer acute auditory injury if seismic survey activity occurred within 1 km of a Bryde's whale and could experience behavioral responses, including strong avoidance, if activity occurred within 8 km of a whale (Rosel *et al.,* 2016). None of the measures in the Notice to Lessees to address exposure to short-term noise at high sound pressure (resulting in acute auditory injury) would address the issues associated with exposure to chronic noise. BOEM has projected oil and gas activity levels in the EPA that show there will be wells drilled and associated activities occurring in the EPA as a result of current lease sales (BOEM 2015–033), and noise from these activities may affect the GOMx Bryde's whale. Moreover, the moratorium on new lease sales in the EPA expires in 2022, and thereafter, noise produced from oil and gas activities is likely to increase within the Bryde's whale BIA. Post-moratorium, the whales could be exposed to ambient noise levels that have the potential to mask communications, among other effects, and to discrete incidences of noise that have the potential to cause acute auditory injuries.

We appreciate the comment with information from BOEM's now-finalized EIS (BOEM 2017–051) regarding the sound levels that Bryde's whales could be exposed to from seismic oil and gas surveys taking place in the entire Gulf of Mexico, including the EPA. Information from this comment supports our conclusions regarding the impacts of noise from oil and gas activities on GOMx Bryde's whales in the future if energy exploration, development, and production were to expand into the EPA.

Comment 38: One commenter stated that the modeled noise predictions that NMFS relied on from the status review were un-validated and inconsistent with real world data, as one of the peer reviewers noted. The commenter stated that NMFS cannot rely on models that do not reflect real world measurements.

Response: The SRT presented model outputs from the Cetacean and Sound Mapping (CetSound) working group to understand the potential contribution from different sound sources to ambient noise in the Gulf of Mexico and the potential geospatial distribution of ambient noise. One of the peer reviewers of the draft status review report recommended omitting the models due to the potential discrepancy with measured data. The SRT took into account the peer reviewer's comments and explained that the CetSound models in the BIA are consistent with the real world measurements described in Rice *et al.,* 2014 and Wiggins *et al.* (in review at the time the status review was developed, and published in 2016) and made appropriate revisions in the final status review report to clarify this point. We conclude that, as is explained in the status review, a comparison of sound levels detected by Marine Autonomous Recording Units and High Frequency Acoustic Recording Packages and the CetSound predictions indicates that the predictions are a reasonable approximation of the range of ambient noise, considering the differences in spatial and temporal scales of the models and in-situ measurements. When seismic survey activity is low in the EPA, ambient noise levels are likely to be within the range the model predicts for total shipping noise, and when seismic survey activity is higher in the EPA (near 2009 levels), ambient noise levels are likely to be within the range the model predicts for total shipping and seismic noise.

Comment 39: One commenter stated that ambient noise levels in the Gulf of Mexico present no harm to the GOMx Bryde's whale under current or historical standards for evaluating the levels at which noise will cause injury or behavioral effects. The commenter stated that the average ambient noise levels cited in the status review are below those at which NMFS believes the species will experience auditory impacts, as set forth in NMFS' 2016 Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing, and the historical levels, which commenters state are 180 dB for physical injury and 160 dB for behavioral effects. The commenters stated that the Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing changed the acoustic standards for physical injury, but did not change the 160 dB behavioral effects standard. The commenter also stated that the status review incorrectly states that ambient noise sound pressure levels may exceed thresholds for behavior disturbances during a proportion of the year in certain regions (*e.g.,* MARU sites HF4 and HF7 in the Central Planning Area, Table 6, and Figure 14). According to the commenter, this statement is incorrect because levels recorded at those sites are below the thresholds. The commenters stated that NMFS needs to develop a specific standard of harm before it can assess the level of risk to Bryde's whales from exposure to anthropogenic noise.

Response: We have sufficient information to evaluate the threat to the GOMx Bryde's whale from

anthropogenic noise, including the threat from ambient noise (the average background noise levels that the animals experience). We described the research on the effects of noise on marine mammals in the status review and proposed rule (Rosel *et al.,* 2016; 81 FR 88639, December 8, 2016). We concluded GOMx Bryde's whales are being affected by noise, caused primarily by vessels and commercial shipping traffic and seismic surveys. In particular, we find that exposure to noise from these sources can increase stress, mask communication and environmental cues, lead to reduced foraging and reproductive success, and lead to habitat displacement. We also conclude that noise associated with energy exploration, development, and production likely contributed to the species' range contraction.

In addition to discussing the effects of acute and chronic exposure to noise, the SRT evaluated whether ambient noise levels would exceed the thresholds NMFS has used to evaluate effects from acute, or short-term, exposure to noise. Although the acute exposure thresholds are not intended to be used to evaluate the effects of exposure to constant background noise, the SRT conducted this comparative analysis to determine whether the GOMx Bryde's whale is continuously being exposed to noise at levels that would cause acute auditory injury, or result in behavioral effects even if the species was temporarily exposed.

Thus, the SRT compared, measured, and modeled ambient noise levels to NMFS' acoustic thresholds for determining whether sound at a given level constitutes Level A or Level B harassment for the purpose of incidental take permitting, as those terms are defined under the MMPA. While the SRT was finalizing the status review, NMFS was in the process of updating the acoustic thresholds for auditory injury. The status review refers to earlier-existing thresholds, stating that the threshold for Level A harassment, which includes the potential for injuries, was 180dB, and the threshold for Level B harassment, which refers to behavioral effects, was 160 dB for impulsive sound and 120 dB for non-impulsive sound. The SRT did not determine at what point noise from seismic or shipping activities would cause Level A or Level B harassment. The purpose of the status review analysis was not to evaluate noise that might be harassment under the MMPA, but to evaluate threats to the species to inform our ESA listing decision. In 2016, we published Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing—Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts (2016 Technical Guidance). This document provides acoustic thresholds for assessing auditory impacts in marine mammal hearing for all sound sources. It updated the 180 dB threshold used to assess the onset of auditory injury, but did not update or address the threshold for evaluating behavioral harassment from non-impulsive noise (*e.g.,* continuous noise), and the status review uses the 120 dB for evaluating behavioral effects from continuous noise sources. The status review evaluated whether ambient noise levels would exceed this 120 dB threshold.

Ambient noise levels measured at certain locations (MARU sites HF4 and HF7 in Table 6, Figure 14 in the status review in the WPA and CPA) may exceed the 120 dB threshold for determining when exposure to non-impulsive noise may cause behavioral disturbances. The SRT's analysis relied on noise levels for the ⅓ octave band level centered at 100 Hz only, to allow comparisons at the frequencies at which GOMx Bryde's whales produce their calls (Rosel *et al.* 2016 at 48, citing Širović *et al.* 2014). However, noise impacts occur over a wider frequency bandwidth which must be considered to appropriately compare these noise levels to broadband noise levels, such as 120 dB threshold. The sound level in any narrow-band (*e.g.,* the ⅓ octave band centered at 100 Hz) will be lower than the total sound level across the full frequency band. As discussed in the status review, the full impacts of sound (injury, physiological responses, and behavioral responses) can occur throughout the Bryde's whale's hearing frequency range, and therefore, sound levels need to be integrated over this broader range to understand the full impacts of sound. Based on the broadband data presented in Rice *et al.* (2014b) and Wiggins (in review at the time the status review was developed, and published 2016), the SRT estimated that ambient noise levels in the 10–200 Hz frequency range may exceed 120 dB at two locations where sound was measured (the MARU HF4 and HF7 sites in the WPA and CPA). Although those sites are outside of the EPA, as the SRT explained, noise levels in the BIA could reach the levels recorded at these sites when seismic survey activity occurs closer to or within the BIA. The models including seismic survey noise predicted higher noise levels in the BIA, based on data from 2009 when seismic survey activity was high in the BIA. At those levels, the SRT predicted that the whales would be unlikely to hear their closest neighbors. Thus, we conclude that if seismic survey activity were to increase in the EPA and return to 2009 levels, which is possible following expiration of the moratorium, ambient noise levels could be so high as to preclude the species from communicating. Thus, expanding seismic survey activity could prevent the species from communicating at all times. Moreover, high background noise reduces the ability of acoustically sensitive species, such as the GOMx Bryde's whales, to detect and interpret critical acoustic cues, such as those used for communication, detecting predators or prey, or navigation, even if they do not exceed the thresholds for behavioral effects used to evaluate impulsive sound. We conclude that high background noise is a threat to the species.

The best scientific information available discussed above does not support the commenter's position that noise levels present no harm or that NMFS has no standards to measure harm. We discussed the potential harm from ambient noise and acute noise, and compared ambient noise levels to the thresholds at which the agency has determined discrete exposure to noise could cause acute auditory injury or behavioral responses. Moreover, the information in the 2016 Technical Guidance and the agency's thresholds for evaluating behavioral disturbances are not the only tools to be used in analyzing the effects of noise on a species. As stated in that 2016 Technical Guidance, the agency has a number of tools beyond just the guidance, including behavioral impact thresholds, auditory masking assessments, evaluations to help understand the effects of any particular type of impact on an individual's fitness, population assessments, etc., to help evaluate the effects of noise.

Comments on the Threat of Fishing Gear Entanglement

Comment 40: Joint industry commenters stated that entanglement has never been shown to pose an extinction threat to Bryde's whales in the Gulf of Mexico or anywhere else in the world. The joint industry commenters noted: (1) There have been only a handful of Bryde's whale entanglements worldwide and even fewer instances where the entanglement resulted in mortality, (2) fisheries and gear that entangled Bryde's whales are not used near important Bryde's whale areas, (3) in the Gulf of Mexico, there have been no reports of Bryde's whale

entanglement or other fishing-related mortality or serious injury between 1998 and 2013, (4) there are no known interactions between Bryde's whales and pelagic longline gear or bottom longline gear, (5) of the 12 fisheries analyzed for potential fishing gear interactions in the status review, only the butterfish trawl fishery is a potential threat to Bryde's whales, but it has only two participants currently permitted, (6) other fisheries are either unlikely to harm Bryde's whale (hook and line), have the highest effort west of De Soto Canyon or in shallower water than Bryde's whales inhabit (shrimp trawl), or are prohibited in the De Soto Canyon (pelagic longline), and (7) fishing effort in the Gulf of Mexico is declining. Another commenter concurred with the SRT's determination that fishing gear entanglement is at least a moderate threat to the population. Other commenters stated that while there are few known entanglements in U.S. waters, the lack of observer coverage for trap/pot and trawl fisheries and heavy reliance of self-reporting may underestimate the extent of fishery-related mortality and serious injury, as self-reports of interactions by fisheries often are significantly underreported, and that even known levels of entanglement would threaten the species.

Response: The degree of risk from direct fishery interaction is a function of whale size and behavior, gear type, and spatial overlap between fishing effort and habitat. The SRT concluded that five of the 12 commercial fisheries that they evaluated overlap or possibly overlap with the Bryde's whale BIA (*i.e.,* the Gulf of Mexico commercial pelagic longline fishery, the bottom longline component of the Gulf of Mexico reef fish fishery, the Gulf of Mexico shark bottom longline fishery, the Gulf of Mexico shrimp trawl fishery, and the Gulf of Mexico butterfish trawl fishery). The SRT also concluded that these five fisheries use gear types (*i.e.,* pelagic longline, bottom longline, and trawl) that pose entanglement risk to whales (see Table 7, Rosel *et al.* (2016). Trap/pot fisheries in the Gulf of Mexico do not overlap with the BIA so they are not an entanglement concern for this species. The other fisheries not identified above were found to have limited spatial overlap and/or to use gear that does not pose an entanglement risk and therefore that is unlikely to harm GOMx Bryde's whale. The proposed rule assessed the threat of fishing gear entanglement based on the spatial overlap between these fisheries and the Bryde's whale BIA, the amount of fishing effort, and the potential for interactions given the whale's foraging behavior. The status review notes known entanglements and explains that the bycatch rates are often underestimated as marine mammals may become entangled in, or hooked by, fishing gear and swim away with injuries or deaths that are unobserved and accounted for in bycatch statistics (Rosel *et al.,* 2016). High rates of entanglement scarring on living baleen whales indicate that fishery entanglements may occur more frequently than indicated by statistics on known bycatch mortality. The status review stated that the royal red shrimp trawl fishery and butterfish trawl fishery have limited spatial overlap with the BIA and those overlapping areas represent a small portion of fishing effort. The SRT also noted that there are only two participants within the butterfish trawl fishery. Consequently, the SRT determined that these trawl fisheries are unlikely to harm GOMx Bryde's whale. However, the pelagic longline and bottom longline fisheries were found to present an entanglement risk based on their effort in the BIA and their potential for interactions given the gear type and the whale's behavior. Pelagic longlines are a known entanglement threat to baleen whales because the majority of mainline gear is in the water column (Andersen *et al.,* 2008). Approximately two thirds of the Bryde's whale BIA has been closed to commercial pelagic longline under the De Soto Canyon Marine Protected Area (MPA); however, the BIA is larger than the MPA and one third of the BIA is still open to pelagic longline fishing (65 FR 47214; August 1, 2000). The MPA is composed of two rectangular areas, one of which covers the northern part of the BIA, the other covering the southern part, leaving the middle section of the BIA open to pelagic longline (Figure 20B in Rosel *et al.,* 2016). In addition, there are no restrictions or areas within the BIA closed to bottom longline fishing. Bottom longline gear is an entanglement risk to bottom-foraging whales, given that the majority of mainline gear is anchored on the seafloor. The GOMx Bryde's whales likely forage on or near the seafloor bottom, increasing the potential for interaction with bottom longline fisheries. Based on the best scientific and commercial information available, we concluded that fisheries that use pelagic longline and bottom longline gears that operate within the BIA pose an entanglement risk to the GOMx Bryde's whale.

Comment 41: The State of Louisiana requested that we conduct additional analysis and interpretation of the status review's Appendix 2 ''Vessel Monitoring System and Fishery Effort Geospatial Density Distribution.''

Response: As explained in the status review, Appendix 2 depicts fishing effort for a number of fisheries based on Vessel Monitoring System data that, where available, indicate where effort occurs for each fishery. The SRT relied on Appendix 2 and other information to evaluate the spatial distribution of commercial fisheries in the Gulf of Mexico, and to evaluate the risk to the species from fishing gear entanglement. Based on their review, the SRT found that 5 fisheries with gear types that may interact directly with the species may have effort within or along the edge of the known range of GOMx Bryde's whales in the northeastern Gulf of Mexico, as described in Table 7 of the status review. As we explained in the proposed rule, based on the SRT's scoring, the threat of entanglement in commercial fishing gear is ''moderate'' in severity with ''moderate'' certainty, and we considered this in our evaluation of section 4(a)(1) factor E. The State of Louisiana did not express any specific concerns regarding Appendix 2. We find the information contained in the status review, including the information provided in Table 7 and Appendix 2, represents the best available scientific and commercial information upon which to evaluate the threat of fishing gear entanglement on the GOMx Bryde's whale. We will continue to monitor this threat when we conduct our review of the listed species (ESA section 4(c)(2)).

Comments on the Threat of Military Activities

Comment 42: The Navy's Energy and Environmental Readiness Division stated that the proposed rule is consistent with their understanding of the life history, abundance, and genetics information for the GOMx Bryde's whale. They referenced the most significant threats to the GOMx Bryde's whale and described measures the Navy implements to avoid and minimize harm to marine mammals from oil releases from vessels, vessel collisions, and training and testing activities. They provided information on specific operational procedures that they state would help minimize and avoid harm to GOMx Bryde's whales while conducting their activities (*e.g.,* maintaining an oil spill prevention and response program for vessels, having personnel charged with observing objects and disturbances in water to reduce the potential for

vessel interactions, maintaining mitigation zones where training and testing activities may be curtailed when marine mammals are sighted). They also communicated their need to conduct limited training and testing activities in the Gulf of Mexico. They stated that the Eastern Gulf of Mexico Planning Awareness Area encompasses the GOMx Bryde's whales BIA, and indicated the Navy avoids planning major training and testing exercises, when feasible, within this area.

Response: We appreciate the Navy's efforts to implement procedures that may minimize impacts to marine mammals, including the GOMx Bryde's whale. As noted in the proposed rule, section 7(a)(2) of the ESA requires that all Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of endangered or threatened species or destroy or adversely modify designated critical habitat. Federal agencies must consult with NMFS on their actions that may affect listed species under our jurisdiction. We have previously consulted on the Navy's training exercises, including the Atlantic Fleet Training and Testing exercises, and recognize that once the rule is finalized, reinitiation of consultation may be required, to the extent the newly listed species may be affected by the action (50 CFR 402.16). We appreciate the Navy recognizing the GOMx Bryde's whale's BIA and expanding the boundaries of their Planning Awareness Area to encompass that area as it is an important area for the species.

Comments on the Information Quality Act and Peer Review of the Status Review

Comment 43: One commenter stated that the proposed listing rule does not comply with the Information Quality Act (IQA) or guidance on peer review of science documents issued under the IQA and other authorities because NMFS has not classified the rule as ''influential'' or ''highly influential.'' The commenter stated that the proposed listing rule is not Influential Scientific Information (ISI), but is a Highly Influential Scientific Assessment (HISA) because it is novel, controversial, precedent-setting, or has significant interagency interest. The commenter stated that, because the rule is HISA, NMFS was required to provide opportunity for public comment to the peer reviewers, and to provide public comments submitted to NMFS to the peer reviewers. Another commenter stated the proposed listing and the information upon which it is based adheres to information quality standards.

Response: We disagree that our proposed listing rule does not comply with the IQA or guidance on peer review of government science documents. In our Guidance on Responding to Petitions and Conducting Status Reviews under the Endangered Species Act, updated May 2016, we state that it is our policy and practice to seek peer review of the scientific information underlying our determinations under section 4 of the ESA, which includes status reviews where they have been prepared. We also state that we seek peer review of the underlying status review where one has been prepared, not the proposed listing rule, and that only one round of peer review (*i.e.,* peer review of the status review) is necessary. We also explain that peer review of the scientific and commercial information upon which we will base our listing determinations is informed by the Office of Management and Budget's (OMB) December 16, 2004, guidance regarding peer review of government science documents, issued under the IQA and other authorities (OMB Peer Review Bulletin) and NMFS' June 2012, policy directive containing guidance on the OMB Peer Review Bulletin, PD 04–108–4. Thus, consistent with our policy and OMB's Peer Review Bulletin, we did not seek separate peer review of the proposed listing rule, but did seek peer review of the status review.

Commenters state that we did not explain whether the proposed listing is ISI or HISA. Again, we did not seek peer review of the proposed listing. We did, however, seek peer review of the status review, which was classified as ISI. NOAA's Office of Chief Information Officer website at: *http://www.cio.noaa.gov/services_programs/prplans/ID337.html* clearly identifies the status review as an ISI product and provides additional information on the peer review conducted. ISI means scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions. As noted in NMFS' Guidance on the OMB Peer Review Bulletin (PD 04–108–4) and NOAA's Information Quality Guidelines, a clear and substantial impact is one that has a high probability of occurring. The status review was correctly identified as ISI because it is used in informing our response the petition to list the GOMx Bryde's whale and our proposal to list the GOMx Bryde's whale as endangered.

An HISA is a subset of ISI and is defined as a scientific assessment that has a potential impact of more than $500 million in any one year on either the public or private sector or is novel, controversial, or precedent-setting, or of significant interagency interest. The status review is not novel or precedent-setting as NMFS regularly prepares ESA status reviews and ESA listing determinations very similar to this one. While some individuals may disagree with our determination to list the GOMx Bryde's whale as endangered, no controversy or significant interagency interest surrounds the status review. We have no information that suggests the impact of the status review would be greater than the HISA threshold, nor have commenters provided any such information. Thus, the peer review was not completed following the process for peer review of HISA, including any guidelines for public participation. We agree with the commenter who stated that we adhered to information quality standards in developing the status review and proposed rule.

Comment 44: One commenter stated that NMFS did not comply with the requirements of the OMB Peer Review Bulletin for review of ISI because the peer reviewers lacked balance, independence, and were not ''informed of applicable access, objectivity, reproducibility and other quality standards under the federal laws governing information access and quality.'' The commenter stated that the peer reviewers were not balanced because none were industry experts. The commenter also stated that one peer reviewer was not independent because that reviewer is a NMFS employee.

Response: We adhered to the OMB Peer Review Bulletin and our guidance on the OMB Peer Review Bulletin in the selection of the peer reviewers to ensure a balanced review by independent experts and to prevent any real or perceived conflicts of interest. NMFS' guidance on the OMB Peer Review Bulletin directs NMFS to select peer reviewers based on expertise, balance, conflicts, and independence (PD 04–108–4, Appendix A, II.3). We chose three scientists with the requisite expertise, experience, and skill in marine mammal biology, ecology, genetics, and acoustics to review the status review. To ensure balance, we selected peer reviewers who represent a diversity of relevant scientific and technical perspectives and fields of knowledge and who we determined could offer fair and balanced viewpoints regarding the SRT evaluation of the status of the species, including the interpretation of available literature supporting that evaluation. With respect to the independence of the peer

reviewer, NMFS' Guidance on the OMB Peer Review Bulletin states that peer reviewers shall not have participated in development of the work product to be reviewed. None of the peer reviewers tasked with reviewing the status review were involved in developing the status review. The OMB Bulletin does not foreclose NMFS from seeking peer review by a NMFS employee. In addition, all peer reviewers were screened for potential conflicts of interest. Finally, the peer reviewers were informed of applicable access, objectivity, reproducibility, and other quality standards under federal laws governing information access and quality. We provided the peer reviewers with a link to the OMB Peer Review Bulletin and notified them of how we would attribute and disclose their comments consistent with the applicable guidelines. In addition, we provided a link to a website providing other NMFS scientific documents that have been subject to peer review, including the peer review plans for those documents, to serve as examples of previously completed peer reviews.

Comment 45: One commenter stated that NMFS violated requirements for peer review of ISI because the agency did not provide responses to peer reviewer comments on the status review. Joint industry commenters stated that although NMFS provided the text of the peer reviewer comments, NMFS did not make publically available the underlying document containing the comments, complicating the commenters' ability to understand the peer reviewer comments and whether they were addressed. As a result, joint industry commenters stated that the status review is flawed and does not represent the best scientific information available.

Response: NMFS complied with the OMB Peer Review Bulletin and NMFS' guidance on the OMB Peer Review Bulletin (PD 04–108–4) in conducting the peer review of the status review. In accordance with the OMB Peer Review Bulletin and our guidance on that Bulletin (PD 04–108–4) regarding peer review of ISI, we posted the peer review plan, charge statement to the peer reviewers, the peer review report, which summarizes the comments of the peer reviewers, and the final status review, which incorporates the response to peer reviewer comments, on the NOAA's Peer Review Agenda at: *http://www.cio.noaa.gov/services_programs/prplans/ID337.html.* Under our guidance, the peer review report must contain either a verbatim copy of each reviewer's comments (with or without specific attribution) or represent the views of the group as a whole, including any disparate and dissenting views (PD 04–108–4, Appendix A, II.5). Each reviewer prepared an overview or high level comments, which were included in the peer review report. The peer review report also includes the peer reviewers' substantive comments on particular text from the draft status review, where substantive comments were provided. The peer reviewers' non-substantive or stylistic comments the draft status review were not included in the peer review report. Thus, the peer review report meets the requirements of our guidance. Our guidance is clear ''that for ISI, the agency is not required to prepare a separate response'' to the peer review (PD 04–108–4 at 8).

Joint industry commenters state that it is difficult to understand the peer reviewer's comments and whether they were addressed. The commenters are referring to Peer Reviewer 2's comments. Peer Reviewer 2 provided an overview of his or her comments, as well as specific comments on language in the draft status review. Joint industry commenters point out a few of those specific comments as hard to follow. However, each statement that joint industry commenters indicate is difficult to follow was taken out of context. We do not find that Peer Reviewer 2's comments are difficult to follow. In addition, we do not agree that because NMFS did not complete an unrequired procedural step—providing additional documents from the peer review beyond those described above—the information in the status review underlying our determination is somehow rendered inadequate. Moreover, the commenter identifies no better available scientific or commercial information.

Comment 46: One commenter stated that the status review and proposed rule violated the IQA because the agency did not develop a pre-dissemination review certificate.

Response: The proposed rule underwent pre-dissemination review pursuant to Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106–554 (Information Quality Act). The pre-dissemination review is always conducted as part of our internal review process and a pre-dissemination review certificate is maintained as part of the administrative record for this decision. It is not our practice to publish the pre-dissemination review certificate, but it would be made available upon request. We have not received any such requests. In addition, as set forth in our Guidance on Responding to Petitions and Conducting Status Reviews under the ESA, updated May 26, 2016, the draft status review submitted to the peer reviewers is not intended for further distribution. It is distributed solely for the purpose of pre-dissemination peer review under applicable information quality guidelines and it does not represent, and should not be construed to represent, any agency determination or policy.

Comment 47: One commenter stated that the proposed listing rule should be withdrawn because it relies on two documents that do not themselves comply with the OMB Bulletin for Agency Good Guidance Practices, including (1) NMFS' Guidance on Responding to Listing Petitions and Conducting Status Reviews under the ESA and (2) NOAA's Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing. The commenter stated that because those two documents met one or more significance criteria under the OMB Bulletin for Agency Good Guidance Practices, NMFS should have followed that bulletin in developing the documents. The commenter stated that NMFS cannot rely on those documents until they m*eet al*l applicable requirements under that bulletin, in addition to the IQA guidelines and the OMB Peer Review Bulletin.

Response: We do not agree that we need to withdraw the proposed listing rule. Section 4(b)(1)(A) of the ESA requires us to make listing determinations on the basis of the best scientific and commercial data available after taking into account certain efforts being made to protect the species. In making the current listing determination, we relied on the status review, which we believe compiled the best scientific and commercial data available on the species' taxonomy, distribution, abundance, life history, as well as the threats affecting the status of the species, existing regulatory mechanisms, and conservation efforts that affect the Bryde's whale, and other information discussed in the proposed and final rules.

The SRT relied on NMFS' Guidance on Responding to Petitions and Conducting Status Reviews under the ESA in developing the status review. As noted above, that document summarizes the process by which NMFS organizes and conducts status reviews pursuant to section 4(b)(1)(A) of the ESA. This procedural guidance document does not dictate the outcome of the status review or our listing determination. Comments on the process by which this procedural

guidance document was finalized are outside of the scope of this rulemaking.

The commenter assumed that references to ''NOAA acoustic guidance'' in the status review referred to NOAA's 2016 Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing. However, the status review was not referring to NMFS' 2016 Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (''the 2016 Technical Guidance''). We acknowledge that the status review does not clearly cite the acoustic guidance that it references. In the two instances that the status review uses the terminology ''NOAA acoustic guidance'' (page 56, Rosel *et al.,* 2016), it is referring to acoustic thresholds in use at the time of the status review to determine whether sound at a given noise level constitutes Level A or Level B harassment for the purpose of incidental take permitting, as those terms are defined under the MMPA. Those thresholds are discussed earlier in the same section of the status review. As we note in response to Comment 39, the 2016 Technical Guidance did not update the threshold that the SRT used to evaluate the potential threat to the species from ambient noise and does not otherwise affect the validity of the noise analysis in the status review or this rulemaking.

Comment 48: Joint industry commenters state that the status review is difficult to interpret. As support, joint industry commenters cite the peer reviewer comment that the status review is difficult to follow because it introduces terms, such as ''dangerously small population'' and ''high risk of extinction,'' that are not used in ESA listing determinations.

Response: We do not find that the status review is confusing or flawed because it uses the terms ''high risk of extinction'' or ''dangerously small population.'' One of the peer reviewers suggested that the status review refrain from using these terms and stated that these terms could cause confusion because the number of mature individuals is not an ESA-listing factor and that extinction risk does not depend solely on population size. We disagree that the status review, or the listing decision based on it, is flawed because of how the status review team evaluated population size and extinction risk. The SRT was not tasked with making the listing determination, but rather was evaluating the species' extinction risk, which informs NMFS' listing determination. The SRT conducted its review in a manner consistent with established agency practices as in previous status reviews, and appropriately considered the species' risk of extinction in view of the threats to the species and demographic risks such as the species' total population size or abundance. The final status review clearly defines what the SRT considered to be ''high risk'' and a ''dangerously small population size.'' The SRT concluded that the small population size alone put the species at a high risk of extinction, and that the population size and the threats to the species further increase the extinction risk. To make the proposed listing determination, we used the best available scientific and commercial information on the GOMx Bryde's whale, including information summarized in the status review. We proposed to list the GOMx Bryde's whale as endangered after considering the threats to the species under section 4(a)(1), informed by the SRT's threats analysis, demographic risk analysis, and extinction risk assessment, and any conservation efforts to protect the GOMx Bryde's, as required under section 4(b)(1)(A).

General Support for the Proposed Listing Determination

Comment 49: We received 933 comments from the general public that were generally supportive of the listing of the GOMx Bryde's whale as endangered, and protecting their habitats. We received an additional 15 comments from non-governmental organizations supporting the proposed listing. The State of Mississippi also expressed their support for the listing determination. The Government of Cuba's Ministry of Science, Technology and Environment (CITMA) expressed their support of the subspecies determination and agreed that GOMx Bryde's whale is in danger of extinction. Further, CITMA explained that there are no records of *B. edeni* in Cuban waters.

Response: We appreciate the feedback received from these commenters.

Comment 50: The CITES Scientific Authority of Mexico stated that, according to their experts, they were able to confirm that the GOMx Bryde's whale population consists of about 33 individuals total, that the Gulf of Mexico population is a distinct from Bryde's whale populations worldwide, and that the GOMx Bryde's whales have low genetic diversity, and is exposed to various threats.

Response: We appreciate the commenter's feedback on our findings in the proposed rule. In the proposed rule, we noted various abundance estimates, including the Marine Mammal Protection Act abundance estimate used for management of the ''Northern Gulf of Mexico Bryde's Whale Stock'' of 33. However, we note that we do not conclude that the population consists of 33 individuals. Given the best available evidence and allowing for uncertainty, we conclude that the population likely contains fewer than 100 individuals, with 50 or fewer being mature. We appreciate support for our determination that the GOMx Bryde's whale is genetically isolated unit and is distinct from other whales in the Bryde's whale complex, and that the GOMx Bryde's whale is exposed to various threats, as described in the proposed rule and in this final rule.

Miscellaneous Comments

Comment 51: The Marine Mammal Commission urged NMFS to initiate recovery efforts and requested that NMFS develop a recovery program or recovery plan.

Response: Section 4(f) of the ESA requires the Secretary to develop recovery plans for the conservation and survival of ESA listed species, unless such a plan will not promote the conservation of the species. NMFS will convene a recovery team to develop a recovery plan for the GOMx Bryde's whale after finalizing this rule and completing determinations regarding the critical habitat designation.

Comment 52: One commenter stated that NMFS only briefly summarized concerns about climate change despite the fact that climate change may disproportionately affect the GOMx Bryde's whale due to its restricted habitat. The commenter stated that NMFS failed to consider information they provided on climate change. The commenter stated that climate change will result in larger, more frequent and severe weather events (*i.e.,* hurricanes and tropical storms) that could damage oil and gas production structures, resulting in additional oil spills, which would further threaten the GOMx Bryde's whale.

Response: The SRT considered relevant information pertaining to climate change [in?] preparing the status review, and we agree with the SRT findings on climate change in the proposed rule. The status review discusses the fact that climate change has the potential to influence hurricane intensity and frequency. However, we cannot speculate about the possibility of events such as oil and gas structure failure as a result of these storms. As discussed in the proposed rule, the impacts of climate change on cetaceans can potentially include range shifts, habitat degradation or loss, changes to

the food web, susceptibility to disease and contaminants, and thermal intolerance. However, impacts of climate change on the GOMx Bryde's whales remain speculative given the limited data currently available.

Summary of Changes From the Proposed Rule

Below we have included the support for our decision, which also was reflected in the proposed rule. The text below reflects some non-substantive changes to improve clarity, including clarifying the basis for our conclusion regarding section 4(a)(1) factors A, D, and E. We also have updated and corrected some citations and references throughout, and clarified the abundance estimates and species' range to refer to additional information in the status review. We revised the discussion of the species' range contraction under factor A for clarity, and revised our analysis of how the species is affected by noise associated with seismic surveys under factors A and E. In addition, we added a discussion of the inadequacy of regulatory mechanisms to address the threat of fishing gear entanglement under the discussion of factor D. The added information was discussed in the proposed rule, though not under factor D.

Biological Review

This section provides a summary of key biological information presented in the status review (Rosel *et al.* 2016), which provides the context and foundation for our listing determination. The petition specifically requested that we consider the Gulf of Mexico population of Bryde's whale as a DPS and list that population as an endangered species. Therefore, the SRT first considered whether the Bryde's whale in the Gulf of Mexico constituted a DPS, a subspecies, a species, or part of the globally distributed Bryde's whale population. This section also includes our conclusions based on the biological information presented in the status review.

Species Description

Bryde's whale (*B. edeni*) is a large baleen whale found in tropical and subtropical waters worldwide. Currently, two subspecies of Bryde's whale are recognized: a smaller form, Eden's whale (*B. e. edeni*), found in the Indian and western Pacific oceans primarily in coastal waters, and a larger, more pelagic form, Bryde's whale (*B. e. brydei*), found worldwide (Rosel *et al.* 2016). Like the Bryde's whale found worldwide, the Bryde's whale in the Gulf of Mexico has a streamlined and sleek body shape, a somewhat pointed, flat rostrum with three prominent ridges (*i.e.,* a large center ridge, and smaller left and right lateral ridges), a large falcate dorsal fin, and a counter-shaded color that is fairly uniformly-dark dorsally and light to pinkish ventrally (Jefferson *et al.* 2015). There is no apparent morphological difference between the Bryde's whale in the Gulf of Mexico and those worldwide. Baleen from these whales has not been thoroughly characterized, but the baleen plates from one individual from the Gulf of Mexico were dark gray to black with white bristles (Rosel *et al.* 2016). This is consistent with the description by Mead (1977), who indicated that the bristles of both Bryde's whale subspecies are coarser than those in the closely-related sei whale. Limited data (from 14 whales) indicate the length of Bryde's whales in the Gulf of Mexico is intermediate between the two currently recognized subspecies. The largest Bryde's whale observed in the Gulf of Mexico was a lactating female measuring 12.7 m in length, and the next four largest animals were 11.2–11.6 m in length (Rosel and Wilcox 2014). Rice (1998) reported adult Eden's whales rarely exceed 11.5 m total length and adult Bryde's whales from the Atlantic, Pacific and the Indian Ocean reach 14.0–15.0 m in length.

Genetics

In a recent genetic analysis of mtDNA samples taken from Bryde's whales in the Gulf of Mexico, Rosel and Wilcox (2014) found that the Gulf of Mexico population was genetically distinct from all other Bryde's whales worldwide. Maternally inherited mtDNA is an indicator of population-level differentiation, as it evolves relatively rapidly. Rosel and Wilcox (2014) identified 25–26 fixed nucleotide differences in the mtDNA control region between the Bryde's whale in the Gulf of Mexico and the two currently recognized subspecies (*i.e.,* Eden's whale and Bryde's whale) and the sei whale (*B. borealis*). They found that the level and pattern of mtDNA differentiation discovered indicates that GOMx Bryde's whales are as genetically differentiated from other Bryde's whales worldwide as those Bryde's whales are differentiated from their most closely-related species, the sei whale. In addition, genetic analysis of the mtDNA data and data from 42 nuclear microsatellite loci (repeating base pairs in the DNA) revealed that the genetic diversity within the GOMx Bryde's whale population is exceedingly low. Rosel and Wilcox (2014) concluded that this level of genetic divergence suggests a unique evolutionary trajectory for the Gulf of Mexico population of Bryde's whale, worthy of its own taxonomic standing.

The SRT considered this level of genetic divergence to be significant, indicating that the Bryde's whale in the Gulf of Mexico is a separate subspecies. To confirm its determination, the SRT asked the Society for Marine Mammalogy Committee on Taxonomy (Committee) for its expert scientific opinion on the level of taxonomic distinctiveness of the Bryde's whale in the Gulf of Mexico. The Committee maintains the official list of marine mammal species and subspecies for the Society for Marine Mammalogy. The Committee updates the list as new descriptions of species, subspecies, or taxonomic actions appear in the technical literature, adhering to principle and procedures, opinions, and directions set forth by the International Commission on Zoological Nomenclature. The Committee also reviews, as requested, formal descriptions of new taxa and other taxonomic actions, and provides expert advice on taxonomic descriptions and other aspects of marine mammal taxonomy. In response to the request made by the SRT, all of the Committee members who were available to respond (nine out of nine) voted it was ''highly likely'' that Bryde's whales in the Gulf of Mexico comprise at least an undescribed subspecies of what is currently recognized as *B. edeni*. This result constituted the opinion of the Committee, which is comprised of 15 members and makes decisions by majority vote (W. F. Perrin, Chair, Committee, pers. comm., 2015). Based on the expert opinion from the Committee and the best available scientific information, the SRT concluded Bryde's whales in the Gulf of Mexico are taxonomically distinct from the other two Bryde's whale subspecies. The SRT identified the Bryde's whale occurring in the Gulf of Mexico as a separate subspecies called ''GOMx Bryde's whale,'' and conducted the status review accordingly.

Our joint ESA regulations with the U.S. Fish and Wildlife Service state that, In determining whether a particular taxon or population is a species for the purpose of the Act, the Secretary shall rely on standard taxonomic distinctions and the biological expertise of the Department and scientific community concerning the relevant taxonomic group (50 CFR 424.11(a)). Under this provision, we must consider the biological expertise of the SRT and the scientific community, and apply the best available scientific and commercial

information when it indicates that a taxonomic classification is outdated or incorrect. The GOMx Bryde's whale has a high level of genetic divergence from the two recognized Bryde's whale subspecies (Eden's whale and Bryde's whale) elsewhere in the world. We relied on the biological expertise of the SRT and the Committee to interpret information relevant to the taxonomic status of the Bryde's whale in the Gulf of Mexico. We agree with the SRT and the Committee's determination that the Bryde's whale in the Gulf of Mexico is taxonomically at least a subspecies of *B. edeni.* Based on the best available scientific and commercial information described above and in the status review, we have determined that the Bryde's whale in the Gulf of Mexico is a taxonomically distinct subspecies and, therefore, eligible for listing under the ESA. Accordingly, we did not further consider whether the GOMx Bryde's whale population qualifies as a DPS under the DPS Policy.

Distribution

The status review (Rosel *et al.,* 2016) found that the historical distribution of Bryde's whale in the Gulf of Mexico included the northeastern, north-central and southern Gulf of Mexico. This was based on work by Reeves *et al.* (2011), which reviewed whaling logbooks of ''Yankee whalers'' and plotted daily locations of ships during the period 1788–1877 as a proxy for whaling effort, with locations of species takes and sightings in the Gulf of Mexico. These sightings by the whalers were generally offshore in deeper waters (*i.e.,* >1000 m), given their primary target of sperm whales (*Physeter microcephalus*). Reeves *et al.* (2011) concluded that whales reported as ''finback'' by ''Yankee whalers'' in the Gulf of Mexico were most likely Bryde's whales. Although all recent confirmed sightings of Bryde's whales have been in the northeastern Gulf of Mexico. Based on Reeves *et al.* (2011), the SRT found that that the historical distribution of Bryde's whales in the Gulf of Mexico was much broader and also included the north-central and southern Gulf of Mexico. Other baleen whales (*i.e.,* sei or fin whales) are extralimital to the Gulf of Mexico. Sperm whales and GOMx Bryde's whales are the only large whales regularly found in the Gulf of Mexico (Jefferson and Schiro, 1997).

Stranding records from the Southeast U.S. stranding network, the Smithsonian Institution, and the literature (Mead 1977, Schmidly 1981, Jefferson 1995) include 22 Bryde's whale strandings in the Gulf of Mexico from 1954 to 2012, although three of those stranding have uncertain species identification. Most strandings were recorded east of the Mississippi River through west central Florida, but two were recorded west of Louisiana. There are no documented Bryde's whale strandings in Texas, although strandings of fin (*B. physalus*), sei (*B. borealis*), and minke (*B. acutorostrata*) whales have been documented.

We began conducting oceanic (ship) and continental shelf (ship and aerial) surveys for cetaceans in 1991 that continue today. The location of shipboard and aerial survey effort in the Gulf of Mexico and Atlantic Ocean was plotted by Roberts *et al.* (2016). Details of Bryde's whale sightings from these surveys are summarized in Waring *et al.* (2015). During surveys in 1991, Bryde's whales were sighted in the northeastern Gulf of Mexico along the continental shelf break, in an area known as the De Soto Canyon. In subsequent surveys, Bryde's whales or whales identified as Bryde's/sei whales (*i.e.,* where it was not possible to distinguish between a Bryde's whale or a sei whale) were sighted in this same region of the northeastern Gulf of Mexico. When observers were able to clearly see the dorsal surface of the rostrum with three ridges, a diagnostic characteristic of Bryde's whales, it was recorded as a Bryde's whale. When the three ridges could not be seen, observers recorded the whale as Bryde's/sei whales or unidentified baleen whale (Maze-Foley and Mullin 2006). Sightings of Bryde's whales in the Gulf of Mexico have been consistently located in the De Soto Canyon area, along the continental shelf break between 100 m and 300 m depth. Bryde's whales have been sighted in all seasons within the De Soto Canyon area (Mullin and Hoggard 2000, Maze-Foley and Mullin 2006, Mullin 2007, DWH MMIQT 2015). Consequently, LaBrecque *et al.* (2015) designated this area, home to the small resident population of Bryde's whale in the northeastern Gulf of Mexico, as a Biologically Important Area (BIA). BIAs are reproductive areas, feeding areas, migratory corridors, or areas in which small and resident populations are concentrated. Researchers identify BIAs to provide information to help inform regulatory and management decisions, in order to minimize impacts from anthropogenic activities on marine mammals (LaBrecque *et al.,* 2015). The area that LeBrecque *et al.* (2015) identified as the BIA covers waters between 100 m and 300 m deep from approximately Pensacola, Fla. to just south of Tampa, Fla. However, given that there have also been sightings at 302 and 309 m depth in this region and west of Pensacola, Florida, the core area inhabited by the species is probably better described out to the 400 m depth contour and to Mobile Bay, Alabama, to provide some buffer around the deeper water sightings and to include all sighting locations in the northeastern Gulf of Mexico, respectively (Rosel *et al.,* 2016). We consider this larger area, extending to the 400 m depth contour, an accurate description of the GOMx Bryde's whale BIA, based on the recent sightings and tag data, and when we refer to the GOMx Bryde's whale BIA, we are referring to this larger area.

Although all the confirmed Bryde's whale sightings in the Gulf of Mexico have been within the BIA, questions remain about their current distribution in U.S. waters. NMFS surveys from 1991 to 2015 recorded three baleen whales sighted outside the BIA—a fin whale identified in 1992 off Texas and two sightings of Bryde's/sei whale in 1992 and 1994 along the shelf break in the western Gulf of Mexico. In addition, five records of ''baleen whales'' have been recorded from 2010 to 2014 west of the BIA, at the longitude of western Louisiana in depths similar to those in the BIA (Bureau of Safety and Environmental Enforcement, unpublished). The two sightings southwest of Louisiana included photographs showing they were clearly baleen whales. However, the information collected was not sufficient to identify the whales at the species level. In 2015, a citizen sighted and photographed what most experts believe was a Bryde's whale in the western Gulf of Mexico south of the Louisiana-Texas border (Rosel *et al.,* 2016). Given these observations, the SRT determined that although it is possible that a small number of baleen whales occur in U.S. waters outside the BIA, these observations in the north-central and western Gulf of Mexico were difficult to interpret (Rosel *et al.,* 2016).

Few systematic surveys have been conducted in the southern Gulf of Mexico (*i.e.,* Mexico and Cuba). Six marine mammal surveys were conducted from 1997 to 1999 in the southern Gulf of Mexico and Yucatán Channel. These surveys focused specifically on the extreme southern Bay of Campeche, an area where Reeves *et al.* (2011) reported numerous sightings of baleen whales from the whaling logbooks. A more recent survey reported a single baleen whale in an area of nearly 4,000 square kilometers (km^2) (Ortega-Ortiz 2002, LaBrecque *et al.* 2015). This whale was identified as a fin whale; however, subsequent discussion between the author and the

SRT suggested it should have been recorded as an unidentified baleen whale (Rosel *et al.,* 2016). As summarized in the status review (Rosel *et al.,* 2016), a compilation of all available records of marine mammal sightings, strandings, and captures in the southern Gulf of Mexico identified no Bryde's whales (Ortega-Ortiz 2002).

We agree with the SRT's findings that what is now recognized as the GOMx Bryde's whale has been consistently located over the past 25 years along a very narrow depth corridor in the northeastern Gulf of Mexico, recognized as the GOMx Bryde's whale BIA. In fact, there has only been one likely Bryde's whale sighting outside the BIA, the baleen whale that a citizen sighted and photographed in 2015 and that some experts believe to be a Bryde's whale. Despite a large amount of dedicated marine mammal survey effort that included both continental shelf and oceanic waters of the Atlantic Ocean off the southeastern United States and the northern Gulf of Mexico, there have been no sightings outside the BIA that have been identified as Bryde's whales. Historical whaling records indicate that the historical distribution of the GOMx Bryde's whale in the Gulf of Mexico was much broader than it is currently and included the north-central and southern Gulf of Mexico. We agree with the SRT that the BIA, located in the De Soto Canyon area of the northeastern Gulf of Mexico, encompasses the current areal distribution of the GOMx Bryde's whale.

Abundance Estimates

All of the abundance estimates for Bryde's whale in the northern Gulf of Mexico are based on aerial- or ship-based line-transect surveys (Buckland *et al.* 2005). Various surveys conducted from 1991 to 2012 are discussed in the status review (Rosel *et al.* 2016). As previously stated, all confirmed GOMx Bryde's whale sightings occurred in the BIA during surveys that uniformly sampled the entire northern Gulf of Mexico. The abundance estimate used for management under the MMPA of the ''Northern Gulf of Mexico Bryde's Whale Stock'' is 33 whales (CV = 1.07; Waring *et al.* 2013). Recently, Duke University researchers estimated abundance to be 44 individuals (CV = 0.27) based on the averages of 23 years of survey data (Roberts *et al.* 2015a, Roberts *et al.* 2016). No analysis has been conducted to evaluate abundance trends for the GOMx Bryde's whale. Given the range in previous abundance estimates, the SRT agreed by consensus that, given the best available scientific information and allowing for the uncertainty of Bryde's whale occurrence in non-U.S. waters of the Gulf of Mexico, there are fewer than 250 mature individuals, and that it is more than likely that the population contains fewer than 100 individuals, with 50 or fewer being mature. For the reasons stated above, we concluded that there are likely fewer than 100 individuals GOMx Bryde's whales, with fewer than 50 being mature.

Behavior

Little information exists on the behavior of the GOMx Bryde's whale. Maze-Foley and Mullin (2006) found GOMx Bryde's whales to have a mean group size of 2 (range 1–5, n = 14), similar to group sizes of the Eden's and Bryde's whales (Wade and Gerrodette 1993). The GOMx Bryde's whale is known to be periodically ''curious'' around ships and has been documented approaching them in the Gulf of Mexico (Rosel *et al.* 2016), as observed in Bryde's whales worldwide (Leatherwood *et al.* 1976, Cummings 1985). In September 2015, a female GOMx Bryde's whale was tagged with an acoustic and kinematic data-logging tag in the De Soto Canyon (Rosel *et al.,* 2016). Over the nearly 3-day tagging period, the whale spent 47 percent of its time within 15 m of the surface during the day and 88 percent of its time within 15 m of the surface during the night (Soldevilla *et al.,* 2017).

Foraging Ecology

Little information is available on foraging ecology of GOMx Bryde's whales. Based on behavior observed during assessment surveys, these whales do not appear to forage at or near the surface (Soldevilla *et al.,* 2017). In general, Bryde's whales are thought to feed primarily in the water column on schooling fish such as anchovy, sardine, mackerel and herring, and small crustaceans (Kato 2002). These prey occur throughout the Gulf of Mexico and the BIA (Grace *et al.* 2010). Tracking data from the single whale with an acoustic tag (described above) indicated diurnal diving to depths of up to 271 m, with foraging lunges apparent at the deepest depths. That whale was likely foraging at or just above the sea floor (Soldevilla *et al.,* 2017) where diel-vertical-migrating schooling fish form tight aggregations.

Reproduction and Growth

Little information exists on reproduction and growth of GOMx Bryde's whale; however, similar to Eden's whales and Bryde's whales elsewhere in the world, the GOMx Bryde's whale is considered to have k-selected life history parameters (large body size, long life expectancy, slow growth rate, late maturity, with few offspring). Taylor *et al.* (2007) estimated that Bryde's whales worldwide may reproduce every 2 to 3 years and reach sexual maturity at age 9. Given the basic biology of baleen whales, it is likely that under normal conditions, the female GOMx Bryde's whales produce a calf every 2 to 3 years. The largest known GOMx Bryde's whale was a lactating female 12.6 m in length (Rosel and Wilcox 2014). Currently, skewed sex ratio does not appear to be an issue for this population, as recent biopsies have shown equal number of males and females (Rosel and Wilcox 2014; Rosel *et al.* 2016). No GOMx Bryde's whale calves have been reported during surveys. However, two stranded calves have been recorded in the Gulf of Mexico: A 4.7 m calf stranded in the Florida Panhandle in 2006 (SEUS Historical Stranding Database) and a 6.9 m juvenile stranded north of Tampa, Florida, in 1988 (Edds *et al.* 1993).

Acoustics

Baleen whale species produce a variety of highly stereotyped, low-frequency tonal and broadband calls for communication purposes (Richardson *et al.* 1995). These calls are thought to function in a reproductive or territorial context, provide individual identification, and communicate the presence of danger or food (Richardson *et al.* 1995). Bryde's whales worldwide produce a variety of calls that are distinctive among geographic regions, and these calls may be useful for delineating subspecies or populations (Oleson *et al.* 2003, Širović *et al.* 2014). In the Gulf of Mexico, Širović *et al.* (2014) reported Bryde's whale call types composed of downsweeps and downsweep sequences and localized these calls (*i.e.,* researchers recorded the calls on multiple instruments that allowed them triangulate the location of the calls and then confirmed the location with visual sightings). Rice *et al.* (2014) detected these sequences, as well as two stereotyped tonal call types that originated from Bryde's whales in the Gulf of Mexico. One call type has been definitively identified to free-ranging GOMx Bryde's whales (Širović *et al.* 2014), four additional call types have been proposed as likely candidates (Rice *et al.* 2014a, Širović *et al.* 2014), and two call types have been described from a captive juvenile during rehabilitation (Edds *et al.* 1993). Based on these data, the calls by the GOMx Bryde's whale are consistent with, but different from those previously reported for Bryde's whales worldwide (Rice *et al.* 2014). These unique acoustic

signatures add some support to the genetic results identifying the GOMx Bryde's whale as an evolutionary distinct unit (Rosel and Wilcox 2014).

Threats Evaluation

The SRT identified 27 possible threats, organized and described them according to the five ESA factors listed in section 4(a)(1), and then evaluated the severity of each threat with a level of certainty (see Appendix 3; Rosel *et al.* 2016). Because direct evidence from studies on GOMx Bryde's whales was lacking, the SRT agreed that published scientific evidence from other similar marine mammals (*e.g.,* other Bryde's whale subspecies, other baleen whales) was relevant and necessary to estimate impacts to GOMx Bryde's whale and extinction risk.

To promote consistency when ranking each threat, the SRT used definitions for 'severity of threat' and 'level of certainty' similar to other status reviews, including the Hawaiian insular false killer whales (Oleson *et al.* 2010) and the northeastern Pacific population of white shark (Dewar *et al.* 2013). The SRT categorically defined specific rankings for both severity and certainty for each specific threat (identified below) as ''low,'' ''moderate,'' or ''high.'' The categorical definitions for the severity of each threat were identified by the SRT as 1 = ''low,'' meaning that the threat is likely to only slightly impair the population; 2 = ''moderate,'' meaning that the threat is likely to moderately degrade the population; or 3 = ''high,'' meaning that the threat is likely to eliminate or seriously degrade the population. The SRT also scored the certainty of the threat severity based on the following categorical definitions: 1 = ''low,'' meaning little published and/or unpublished data exist to support the conclusion that the threat did affect, is affecting, or is likely to affect the GOMx Bryde's whale with the severity ascribed; 2 = ''moderate,'' meaning some published and/or unpublished data exist to support the conclusion that the threat did affect, is affecting, or is likely to affect the population with the severity ascribed; and 3 = ''high,'' meaning there are definitive published and/or unpublished data to support the conclusion that this threat did affect, is affecting, or is likely to affect the GOMx Bryde's whale with the severity ascribed. Then, to determine the overall impact of an ESA factor, the SRT looked at the collective impact of threats considered for each ESA factor to provide an ''overall threat ranking'' for each ESA factor, defined as follows: 1 = ''low,'' meaning the ESA factor included ''a low number'' of threats likely to contribute to the decline of the GOMx Bryde's whale; 2 = ''moderate,'' meaning the ESA factor included an intermediate number of threats likely to contribute to the decline of the GOMx Bryde's whale, or contained some individual threats identified as moderately likely to contribute to the decline; and 3 = ''high,'' meaning the ESA factor included a high number of threats that are moderately or very likely to contribute to the decline of the GOMx Bryde's whale, or contains some individual threats identified as very likely to contribute to the decline of the GOMx Bryde's whale.

The SRT then calculated the numerical mean of the team members' scores for each threat or category of threats. However, we do not believe that relying on the numerical mean of the SRT's scores is appropriate, because the specific rankings for the severity, certainty, and overall threat were categorically defined by the SRT and not numerically defined. Therefore, we assessed the majority vote of the team members' scores (*i.e.,* 1, 2, or 3, as described above) and assigned each threat a specific ranking defined by the SRT's categorical definitions (*i.e.,* low, moderate, or high) based on the majority vote of the SRT. When there was no clear majority (*i.e.,* no rank received four votes), the categorical ranking we assigned was a combination of the two ranks receiving three votes each (*e.g.,* three votes for high and three votes for moderate we characterized as ''moderate-high'').

Each of the 27 possible threats identified by the SRT is summarized below, by ESA factor, with severity and certainty rankings based on the SRT's categorical scoring, as described above. We also summarize the overall threat ranking for each ESA factor, based on the SRT's scores, and provide NMFS' determination with regard to each factor. A detailed table of the SRT's threats and rankings can be found in Appendix 3 of the status review (Rosel *et al.,* 2016).

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

The SRT considered the following threats to the GOMx Bryde's whale under ESA factor A: Energy exploration, development, and production, oil spills and spill response, harmful algal blooms, persistent organic pollutants, and heavy metals. Based on the SRT's numerical threat rankings, the overall threat ranking assigned to factor A was ''high.''

Energy Exploration, Development, and Production

The SRT found that energy exploration, development, and production was a significant threat which has contributed to the curtailment of the species' range. The SRT assigned the threat of energy exploration (seismic surveys) and development (drilling rigs, platforms, cables, pipelines) a score of ''high'' severity threat with ''moderate'' certainty. Note: Other aspects or elements of energy exploration, development, and production can act directly on the whales (*e.g.,* noise, vessel collision, marine debris). Under factor A, the SRT evaluated how noise and the industrialization associated with energy exploration, development, and production contributed to the species' range contraction. Under factor E, other natural or human factors affecting a species' continued existence, the SRT also evaluated how the potential for noise, vessel collision, and marine debris associated with oil and gas activities could affect the species by injuring them, causing mortality, or interfering with their behavior (masking vocalizations, causing stress, reducing reproductive and foraging success, or interfering with the ability to interpret environmental cues).

The Gulf of Mexico is a major oil and gas producing area and has proven to be a steady and reliable source of crude oil and natural gas for more than 50 years. Approximately 2,300 platforms operate in Federal outer continental shelf (OCS) waters (Rosel *et al.* 2016), and in 2001 approximately 27,569 miles (44,368 km) of pipeline lay on the Gulf of Mexico seafloor (Cranswick 2001). For planning and administrative purposes, the BOEM has divided the Gulf of Mexico into three planning areas: Western, Central, and Eastern. The majority of active lease sales are located in the Western and Central Planning Areas. Habitat in the north-central and southern Gulf of Mexico, which includes the GOMx Bryde's whale's historical range, has been significantly modified with the presence of thousands of oil and gas platforms. The noise associated with energy exploration (seismic surveys), development, and production also has modified the habitat by increasing ambient noise levels. In addition, these activities have increased aircraft and marine vessel traffic to service these operations. This modification likely contributed to the curtailment of the species' range; the species now is almost exclusively found within a limited portion of the EPA.

The BIA, which is encompassed by the EPA, currently has no production activity, with most of the EPA falling under a moratorium on new lease sales. However, this moratorium expires in 2022. In addition to expressing concern regarding the current curtailment of the GOMx Bryde's whale range due to energy exploration, development, and production, and associated noise, in the north-central and southern Gulf of Mexico, the SRT raised significant concern about the moratorium expiring and the potential expansion of impacts that opening these waters to development would have on the Bryde's whale BIA in the future. If oil and gas activities, the associated industrialization, and noise increase within the BIA, then that habitat will likely become unsuitable. The species may not be able to relocate outside the BIA, and their current habitat in the BIA may be further curtailed.

Oil Spills and Spill Responses

The SRT found that oil spills and spill response is a significant threat which has modified the species' habitat. The SRT's scored the threat of exposure to oil spills and spill responses is a ''high'' severity threat with a ''high'' level of certainty to the GOMx Bryde's whale. The 2010 DWH oil spill was the largest spill affecting U.S. waters in U.S. history, spilling nearly 134 million gallons (507 million liters) of oil into the Gulf of Mexico which impacted 48 percent of the Bryde's whale's BIA. In addition, 46 smaller-scale spills associated with oil and gas related activities (*e.g.,* platforms, rigs, vessels, pipelines) occurred in the Gulf of Mexico between 2011 and 2013 (OCS EIS EA BOEM 2015–001).

Exposure to oil spills may cause marine mammals acute or chronic impacts with lethal or sub-lethal effects depending on the size and duration of the spill. For large baleen whales, like the GOMx Bryde's whale, oil can foul the baleen they use to filter-feed, decreasing their ability to eat, and resulting in the ingestion of oil (Geraci *et al.* 1989). Impacts from exposure may also include: Reproductive failure, lung and respiratory impairments, decreased body condition and overall health, and increased susceptibility to other diseases (Harvey and Dahlheim 1994). Oil and other chemicals on the body of marine mammals may result in irritation, burns to mucous membranes of eyes and mouth, and increased susceptibility to infection (DWH Trustees 2016). Dispersants used during oil spill responses may also be toxic to marine mammals (Wise *et al.* 2014a). After oil spills cease, marine mammals may experience continued effects through persistent exposure to oil and dispersants in the environment, reduction or contamination of prey, direct ingestion of contaminated prey, or displacement from preferred habitat (Schwacke *et al.* 2014, BOEM and Gulf of Mexico OCS Region 2015, DWH Trustees 2016). The DWH oil spill is an example of the significant impacts a spill can have on the status of the GOMx Bryde's whale. Although the DWH platform was not located within the BIA, the oil footprint included 48 percent of GOMx Bryde's whale habitat within the BIA; an estimated 17 percent of the species was killed, 22 percent of reproductive females experienced reproductive failure, and 18 percent of the population likely suffered adverse health effects due to the spill (DWH Trustees 2016; DWH MMIQT 2015).

Harmful Algal Blooms

Harmful Algal Blooms (HAB) occur throughout the Gulf of Mexico, with most blooms occurring off the coast of Florida. One of the most common HAB species, *Karenia brevis* (also known as the red tide organism), is common along coastal zones, but can also develop offshore. *Karenia brevis* produces neurotoxins that affect the nervous system by blocking the entry of sodium ions to nerve and muscle cells (Geraci *et al.* 1989). The neurotoxins can accumulate in primary consumers through direct exposure to toxins in the water, ingestion, or inhalation. Once neurotoxins have entered the food web, bioaccumulation can occur in predators higher up on the food web, like GOMx Bryde's whales.

HABs are also known to negatively affect marine mammal populations through acute and chronic detrimental health effects, including reproductive failure (reviewed in Fire *et al.* 2009). Although no documented cases of GOMx Bryde's whale deaths resulting from HABs exist, cases involving humpback whales (*Megaptera novaeangliae;* Geraci *et al.* 1989) and potentially fin (*B. physalus*) and minke whales (*B. acutorostrata*) (Gulland and Hall 2007) have been reported. Impacts from HABs have also been associated with large-scale mortality events for common bottlenose dolphins and manatees in the offshore and coastal waters of the northeastern Gulf of Mexico. Given the small population size of the GOMx Bryde's whale, the SRT noted that a HAB-induced mortality of a single breeding female would significantly degrade the status of the population. Largely due to human activities, HABs are increasing in frequency, duration, and intensity throughout the world (Van Dolah 2000). Based on the SRT's scoring, the threat of HABs is a ''moderate'' severity threat with a ''low'' level certainty.

Persistent Organic Pollutants and Heavy Metals

Concentrations of persistent organic pollutants (POP) are typically lower in baleen whales compared to toothed whales due to differences in feeding levels in the trophic system (Waugh *et al.* 2014, Wise *et al.* 2014b). In general, thresholds for adverse impacts to baleen whales resulting from POPs are unknown (Steiger and Calambokidis 2000).

Little is known about the effects of heavy metals on offshore marine mammal populations. Heavy metals can accumulate in whale tissue and cause toxicity (Sanpera *et al.* 1996, Hernández *et al.* 2000, Wise *et al.* 2009). Similarly, heavy metals accumulate in prey at the trophic levels where marine mammals feed. However, concentrations of heavy metals in tissue vary based on physiological and ecological factors such as geographic location, diet, age, sex, tissue, and metabolic rate (Das *et al.* 2003). Although heavy metals are pervasive in the marine environment and documented in various marine mammal species, their impact on Bryde's whale health and survivorship is unknown. Based on the SRT's scoring, the threat of POPs and heavy metals are of ''low'' severity, with a ''moderate'' level of certainty for POPs and a ''low'' level of certainty for heavy metals.

Summary of Factor A

We interpret the overall risk assigned by the SRT for ESA factor A as ''high,'' indicating that there are a high number of threats that are moderately or very likely to contribute to the decline of the GOMx Bryde's whale, or some individual threats identified as very likely to contribute to the decline of the population. Specifically, the SRT found that energy exploration, development, and production, and oil spills and spill response were significant threats that have contributed to modification of the species habitat and likely curtailment in its range. The SRT found that HABs, POPs, and heavy metals are not currently significant factors in habitat the destruction, curtailment, or modification. Based on the comprehensive status review and after considering the SRT's threats assessment, we conclude that energy exploration, development, and production have contributed to a curtailment in the species' range by physically modifying the habitat and

increasing the industrialization, vessel traffic, and noise, and oil spills and spill response have modified their current habitat. Therefore, we find that the present curtailment of its range and modification of its habitat is contributing to the GOMx Bryde's whale's risk of extinction.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The SRT considered two threats under ESA factor B; historical whaling and scientific biopsy sampling. The overall rank assigned for Factor B, based on the SRT's scoring, is ''low.''

Historical Whaling

The SRT scored the impacts from historical whaling as a ''low'' severity threat with a ''moderate-high'' degree of certainty. Whaling that occurred in the 18th and 19th centuries in the Gulf of Mexico may have removed Bryde's whales. The primary target species was the sperm whale, but other species were also taken. Reeves *et al.* (2011) indicated that, during the 18th and 19th centuries, whalers hunting ''finback whales'' in the Gulf of Mexico were most likely taking Bryde's whales, based on the known distribution and recent records of baleen whale species in the Gulf of Mexico. However, the total number of whales killed during that time cannot be quantified. The SRT determined that it is unlikely the current low abundance of GOMx Bryde's whales is related to historical whaling, as the population would have recovered to some extent, given the estimated population recovery rate (Wade 1998) and considering that whaling stopped over a century ago (Rosel *et al.* 2016). Whaling is not a current threat in the Gulf of Mexico and is regulated by the IWC (see factor D). The SRT ranked the impacts from historical whaling as ''low'' severity threat with a ''moderate-high'' degree of certainty.

Scientific Biopsy Sampling

Scientific research that may have the potential to disturb and/or injure marine mammals such as the Bryde's whale requires a letter of authorization under the MMPA. As of March 7, 2016 (the reference date used by the SRT), there was one active scientific permit authorizing non-lethal take of GOMx Bryde's whale and four scientific research permits authorizing non-lethal take of Bryde's whales worldwide, including the Gulf of Mexico. The permits authorize activities such as vessel or aerial surveys, photo-identification, behavioral observation, collection of sloughed skin, and passive acoustics. Four of the permits also authorize activities such as dart biopsies and/or tagging. Biopsy sampling, where a small piece of tissue is removed for analysis, is a common research activity used to support stock differentiation, evaluate genetic variation, and investigate health, reproduction and pollutant loads (Brown *et al.* 1994). Research on wound healing from biopsies has indicated little long-term impact from biopsy sampling (Brown *et al.* 1994, Best *et al.* 2005). In addition, research activities are closely monitored and evaluated in the United States in an attempt to minimize impacts (see factor D). The SRT scored the threat of scientific biopsy sampling as a ''low'' severity threat with a ''high'' level of certainty.

Summary of Factor B

The overall threat rank assigned for factor B by the SRT was ''low,'' indicating there are a low number of threats that are likely to contribute to the decline of the GOMx Bryde's whale. We conclude, based on our review of the information presented in the status review and the SRT's threats assessment that the threats posed by whaling and scientific biopsy sampling are not contributing to the risk of extinction for the GOMx Bryde's whale.

Factor C. Disease, Parasites, and Predation

The SRT considered the following threats under ESA factor C: Disease and parasites, and predation. The overall rank assigned for factor C based on the SRT's scoring was ''low.''

Disease and Parasites

There is little information on disease or parasitism of any Bryde's whale in the literature. Reviews of conservation issues for baleen whales have tended to see disease as a relatively inconsequential threat (Claphan *et al.* 1999). The SRT noted that cetacean morbillivirus, which causes epizootics resulting in serious population declines in dolphin species (Van Bressem *et al.* 2014), has also been detected in fin whales in the eastern Atlantic Ocean (Jauniaux *et al.* 2000) and in fin whales and minke whales in the Mediterranean Sea (Mazzariol *et al.* 2012; Di Guardo *et al.* 1995). In the Gulf of Mexico, the morbillivirus outbreaks that occurred in 1990, 1992, and 1994 caused marine mammal mortalities, with most of the mortalities being common bottlenose dolphins (Rosel *et al.* 2016). These outbreaks were thought to have originated in the Atlantic Ocean (Litz *et al.* 2014). An unusual mortality event involving hundreds of common bottlenose dolphins in the Atlantic Ocean from 2013–2015 was caused by morbillivirus (Rosel *et al.* 2016). During this outbreak, a few individuals of multiple species of baleen whales in the Atlantic tested positive for the disease, indicating that it could potentially spread to Bryde's whales (Rosel *et al.* 2016). However, there have been no confirmed morbillivirus-related deaths of Bryde's whales in the Gulf of Mexico (Rosel *et al.* 2016).

The SRT identified only two cases of other diseases and parasites occurring in Bryde's whale, one case in Australia (Patterson 1984) and one case in Brazil (Pinto *et al.* 2004). Based on the SRT's scoring, the threat of disease and parasites is a ''low'' severity threat with ''low'' certainty.

Predation

Killer whales (*Orcinus orca*) are the only known predator of Bryde's whales based on observations outside of the Gulf of Mexico (Silber and Newcomer 1990, Alava *et al.* 2013). There are no published records of killer whale predation of GOMx Bryde's whale and observations of killer whales in the Gulf of Mexico have been outside of the GOMx Bryde's whales' BIA (Rosel *et al.* 2016). However, killer whales have been observed harassing sperm whales and attacking pantropical spotted dolphins (*Stenella attenuata*) and a dwarf/pygmy sperm whale (*Kogia* sp.) in the Gulf of Mexico (Pitman *et al.* 2001, Whitt *et al.* 2015, NMFS SEFSC, unpublished). Although large sharks (*e.g.,* white sharks *Carcharodon carcharias,* and tiger sharks *Galaecerdo cuvier*) are known to scavenge on carcasses of Bryde's whales elsewhere in the world (Dudley *et al.* 2000), the SRT found no published reports of large shark predation on healthy, living individuals (Rosel *et al.* 2016). Based on this information, the SRT's scoring of this threat was ''low'' severity with ''low'' certainty.

Summary of Factor C

The overall threat rank assigned for factor C, based on the SRT's scoring, was ''low,'' indicating that this category includes a low number of threats that are likely to contribute to the decline of the GOMx Bryde's whale. Based on the limited observance of disease, parasites, or predation, we concur that these are low potential threats to the GOMx Bryde's whale and are not currently contributing to their extinction risk.

Factor D. Inadequacy of Existing Regulatory Mechanisms

The relevance of existing regulatory mechanisms to extinction risk for an individual species depends on the

vulnerability of that species to each of the threats identified under the other factors of ESA section 4, and the extent to which regulatory mechanisms control the threats that are contributing to the species' extinction risk. If a species is not vulnerable to a particular threat, it is not necessary to evaluate the adequacy of existing regulatory mechanisms for addressing that threat. Conversely, if a species is vulnerable to a particular threat, we do evaluate the adequacy of existing measures, if any, in controlling or mitigating that threat. In the following paragraphs, we summarize existing regulatory mechanisms relevant to threats to GOMx Bryde's whale generally, and assess their adequacy for controlling those threats.

Marine Mammal Protection Act

Bryde's whales are protected by the MMPA (16 U.S.C. 1361 *et seq.*). The MMPA sets forth a national policy to prevent marine mammal species or population stocks from diminishing to the point where they are no longer a significant functioning element of their ecosystem. The Secretaries of Commerce and the Interior have primary responsibility for implementing the MMPA. The Secretary of Commerce has jurisdiction over the orders Cetacean and Pinnipedia with the exception of walruses, and the Secretary of Interior has jurisdiction over all other marine mammals. Both agencies are responsible for promulgating regulations, issuing permits, conducting scientific research, and enforcing regulations, as necessary, to carry out the purposes of the MMPA. The MMPA includes a general moratorium on the ''taking'' and importing of marine mammals (16 U.S.C. 1371), which is subject to a number of exceptions. Some of these exceptions include ''take'' for scientific purposes, public display, and unintentional incidental take coincident with conducting lawful activities. Any U.S. citizen, agency, or company who engages in a specified activity other than commercial fishing (which is specifically and separately addressed under the MMPA) within a specified geographic region may submit an application to the Secretary to authorize the incidental, but not intentional, taking of small numbers of marine mammals within that region for a period of not more than five consecutive years (16 U.S.C. 1371(a)(5)(A)(i)). U.S. citizens can also apply under the MMPA for authorization to incidentally take marine mammals by harassment for up to one year (16 U.S.C. 1371(a)(5)(D)). For both types of authorizations, it must be determined that the take is of small numbers, has no more than a negligible impact on those marine mammal species or stocks, and does not have an un-mitigatable adverse impact on the availability of the species or stock for subsistence use. The MMPA also provides mechanisms for directed ''take'' of marine mammals for the purposes of scientific research (16 U.S.C. 1374). Non-lethal research takes of Bryde's whale for scientific research (*e.g.,* biopsy sampling) are currently authorized on a global scale and typically do not specify a geographic area. Hence the potential for multiple biopsies of an individual Bryde's whale does exist. However, any risk to GOMx Bryde's whale from multiple sampling is low, and we do not expect any mortality to result. In these situations, we take a proactive role and coordinate with researchers to minimize any potential negative effects to a small population.

The Northern Gulf of Mexico stock of Bryde's whales is considered a ''strategic'' stock under the MMPA, because the level of direct human-caused mortality and serious injury exceeds the potential biological removal (PBR) level determined for the species, which could have management implications (U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments 2015; 16 U.S.C. 1362(19)). The MMPA also provides additional protections to stocks designated as ''depleted'' and requires that conservation plans be developed to conserve and restore the stock to its optimum sustainable population (OSP) (16 U.S.C. 1383b). In order for a stock to be considered ''depleted'' the Secretary, after consultation with the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals, must determine it is below its OSP (16 U.S.C. 1362(1)(A)), or it must be listed under the ESA (16 U.S.C. 1362(1)(C)). In 2015, the Marine Mammal Stock Assessment Report determined that the status of the Northern Gulf of Mexico Population of Bryde's whales relative to OSP was unknown, as there was insufficient information to determine population trends (U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments 2015). Because of this lack of information on OSP, the GOMx Bryde's whale is not designated as a ''depleted'' stock and there is no conservation plan. The 2016 Marine Mammal Stock Assessment Report (82 FR 29039, June 27, 2017) did not update the report on the Gulf of Mexico population of Bryde's whales (U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments 2016). Based on the above, we conclude that, outside of the general protections provided to marine mammals by the MMPA, there are no specific regulatory mechanisms specific to the GOMx Bryde's whale under the MMPA.

Magnuson-Stevens Fishery Conservation and Management Act (MSA)

The Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. 1801 *et seq.,* established eight regional fishery management councils (Councils) that develop and implement management measures for fisheries requiring conservation and management through fishery management plans (FMPs). These FMPs must comply with 10 national standards for fishery conservation and management in addition to other principles to promote sustainable use of managed fisheries. Fishery management plans are submitted to the Secretary of Commerce and, if approved, are implemented via federal regulation. The Gulf of Mexico Fishery Management Council manages a number of species in the Gulf of Mexico, and the regulations implementing the FMPs have the potential to benefit the GOMx Bryde's whale. In addition, under the MSA, NMFS is responsible for managing high migratory species, including tunas, sharks, swordfish, and billfish.

As discussed in the Fishing Gear Entanglement section, the bottom longline component of the Gulf of Mexico reef fish fishery, the Gulf of Mexico shark bottom longline fishery, and Atlantic Ocean, Caribbean, Gulf of Mexico commercial pelagic longline fishery for large pelagic species are active within BIA. These fisheries use gear types (*i.e.,* bottom longline and pelagic longline) that pose entanglement risk to GOMx Bryde's whales. In 2000, the Highly Migratory Species Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan was amended to establish the De Soto Canyon Marine Protected Area. The De Soto Canyon Marine Protected Area is closed to pelagic longline fishing. It includes approximately ⅔ of the GOMx Bryde's whale BIA. This closure reduces the likelihood of a GOMx Bryde's whale becoming entangled in longline gear in the BIA. However, ⅓ of the BIA is still open to pelagic longlining. In addition, while the pelagic longlining is prohibited in the De Soto Marine Protected Area, there are no restrictions or areas within the BIA closed to bottom longline fishing. We believe that the De Soto Marine Protected Area provides some protection to the GOMx Bryde's whale. However, there are no additional

regulations or protections in place that address, mitigate, or remove the threat posed by bottom longline fishing or pelagic longline fishing. Thus, we conclude that fishing gear entanglement remains a threat, despite the protections in place.

Outer Continental Shelf Lands Act and the Oil Pollution Act

The SRT also identified existing regulatory mechanisms relating to oil and gas development and oil spills and spill responses (see factors A and E for a discussion of those threats). The Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. 1331 *et seq.*) establishes Federal jurisdiction over submerged lands on the OCS seaward of coastal state boundaries in order to explore and develop oil and gas resources. Implementation, regulation, and granting of leases for exploration, development, and production on the OCS are delegated to the BOEM, and BOEM is responsible for managing development of the nation's offshore resources. The functions of BOEM include leasing, exploration, development, and production, plan administration, environmental studies, National Environmental Policy Act (NEPA) analysis, resource evaluation, economic analysis, and the renewable energy program. BSEE is responsible for enforcing safety and environmental regulations. OCSLA mandates that orderly development of OCS energy resources be balanced with protection of human, marine and coastal environments. It is the stated objective of the OCSLA that operations in the OCS should be conducted in a safe manner to prevent or minimize the likelihood of blowouts, loss of well control, fires, spillages or other occurrences which may cause damage to the environment or to property, or endanger life or health (43 U.S.C. 1332(6)). OCSLA further requires the study of the environmental impacts of oil and gas leases on the continental shelf, including an assessment of effects on marine biota (43 U.S.C. 1346). OCSLA, as amended, requires the Secretary of the Interior, through BOEM and BSEE, to manage the exploration, development, and production of OCS oil, gas, and marine minerals (*e.g.,* sand and gravel) and the siting of renewable energy facilities. The Energy Policy Act of 2005, Public Law (Pub. L.) 109–58, added Section 8(p)(1)(C) to the OCSLA, which grants the Secretary of Interior the authority to issue leases, easements, or rights-of-way on the OCS for the purpose of developing energy from sources other than oil and gas (*i.e.,* renewable energy development) (43 U.S.C. 1337(p)(1)(C)). This authority has been delegated to BOEM (30 CFR 585.100), which now regulates activities within Federal waters. Since 2006, there has been a moratorium on leasing new areas for oil and gas development and production in the Gulf of Mexico EPA, which includes the waters offshore of Florida, including the BIA. The moratorium is set to expire in 2022 and, if it is not renewed, the GOMx Bryde's whale within the BIA could be exposed to increased energy exploration.

The Oil Pollution Act (OPA) of 1990 (33 U.S.C. 2701–2762) is the principal statute governing oil spills in the nation's waterways. OPA was passed following the March 1989 Exxon Valdez oil spill to address a lack of adequate resources, particularly Federal funds, to respond to oil spills (National Pollution Funds Center 2016). The OPA created requirements for preventing, responding to, and funding restoration for oil pollution incidents in navigable waters, adjoining shorelines, and Federal waters. The OPA authorizes Trustees (representatives of Federal, state, and local government entities, and Tribes with jurisdiction over the natural resources in question) to determine the type and amount of restoration needed to compensate the public for the environmental impacts of the spill. These assessments are typically described in damage assessment and restoration plans. The Final Programmatic Damage Assessment and Restoration Plan (PDARP) developed for the 2010 DWH oil spill found the GOMx Bryde's whale to be the most impacted oceanic and shelf marine mammal; the oil footprint included 48 percent of the habitat within the BIA and 48 percent of the population was exposed to oil, resulting in an estimated 22 percent maximum decline in population size (DWH Trustees 2016, DWH MMIQT 2015). The DWH PDARP allocates fifty-five million dollars over the next 15 years for restoration of oceanic and shelf marine mammals, including Bryde's whales. The PDARP does not identify specific projects, but lays out a framework for planning future restoration projects, that may contribute to the restoration of GOMx Bryde's whale.

The impacts to the GOMx Bryde's whale from oil and gas development and oil spills in the Gulf of Mexico identified by the SRT (*e.g.,* contributing to the curtailment of range and modification of their habitat) indicate that existing regulatory mechanisms are not adequate to control these threats. While the current moratorium on leasing for new oil and gas development in the EPA appears to provide some protection to the GOMx Bryde's whale, the SRT found that development in the Gulf of Mexico continues to have broad impacts. Additionally, the existing moratorium on new leases in the EPA expires in 2022 and, if not renewed, energy development could occur in the GOMx Bryde's whale BIA, potentially resulting in severe impacts to this small population. We acknowledge that the restoration activities under the DWH PDARP may be beneficial to GOMx Bryde's whales, but we also conclude that oil spills and spill responses remain a serious current threat to the GOMx Bryde's whale and its habitat, as discussed above in factor A.

International Convention for the Regulation of Whaling

The IWC was set up under the International Convention for the Regulation of Whaling (ICRW), signed in 1946. The IWC established an international moratorium on commercial whaling for all large whale species in 1982, effective in 1986; this affected all member (signatory) nations (paragraph 10e, IWC 2009a). Since 1985, IWC catch limits for commercial whaling have been set at zero. However, under the IWC's regulations, commercial whaling has been permitted in both Norway and Iceland based on their objection to specific provisions. In addition, harvest of whales by Japan for scientific purposes has been permitted by the ICRW, including the Bryde's whale in the North Pacific. However, distribution of the GOMx Bryde's whale does not overlap with any permitted commercial whaling. The SRT concluded the current commercial whaling moratorium provides significant protection for the GOMx Bryde's whale, and we concur.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora

CITES is aimed at protecting species at risk from unregulated international trade and regulates international trade in animals and plants by listing species in one of its three appendices. The level of monitoring and control to which an animal or plant species is subject depends on the appendix in which the species is listed. All Bryde's whales (*B. edeni*) are currently listed in Appendix I under CITES. Appendix I includes species that are threatened with extinction and may be affected by trade; trade of Appendix I species is only allowed in exceptional circumstances. Due to the IWC commercial whaling moratorium in place since 1985, commercial trade of Bryde's whale in the Gulf of Mexico has not been

permitted. However, if the moratorium should be lifted in the future, the Bryde's whale's CITES Appendix I listing would restrict trade, so that trade would not contribute to the extinction risk of the species.

International Maritime Organization

The IMO, a branch of the United Nations, is the international authority on shipping, pollution, and safety at sea and has adopted guidelines to reduce shipping noise and pollution from maritime vessels. Additionally, the IMO's Marine Environment Protection Committee occasionally identifies special areas and routing schemes for various ecological, economic, or scientific reasons. Some of these actions help benefit endangered right whales and humpback whales. However, the SRT found no protected areas or routing schemes that would protect the GOMx Bryde's whale.

Mexico Energy Sector: Opening to Private Investment

The SRT expressed concern regarding potential oil and gas development in the southern Gulf of Mexico. Mexico recently instituted reforms related to its oil and gas sector that officially opened Mexico's oil, natural gas, and energy sectors to private investment. As a result, Mexico's state-owned petroleum company, Petroleos Mexicanos (Pemex), may now partner with international companies for the purposes of exploring the southern Gulf of Mexico's deep water and shale resources. The SRT found that more than 9 companies have shallow water lease permits either pending or approved, and 2D and 3D seismic data collection has begun. In 2013, the U.S. Congress approved the U.S.–Mexico Transboundary Hydrocarbons Agreement, which aims to facilitate joint development of oil and natural gas in part of the Gulf of Mexico. This agreement, coupled with recent reforms in Mexico, could lead to development within the Gulf of Mexico of offshore Mexico oil and gas, including infrastructure for cross-border pipelines. The SRT found that recent developments indicate a high potential for oil and gas development in these waters. However, anticipating any future threats to the GOMx Bryde's whale at this point in time is overly speculative because the best available scientific and commercial information indicates that the GOMx Bryde's whale distribution does not currently include the southern Gulf of Mexico.

Summary of Factor D

The SRT unanimously agreed that the inadequacy of existing regulatory mechanisms factor is a ''high'' threat to the GOMx Bryde's whale (Rosel *et al.* 2016). Specifically, the SRT found that, given the current status and limited distribution of the Bryde's whale population in the Gulf of Mexico, it is clear that existing regulations have been inadequate to protect them. The SRT expressed particular concern regarding current oil and gas development and impacts from oil spills in the Gulf of Mexico, as well as vessel strikes due to shipping traffic. We agree that currently there are no regulatory mechanisms in the Gulf of Mexico to address ship strikes on GOMx Bryde's whales, which the SRT identified as one of the primary threats faced by the species (see factor E below). Additionally, the status review suggests that oil and gas development in the Gulf of Mexico has been a contributing factor to limiting the GOMx Bryde's whale's current range to the De Soto Canyon. In our view, the best available scientific and commercial information establishes that energy exploration, development, and production, oil spills and oil spill response, vessel collision, fishing gear entanglement, anthropogenic noise, and small population concerns, such as allee effects, demographic stochasticity, genetics, k-selected life history parameters, and stochastic and catastrophic effects are currently threatening the species and contributing to its extinction risk (factors A and E).We acknowledge that some existing protective regulations are in place, however, we find that the existing regulatory mechanisms are inadequate to control the threats that are contributing to the GOMx Bryde's whale's extinction risk, for the reasons stated above and in our response to comments.

Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence

The SRT categorized threats under ESA factor E by three groups: A general category for ''other natural or human factors;'' anthropogenic noise; and small population concerns. Within the general sub-category for other natural or human factors, the SRT included: Vessel collision; military activities; fishing gear entanglements; trophic impacts due to commercial harvest of prey; climate change; plastics and marine debris; and aquaculture. Within the anthropogenic noise sub-category of factor E, the SRT included: Aircraft and vessel noise associated with oil and gas activities; drilling and production noise associated with oil and gas activities; seismic survey noise associated with oil and gas activities; noise associated with military training and exercises; noise associated with commercial fisheries and scientific acoustics; and noise associated with vessels and shipping traffic. Within the small population concerns sub-category of factor E, the SRT included: Allee effects; demographic stochasticity; genetic stochasticity; k-selected life-history parameters; and stochastic and catastrophic events. An explanation of these threats and the SRT's ranking for each of these sub-categories follows.

Other Natural or Human Factors

Vessel Collision—Vessel collisions are a significant source of mortality for a variety of coastal large whale species (Laist *et al.* 2001). The northern Gulf of Mexico is an area of heavy ship traffic, which increases the risk of vessel-whale collisions (Rosel *et al.* 2016). Several important commercial shipping lanes travel through the primary GOMx Bryde's whale habitat in the northeastern Gulf of Mexico, particularly vessel traffic from ports in Mobile, Pensacola, Panama City, and Tampa (see Figure 17 in Rosel *et al.* 2016). In 2009, a GOMx Bryde's whale was found floating dead in the Port of Tampa, Tampa Bay, Florida. The documented cause of death was blunt impact trauma due to ship strike (Waring *et al.* 2013). The necropsy report found that the whale was a lactating female, indicating that she was nursing a calf. It is likely that the calf died, as it was still dependent on the mother.

Bryde's whales are the third most commonly reported species struck by ships in the southern hemisphere (Van Waerebeek *et al.* 2007). As previously described, tracking information from a single GOMx Bryde's whale indicated a consistent diel dive pattern over 3 days, with 88 percent of nighttime hours spent within 15 m of the surface. This suggested to the SRT that, if other individuals exhibit a similar diving pattern, they would be at greater risk of ship strike, because they spend most of the time near the surface at night when visibility is minimal. Marine mammals that spend the majority of their nighttime hours near the surface and animals that spend more time at or near the surface are at greater risk than species that spend less time at the surface (Rosel *et al.* 2016). Additionally, the threat of vessel collision may increase in the future, given the expansion of the Panama Canal, which is anticipated to increase vessel traffic in the Gulf of Mexico (Institute for Water Resources 2012), and the potential expansion of oil and gas activities, and associated vessel traffic, in the EPA following the expiration of

the moratorium on lease sales. Given the location of commercial shipping lanes, the difficulty of sighting a whale at the surface at night, and the low ability of large ships to change course quickly enough to avoid a whale, the SRT's scoring indicates that ship strikes pose a ''high'' severity threat to the GOMx Bryde's whale with ''high'' certainty.

Military Activities— Significant portions of the Gulf of Mexico are used for military activities. NMFS completed a 2013 Biological Opinion assessing the impact of the Navy training exercises and coordinated via a Letter of Authorization (LOA) under the MMPA to govern unintentional takes incidental to training and testing activities (Rosel *et al.* 2016). Although Level B harassment (*i.e.,* activities that have the potential to disturb a marine mammal or marine mammal stock) is authorized pursuant to that LOA, the Navy determined that very few training or testing activities are likely to occur within the BIA (see Figures 18 and 19 in Rosel *et al.* 2016). Moreover, the Navy agreed to expand their Planning Awareness Area to encompass the Bryde's whale BIA and as a result they will avoid planning major training activities there, when feasible. In addition, Eglin Air Force Base (hereafter referred to as Eglin AFB) also conducts training exercises in the Gulf of Mexico. Eglin AFB also had an annual incidental harassment authorization for common bottlenose dolphin and Atlantic spotted dolphin, for their Maritime Weapon Systems Evaluation Program (81 FR 7307, February 11, 2016, and 82 FR 10747, February 15, 2017, which expired on February 3, 2018). However, most training activities take place in relatively shallow water (*i.e.,* 35 to 50 m depth). Eglin AFB does not anticipate that its activities would take GOMx Bryde's whales, because the GOMx Bryde's whales are rare in the areas involved (*e.g.,* in shallow waters between 35 to 50 m deep); therefore, Eglin AFB did not request a take authorization for Bryde's whales (Rosel *et al.* 2016; 81 FR 7307; 82 FR 10747). The SRT concluded that, although there are military activities in the Gulf of Mexico, including the northern Gulf of Mexico, most activities appeared to occur outside the BIA. In addition, they found that military activities are not constant, and due to the current scope of existing activities, the threat was considered less likely to have negative impacts on the population (Rosel *et al.* 2016). However, the SRT believed that this threat would need to be re-evaluated if the intensity, timing, or location of military training exercises extended closer to the BIA. Based on the SRT rankings, the threat of military activities (*i.e.,* explosive pressure waves, target training, and vessel activities) is a ''moderate'' threat with ''low'' certainty. The threat of noise from military activities is considered under the *Anthropogenic Noise* section, below.

Since the publication of the status review and the proposed rule, NMFS has issued regulations and an updated LOA to Eglin AFB for authorization to take marine mammals incidental to conducting testing and training activities in the Eglin Gulf Test and Training Range in the Gulf of Mexico over the course of five years, from February 13, 2018 through February 12, 2023 (83 FR 5545, February 8, 2018). This LOA supersedes other LOAs that were in effect and includes all of Eglin AFB's testing and training activities, including Maritime Weapon Systems Evaluation Program activities, into one action. The Air Force did not request a take authorization for Bryde's whales, and take has not been authorized. Under the LOA, to protect Bryde's whales, mission activities will be aborted/suspended for the remainder of the day if one or more sperm or baleen whales are detected during pre-mission monitoring activities as no takes of these species have been authorized. Trained observers will also be instructed to be vigilant in ensuring Bryde's whales are not in the zone of influence. In addition, monitors will be instructed to be extra vigilant in ensuring that species of concern, including the Bryde's whale, are clear of the zone of influence during testing and training activities. This is in addition to other measures to mitigate and monitor effects to protected species. NMFS consulted on the effects of the testing and training activities at the Eglin Gulf Test and Training Range in the Gulf of Mexico and concluded that the proposed training activities are not likely to adversely affect GOMx Bryde's whale (NMFS 2017). We have re-evaluated this threat in light of this new information, and have determined the military activities continue to be a moderate threat to the species.

Fishing Gear Entanglement—Marine mammals are known to become hooked, trapped, or entangled in fishing gear, leading to injury or mortality (Read 2008; Reeves *et al.* 2013). While gear interactions are documented more frequently for toothed whales, they remain a threat to small populations of baleen whales like the GOMx Bryde's whale (Reeves *et al.* 2013). The SRT evaluated the threat of fishing gear entanglement based on the spatial overlap between 12 commercial fisheries and the Bryde's whale BIA, gear type, the amount of fishing effort, and the potential for interactions given the whale's foraging behavior. The SRT concluded that five of the 12 commercial fisheries evaluated overlap or possibly overlap with the Bryde's whale BIA (*i.e.,* the Gulf of Mexico pelagic longline fishery, the bottom longline component of the Gulf of Mexico reef fish fishery, the Gulf of Mexico shark bottom longline fishery, the Gulf of Mexico shrimp trawl fishery, and the Gulf of Mexico butterfish trawl fishery).

The Gulf of Mexico royal red shrimp trawl fishery and the butterfish trawl fishery overlap within the GOMx Bryde's whale BIA (Rosel *et al.* 2016). However, the royal red shrimp trawl fishery has limited spatial overlap and those areas where spatial overlap occurs represent only a small portion of total fishing effort. The butterfish trawl fishery is small, with only two participants currently permitted, and has limited available information. Thus, the SRT determined that these two fisheries are unlikely to have an interaction with the GOMx Bryde's whale given the limited overlap and total fishing effort.

Pelagic longlines are a known entanglement threat to baleen whales, as the majority of mainline gear is in the water column and animals swimming in the area may interact with the gear (Andersen *et al.* 2008). The Atlantic Ocean, Caribbean, Gulf of Mexico commercial pelagic longline fishery for large pelagic species is active within the GOMx Bryde's whale BIA. Approximately two thirds of the BIA has been closed to commercial pelagic longline fishing year-round since 2000, when the Highly Migratory Species Atlantic Tunas, Swordfish, and Sharks Fishery Management Plan was amended to close the De Soto Canyon Marine Protected Area; however, the BIA is larger than the MPAs and one third of the BIA is still open to pelagic longline fishing (65 FR 47214; August 1, 2000). To date, no interactions between GOMx Bryde's whale and pelagic longline gear have been recorded.

The bottom longline fisheries also are an entanglement threat to the GOMx Bryde's whale. The Gulf of Mexico reef fish and shark bottom longline gear consists of a monofilament mainline up to a mile in length anchored on the seafloor, with up to 1,000 baited hooks along the mainline and marked with buoys. Generally, bottom longline gear poses less of a threat of entanglement to cetaceans compared to pelagic longline gear, except when cetaceans forage along the seafloor. The GOMx Bryde's whales appear to forage along the

seafloor, and therefore they are exposed to risk of entanglement in mainlines. There are no restrictions or areas within the BIA closed to bottom longline fishing. While bottom longlining typically occurs in waters less than 100m, fishing for yellowedge grouper, golden tilefish, blueline tilefish, and sharks occurs in deeper waters between 100 and 400m within the BIA. The available information indicates the GOMx Bryde's whale forages on or near the seafloor bottom, such that potential for interactions exists, given that the majority of mainline gear is anchored on the seafloor (Rosel *et al.* 2016).

Based on the above, the SRT concluded that pelagic and bottom longline gears pose an entanglement risk to the GOMx Bryde's whale where fisheries using these gear types overlap with the species BIA. Thus the SRT scored the threat of entanglement in commercial fisheries is ''moderate'' in severity with ''moderate'' certainty.

Trophic Impacts Due to Commercial Harvest of Prey Items—While GOMx Bryde's whales' prey in the Gulf of Mexico are currently unknown (Rosel *et al.* 2016), they likely feed on anchovy, sardine, mackerel and herring, and small crustaceans, similar to Bryde's whales worldwide (Kato 2000). The two main Gulf of Mexico commercial fisheries for small schooling fish are the Gulf of Mexico menhaden purse-seine fishery and the Florida west coast sardine purse-seine fishery; the main invertebrate fishery is the Gulf of Mexico shrimp trawl fishery. The SRT concluded that direct competition between GOMx Bryde's whale and commercial fisheries did not appear to be likely, based on the current distribution of the GOMx Bryde's whale, the distribution of fishery effort, and presumed fish and invertebrate habitat (Rosel *et al.* 2016). The SRT also evaluated the threat of total biomass removal by the menhaden purse-seine fishery and the shrimp trawl fishery in the Gulf of Mexico and the resulting impact on ecosystem functioning, species composition, and potential trophic pathway alterations, and concluded that the ecosystem and trophic effects of these removals are unknown. Based on the SRT's scoring, the threat from trophic impacts due to commercial harvest of prey is a ''low'' severity threat with ''low'' certainty.

Climate Change—The impacts of climate change on cetaceans are not easily quantified; however, direct and indirect impacts are expected (Evans and Bjørge 2013). Potential impacts of climate change on marine mammals include range shifts, habitat degradation or loss, changes to the food web, susceptibility to disease and contaminants, and thermal intolerance (MacLeod 2009, Evans and Bjørge 2013). The restricted distribution of the GOMx Bryde's whale is a concern, as climate change may disproportionately affect species with specialized or restricted habitat requirements. As water temperatures rise, many marine species will have to shift their distributions northward or in a direction that maintains a near-constant environment (*e.g.,* temperature and prey availability) (Evans *et al.* 2010). Within the Gulf of Mexico, GOMx Bryde's whales have little room to shift their distribution northward into cooler waters. Furthermore, the predicted changes in freshwater inflow and the associated effects on biological productivity may affect the health of the Gulf of Mexico. While recognizing the potential threat that climate change poses to the GOMx Bryde's whale, the SRT considered that there are more significant and immediate pressures on the GOMx Bryde's whale (Rosel *et al.* 2016). The SRT assigned the threat of climate change as a ''low'' severity threat to GOMx Bryde's whale with ''low'' certainty.

Plastics and Marine Debris—Plastics comprise 60–80 percent of all marine debris (Baulch and Perry 2014), and derelict fishing gear is the second most common form of marine debris (National Oceanic Service 2015). There are not many documented interactions of marine mammals with marine debris in the Gulf of Mexico and the SRT did not find any documented cases specific to Bryde's whale (NOAA Fisheries Marine Mammal Health and Stranding Response Database). Less than one percent of marine mammal strandings in the Gulf of Mexico from 2000–2014 showed evidence of entanglement or ingestion of marine debris (NOAA Fisheries Marine Mammal Health and Stranding Response Database). While noting that the records of reported marine mammal strandings may not be comprehensive, the SRT's scoring ranked this threat as ''low'' severity with ''low'' certainty (Rosel *et al.* 2016).

Aquaculture—There are currently no aquaculture facilities in the U.S. waters of the Gulf of Mexico. However, a final rule was published on January 13, 2016 (81 FR 1761) establishing a regulatory program applicable to marine aquaculture in federal waters of the Gulf of Mexico and establishing a regional permitting process. The final rule implements the Fishery Management Plan for Regulating Offshore Marine Aquaculture in the Gulf of Mexico (FMP), prepared by the Gulf of Mexico Regional Fishery Management Council. We note that this final rule is currently under challenge in a pending court proceeding, *Gulf Fishermen's Association, et al.* v. *NMFS,* 16–cv–01271 (E.D. La.). Under the regulations, each facility must satisfy a list of siting requirements and conditions and specifies that an application may be denied for potential risks to essential fish habitat, endangered or threatened species, marine mammals, wild fish stocks, among other reasons (50 CFR 622.103). Marine mammals are known to interact with aquaculture facilities through physical interaction with nets, ropes, twine and anchor lines (Price and Marris 2013). Because each application, including the proposed location, will be considered on a case-by-case basis, taking into account potential impacts to marine mammals, and no aquaculture facilities are currently sited in the Gulf of Mexico, the SRT scoring indicates that the SRT found aquaculture to be a ''low'' severity threat with ''low'' certainty.

Anthropogenic Noise—A variety of anthropogenic noise sources, such as energy exploration (seismic surveys), vessel and shipping traffic, oil and gas drilling and production, and aircraft and vessel traffic associated with oil and gas activities, have considerable energy at low frequencies (<100 Hz) (Sodal 1999; Nieukirk *et al.* 2004; Hildebrand 2009; Nieukirk *et al.* 2012) and are pervasive in the Gulf of Mexico (Rosel *et al.* 2016). Baleen whales produce calls that span a similar low frequency range (20 Hz–30 kHz), and therefore, presumably these species' best hearing abilities fall within this range, and are most impacted by low-frequency sounds (Richardson *et al.* 1995, Ketten 1997, Ketten *et al.* 2013, Cranford and Krysl 2015). Marine mammals rely heavily on their hearing to detect and interpret communication and environmental cues to select mates, find food, maintain group structure and relationships, avoid predators, navigate, and perform other critical life functions (Rosel *et al.* 2016). As noise levels rise in the marine environment, there are a variety of possible direct and indirect adverse physical and behavioral effects to marine mammals such as hearing loss or impairment, stress, behavioral changes, physiological effects, reduced foraging success, reduced reproductive success, masking of communication and environmental cues, and habitat displacement (Richardson *et al.* 1995; Southall *et al.* 2007; Francis and Barber 2013). The SRT evaluated anthropogenic noise and separately assessed, as detailed below, noise from aircraft and vessels associated with oil and gas activities, seismic surveys

associated with oil and gas activities, noise associated with military training and exercises, noise associated with commercial fisheries and scientific acoustics, and noise associated with vessels and shipping traffic.

Noise Generated From Aircraft and Vessels and Oil Drilling and Production Associated With Oil and Gas Activities—Aircraft and vessel operations (service vessels, etc.) support outer continental shelf oil and gas activities in the Gulf of Mexico. Routine aircraft overflights may interrupt and elicit a startle response from marine mammals nearby (Richardson *et al.* 1995). However, if marine mammals are nearby, the disturbance caused by helicopters approaching or departing OCS oil and gas facilities will be short in duration and transient in nature. The SRT reasoned that aircraft and vessel operations may ensonify large areas, but due to the lack of oil and gas activities currently in the eastern Gulf of Mexico, the threat from service aircraft and vessel noise to GOMx Bryde's whale should be minimal.

Oil drilling and production activities produce low-frequency underwater sounds that are in the frequency range detectable by the GOMx Bryde's whale and, given the amount of drilling activity and platforms in the central and western Gulf of Mexico, noise levels are already high. While there are currently no wells being drilled in the eastern Gulf of Mexico, and no production platforms in place, the potential opening of the EPA that overlaps the GOMx Bryde's whale BIA for oil and gas exploration is of considerable concern (Rosel *et al.* 2016). Based on the SRT's scoring, the threat of noise generated from aircraft and vessels associated with oil and gas activities and noise from drilling and oil production is ''moderate,'' with a ''moderate'' level of certainty for noise associated with aircraft and vessels, and the SRT assigned a ''low'' level of certainty for noise generated from drilling and oil production.

Seismic Survey Noise Associated With Oil and Gas Activities—The northern Gulf of Mexico is an area of high seismic survey activity; seismic surveys are typically conducted 24 hours a day, 365 days a year, using airguns that are a source of primarily low-frequency sound (Sodal 1999), and that overlap with ranges baleen whales use for communication and hearing (Rosel *et al.* 2016). These low-frequency sounds can travel substantial distances and airgun sounds have been recorded many hundreds of miles away from the survey locations (Nieukirk *et al.* 2004). Seismic surveys have the potential to cause serious acute auditory injury to animals within 100 m–1 km of airguns with received levels of 230 dB re 1 μPa (peak) or higher (Southall *et al.* 2007). In the 2016 Technical Guidance, this threshold was reduced to 219 dB re 1 μPa (peak), which indicates an area of potential acute auditory injury at equal or greater distance from the sound source than that discussed in Southhall *et al.,* 2007. Behavioral changes following seismic surveys, specifically changes in vocal behavior and habitat avoidance, have been documented for baleen whales (Malme *et al.* 1984, McCauley *et al.* 1998, Gordon *et al.* 2001, Blackwell *et al.* 2015). While reactions of Bryde's whales to seismic surveys have not been studied, the auditory abilities of all baleen whale species are considered to be broadly similar based upon vocalization frequencies and ear anatomy (Ketten 1998). As previously discussed, Bryde's whales could suffer acute auditory injury if seismic survey activity occurred within 1 km of a whale and could experience behavioral responses, including strong avoidance, if activity occurred within 8 km of a whale (Rosel *et al.* 2016). In addition, given the ability of low-frequency sounds to travel substantial distances, sounds from nearby surveys in the northwestern portion of the CPA, near the northeastern extent of the species' BIA, could expose the GOMx Bryde's whales in the BIA to noise at levels that could increase their stress, reduce their foraging and reproductive success, and mask communications and environmental cues. In addition, the SRT found that after 2022, when the moratorium on lease sales expires, the species are likely to be exposed to increased seismic survey activity and associated noise levels that could increase the potential for these effects. The SRT noted that in 2009, seismic survey activity was high in the EPA, but that in following years they did not expect as much activity, due in part to the moratorium on new lease sales and production in the EPA. However, the SRT explained that the spatial distribution of surveying activity in the Gulf of Mexico varies inter-annually, and they expect seismic survey activity to increase following expiration of the moratorium. If seismic survey activity increases, the SRT expects that the species will be exposed to ambient noise at levels that would interfere with their ability to communicate and could be at risk of acute auditory injury or behavioral responses. The SRT scored anthropogenic noise associated with seismic surveys as a ''high'' severity threat with ''moderate'' certainty.

Noise Associated With Military Training and Exercises—Military training and exercises use active sonar sources and explosives as part of their operations and each of these sources have the potential to impact marine mammals (Rosel *et al.* 2016). However, as discussed above, most military activities that occur in the Gulf of Mexico take place outside of the GOMx Bryde's whale BIA, and the Navy expanded their Planning Awareness Area to encompass the BIA (see *Military Activities* above). The SRT found this threat to be less likely to have a negative impact on the GOMx Bryde's whale compared to other threats associated with the anthropogenic noise considered in this sub-category. Therefore, the SRT assigned the threat of noise associated with military training and exercises as ''low'' in severity with a ''moderate'' level of certainty.

Noise Associated With Commercial Fisheries and Scientific Acoustics—Commercial and scientific vessels use active sonar for the detection, localization, and classification of underwater targets, including the seafloor, plankton, fish, and human divers (Hildebrand 2009). Source frequencies of many of these sonars are likely above the frequency range for Bryde's whale hearing (Watkins 1986, Au *et al.* 2006, Tubelli *et al.* 2012). Recent technological advancements, such as the Ocean Acoustic Waveguide Remote Sensing (OAWRS) system, use low-frequency acoustics that have the potential to impact baleen whale behavior (Risch *et al.* 2012). However, the SRT concluded these low-frequency systems are not likely to be used in U.S. waters in the future (Rosel *et al.* 2016). Because the acoustic frequencies associated with the sonar systems used by commercial fisheries and scientific vessels are not within the range of GOMx Bryde's whale hearing and are not likely to be used in the Gulf of Mexico, the SRT assigned the threat of noise associated with commercial fisheries and scientific acoustics a ranking of ''low'' in severity with ''low'' certainty.

Noise Associated With Shipping Traffic and Vessels—Noise from shipping traffic is an unintended byproduct of shipping and depends on factors such as ship type, load, speed, ship hull and propeller design; noise levels increase with increasing speed and vessel size (Allen *et al.* 2012, McKella *et al* 2012b, Rudd *et al.* 2015). Shipping noise is characterized by mainly low frequencies (Hermannsen *et al.* 2014) and contributes significantly to low-frequency noise in the marine

environment (National Research Council 2003, Hildebrand 2009). Approximately 50 percent of U.S. merchant vessel traffic (as measured by port calls or tonnage for merchant vessels over 1,000 gross tons) occurs at U.S. Gulf of Mexico ports, indicating shipping activity is a significant source of noise in this region. Noise is likely to increase as shipping trends indicate that faster, larger ships will traverse the Gulf of Mexico following expansion of the Panama Canal (Rosel *et al.* 2016).

Shipping noise in the northeast United States was predicted to reduce the communication space of humpback whales, right whales, and fin whales by 8 percent, 77 percent, and 20 percent, respectively, by masking their calls (Clark *et al.* 2009). Because Bryde's whale call source levels are most similar to those of right whales, the SRT found they may be similarly impacted (Rosel *et al.* 2016). Documented impacts of vessel and shipping noise on marine mammals, like the GOMx Bryde's whale, include: Habitat displacement; changes in diving and foraging behavior; changes in vocalization behavior; and altered stress hormone levels (Rosel *et al.* 2016).

The SRT found that there is a high level of low frequency noise caused by shipping activity in the Gulf of Mexico, and that it is likely the GOMx Bryde's whale is experiencing significant biological impacts as a result. The impacts to the GOMx Bryde's whale are assumed to be similar to those observed in other low frequency hearing baleen whale species, and include increased stress hormone levels, changes in dive and foraging behavior and communication, and habitat displacement. The SRT assigned the threat of noise associated with shipping traffic and vessels a score of ''moderate'' severity threat with ''moderate'' certainty.

Small Population Concerns

The final sub-category considered by the SRT under ESA factor E was small population concerns. The SRT considered Allee effects, demographic stochasticity, genetic stochasticity, k-selected life-history parameters, and stochastic and catastrophic events under this sub-category.

Allee Effects—If a population is critically small in size, individuals may have difficulty finding a mate. The probability of finding a mate depends largely on density (*i.e.,* abundance per area) rather than absolute abundance alone (Rosel *et al.* 2016). As previously discussed, noise from ships and industrial oil activities, including seismic exploration, could mask mating calls and contribute to reduced fecundity of the GOMx Bryde's whale (Rosel *et al.* 2016). The small population size (*i.e.,* likely fewer than 100 individuals, with 50 or fewer at maturity) may mean that Allee effects are occurring, making it difficult for individual whales to find one another for breeding, thereby reducing the population growth rate. The SRT's scored the impacts from Allee effects as a ''moderate'' threat in both severity and certainty.

Demographic Stochasticity—Demographic stochasticity refers to the variability of annual population change arising from random birth and death events at the individual level. Populations that are small in number are more vulnerable to adverse effects from demographic stochasticity. Demographic stochasticity is also more problematic for slowly reproducing species, such as GOMx Bryde's whales, which under normal conditions are likely to produce a calf every 2 to 3 years, similar to Bryde's whales worldwide and Eden's whale. Mean population growth rates can be reduced by variances in inter-annual growth rates, and this variance steadily increases as the population size decreases (Goodman 1987). The SRT also noted that, while skewed sex ratios do not currently appear to be a problem for GOMx Bryde's whales, their low calving rate and small population size create a higher probability of developing skewed sex ratios through chance alone. The SRT's scored the threat from impacts from demographic stochasticity as ''high'' in both severity and certainty.

Genetics—Genetic stochasticity results from three separate factors: Inbreeding depression, loss of potentially adaptive genetic diversity, and mutation accumulation (Frankham 2005; Reed 2005). The SRT concluded that the very small population size and documented low level of genetic diversity (Rosel and Wilcox 2014) indicates that the GOMx Bryde's whale is likely already experiencing inbreeding (mating with related individuals) that could lead to a loss of potentially adaptive genetic diversity and accumulation of deleterious mutations (Frankham 2005, Reed 2005). Applying the estimate from Taylor *et al.* (2007) of 0.51 for the proportion of a Bryde's whale population that is mature, and assuming a stable age distribution, the SRT concluded there would be at most 50 mature individuals for the GOMx Bryde's whale population, putting the whales at immediate recognized risk for genetic factors. Even with a 50–50 sex ratio, the SRT concluded that current abundance estimates are so low that current Bryde's whale population levels would meet any genetic risk threshold for decreased population growth due to inbreeding depression and potential loss of adaptive genetic diversity (Rosel *et al.* 2016). The SRT scored the threat of genetic stochasticity as ''high'' in both severity and certainty.

K-Selected Life History Parameters—In general all whales are considered as k-selected species due to their life history characteristics of large-size, late-maturity, and iteroparous reproduction that is energetically expensive, resulting in few offspring. K-selected life history characteristics in and of themselves are not a problem for baleen whales, but a small population size coupled with a low productivity rate further hinders population growth and increases the time frame for recovery when, as with the GOMx Bryde's whale, the population size is small and vulnerable to threats (Rosel *et al.* 2016). The SRT assigned the threat from k-selective life history parameters a score of ''high'' in severity and certainty.

Stochastic and Catastrophic Events—The small number of GOMx Bryde's whales and their restricted range (*i.e.,* De Soto Canyon area of the northeastern Gulf of Mexico) exacerbates the species' vulnerability to stochastic and catastrophic events. Further, the GOMx Bryde's whales are in close proximity to oil extraction developments and areas that could be affected by extreme weather events and harmful algal blooms. For example, an analysis of the impacts of the DWH oil spill on cetacean stocks in the Gulf of Mexico estimated that 17 percent of the GOMx Bryde's whale population was killed (DWH Trustees 2016). The SRT scored the threat from stochastic and catastrophic events on the GOMx Bryde's whale as ''high'' in severity with ''high'' certainty.

Summary of Factor E

The SRT's overall threat ranking for the threats we consider under ESA factor E was influenced by a suite of threats. The SRT separately ranked the overall threat of three groups of threats, ''other natural or human factors'' affecting the species' continued existence, small population concerns, and anthropogenic noise. Under the ''other natural and human factors'' category, based on the SRT's scoring, vessel collision, followed by fishing gear entanglements, presents the most serious individual threats the SRT considered. The threat of vessel collision is a significant source of mortality for a variety of coastal whale species and several important

commercial shipping lanes travel through the GOMx Bryde's whale BIA (Rosel *et al.* 2016). Fishing gear entanglement from the pelagic longline and bottom longline fisheries is a threat due to the spatial overlap between these fisheries and the Bryde's whale BIA, and the potential for interactions with the gear given the whale's foraging behavior (Rosel *et al.* 2016). The SRT's overall ranking for its generic ''other natural of human factors'' is moderate-high. The SRT's overall threat ranking for the category of ''anthropogenic noise'' was ''high,'' which was driven largely by the impacts of noise associated with seismic surveys, vessel and shipping traffic, oil and gas drilling and production, and aircraft and vessel traffic associated with oil and gas activities. The greatest threat identified by the SRT under ESA factor E was ''small population concerns,'' which the SRT's scoring unanimously assigned a ''high'' overall threat ranking.

In summary, the SRT found the level of anthropogenic noise in the Gulf of Mexico, the risk of vessel collisions, fishing gear entanglements, in combination with the small population size, are threats that are likely to eliminate or seriously degrade the population. The overall ranking the SRT assigned for factor E was ''high'' (*i.e.,* two high overall rankings for anthropogenic noise and small population concerns and one moderate-high overall ranking for its ''other natural and human factors'' category), indicating that there are a high number of threats that are moderately or very likely to contribute to the decline of the GOMx Bryde's whale. Considering the assessment completed by the SRT, we determine that the threats considered under factor E, including small population concerns; anthropogenic noise from seismic surveys, shipping traffic and vessels, and vessels and aircraft supporting oil and gas activities; vessel collision; and fishing gear entanglements are contributing to the risk of extinction for the GOMx Bryde's whale.

NMFS' Conclusions From Threats Evaluation

The most serious threats to the GOMx Bryde's whale are: Small population size, energy exploration, development, and production, oil spills and oil spill responses, vessel collision, anthropogenic noise, and fishing gear entanglement. We considered these threats under ESA section 4(a)(1) factors A and E; overall, we view the risk from factors A and E as high. We agree with the SRT's assessment that these threats are currently affecting the status of the GOMx Bryde's whale, and find that they are putting it at a heightened risk of extinction. We also agree with the SRT's characterization of factors B and C, overutilization for commercial, recreational, scientific, or educational purposes and disease, parasites, or predation, and their low overall ranking. We find that these are not factors that are likely contributing to the extinction risk for the GOMx Bryde's whale. Finally, we agree with the SRT's overall assessment for factor D, and we conclude that existing regulatory measures are not adequate to control the threats that are contributing to the species' extinction risk identified under factors A and E.

Demographic Risk Analysis

The SRT also evaluated four demographic factors—abundance, spatial distribution, growth/productivity, and genetic diversity—to assess the degree of extinction risk. These demographic criteria have been used in previous NMFS status reviews to summarize and assess a population's extinction risk due to demographic processes. The SRT used the following definitions to rank these factors: 1 = ''No or low risk: it is unlikely that this factor contributes significantly to risk of extinction, either by itself or in combination with other factors;'' 2 = ''Low risk: it is unlikely that this factor contributes significantly to risk of extinction by itself, but some concern that it may contribute, in combination with other factors;'' 3 = ''Moderate risk: it is likely that this factor in combination with others contributes significantly to risk of extinction;'' 4 = ''High risk: it is likely that this factor, by itself, contributes significantly to risk of extinction''; and 5 = ''Very high risk: it is highly likely that this factor, by itself, contributes significantly to risk of extinction.'' As described in detail below, the SRT concluded that each of these four demographic factors are likely to contribute significantly to the risk of extinction for the GOMx Bryde's whale.

The SRT determined that both abundance and spatial distribution were ''very high risk'' factors, meaning that it is highly likely that each factor, by itself, contributes significantly to the risk of extinction. The SRT concluded the best available scientific information indicated: (1) The number of GOMx Bryde's whales is likely fewer than 100 individuals with 50 or fewer mature individuals, and (2) their current distribution is restricted to a small region along the continental shelf break (100–400 m) in the De Soto Canyon makes them vulnerable to catastrophe. The SRT concluded that the GOMx Bryde's whale constitutes a dangerously small population, at or below the near-extinction population level, and the species' restricted range makes it vulnerable to a single catastrophic event (Rosel *et al.* 2016).

The SRT ranked both growth/productivity and genetic diversity as ''high'' risk factors, meaning that it is likely that each factor, by itself, contributes significantly to the risk of extinction. The SRT noted that the life-history characteristics of the GOMx Bryde's whale (*i.e.,* late-maturing, long gestation, single offspring) result in a slower recovery ability from their small population size and lead to a longer time during which a risk factor like a catastrophe could occur (Rosel *et al.* 2016). Allee effects were also identified by the SRT as increasing extinction risk because the small number of individuals reduces population growth rate through mate limitation (Rosel *et al.* 2016). Similarly, the low level of genetic diversity, documented in both mtDNA and nuclear DNA by Rosel and Wilcox (2014), combined with the small population size, means that individuals are likely breeding with related individuals and inbreeding depression may be occurring, resulting in a loss of genetic diversity (Rosel *et al.* 2016).

Extinction Risk Assessment

The SRT considered the information provided in the status review and demographic risk factors to conduct an extinction risk assessment. The SRT summarized its ERA for the GOMx Bryde's whale, placing it in the context of our agency guidelines on how to synthesize extinction risk (NMFS 2015). Those agency guidelines define categories of extinction risk. The high extinction risk category is defined as:

> A species or DPS with a high risk of extinction is at or near a level of abundance, productivity, spatial structure, and/or diversity that places its continued persistence in question. The demographics of a species, subspecies, or DPS at such a high level of risk may be highly uncertain and strongly influenced by stochastic or depensatory processes. Similarly, a species or DPS may be at high risk of extinction if it faces clear and present threats (*e.g.,* confinement to a small geographic area; imminent destruction, modification, or curtailment of its habitat; or disease epidemic) that are likely to create present and substantial demographic risks.

Applying this standard, the SRT unanimously agreed that the GOMx Bryde's whale has a high risk of extinction.

We consider the SRT's approach to assessing the extinction risk for GOMx Bryde's whale appropriate and based on

the best scientific and commercial information available. Based on the key conclusions from the status review, including the ERA (Rosel *et al.* 2016), we find that the GOMx Bryde's whale is a species, as defined by the ESA, that is at high risk of extinction as a result of ESA factors A, D, and E.

Protective Efforts

Section 4(b)(1)(A) of the ESA requires the Secretary, when making a listing determination for a species, to take into consideration those efforts, if any, being made by any State or foreign nation to protect the species. To evaluate the efficacy of domestic efforts that have not yet been implemented or that have been implemented, but have not yet been demonstrated to be effective, the Services developed a joint ''Policy for Evaluation of Conservation Efforts When Making Listing Decisions'' (PECE) (68 FR 15100; March 28, 2003). The PECE is designed to ensure consistent and adequate evaluation of formalized domestic conservation efforts that have not yet been implemented, or that have been implemented but not yet proven to be effective, when making listing determinations. The PECE is expected to facilitate the development of conservation efforts by states and other entities that sufficiently improve a species' status so as to make listing the species as threatened or endangered unnecessary.

The PECE establishes two overarching criteria to use in evaluating efforts identified in conservations plans, conservation agreements, management plans or similar documents: (1) For those efforts yet to be implemented, the certainty that the conservation effort will be implemented and (2) for those efforts that have not yet demonstrated effectiveness, the certainty that the conservation effort will be effective.

The status review (Rosel *et al.* 2016) summarized two known conservation efforts, both of which are planned and have yet to be implemented, and we further assess them here: The DWH PDARP and the GoMMAPPS. The restoration plan in the PDARP is a framework for planning future restoration projects. For marine mammals, the PDARP focuses on restoration activities that support population resilience, reduce further harm or impacts, and complement existing management priorities, with the goal of compensating for the population injuries suffered by each marine mammal stock. GOMx Bryde's whales were the most impacted offshore cetacean by the DWH oil spill, suffering an estimated 22 percent maximum decline in population size (DWH Trustees 2016). Although specific projects are not yet identified to implement Bryde's whale restoration, we anticipate that they should benefit the population, but, considering the species' life history, population recovery to pre-spill levels will take decades. More importantly, the population estimates considered by the SRT were pre-spill and were still found to represent a high extinction risk. Therefore, the conservation benefits that may be expected through implementation of the PDARP would not be expected to reduce the extinction risk for Bryde's whale to such a degree that this population would qualify as threatened or that listing is not warranted.

We also considered the proposed results from GoMMAPPS and its potential to protect and restore the population of GOMx Bryde's whale. The purpose of this program is to improve information about abundance, distribution, habitat use, and behavior of living marine resources (*e.g.,* marine mammals, sea turtles, sea birds) in the Gulf of Mexico, as well as to mitigate and monitor potential impacts of human activities. GoMMAPPS promotes collaborations via data sharing with other research efforts in the Gulf of Mexico, including potentially with Mexico. Given the scope of the program, studies are likely to increase scientific understanding of the GOMx Bryde's whale and its habitat, support management decisions, and monitor potential impacts of human activities. GoMMAPPS is likely to provide significantly improved information on the status of protected species in the Gulf of Mexico, possibly including GOMx Bryde's whales, and we anticipate that this information can be used to protect Bryde's whales more effectively in the future. However, these conservation benefits will require secondary actions that are not currently known. Therefore, we conclude that the conservation benefits from GOMAPPS to Bryde's whales are too diffuse and uncertain to be considered effective measures per the PECE. After taking into account these conservation efforts, the current status of GOMx Bryde's whale, and our evaluation of the section 4(a)(1) factors, we conclude that the conservation efforts identified cannot be considered effective measures in reducing the current extinction risk.

Final Determination

We reviewed the best available scientific and commercial information, including the information in the status review (Rosel *et al.* 2016), which incorporated comments from the peer reviewers. Based on the status review, our evaluation of protective efforts, and consideration of all public comments, we determined that the GOMx Bryde's whale meets the definition of endangered under the ESA. We found that the GOMx Bryde's whale is a species, as defined by the ESA, which is in danger of extinction throughout all of its range as a result of ESA section 4(a)(1) factors A, D, and E. We summarize the results of our determination as follows: (1) The GOMx Bryde's whales are distinct from Bryde's whales worldwide such that we have determined it to be a subspecies; (2) the current range of the GOMx Bryde's whale is restricted to the northeastern Gulf of Mexico (*i.e.,* Bryde's whale BIA) and is significantly smaller than the historical range; (3) the population is small, likely containing fewer than 100 individuals, with 50 or fewer mature individuals; (4) energy exploration, development, and production, oil spills and oil spill responses, vessel collision, fishing gear entanglement, and anthropogenic noise are threats that contribute to its risk of extinction; and (5) the existing regulatory mechanisms are not adequate to control those threats. After considering efforts being made to protect the species, we conclude that existing or proposed conservation efforts would not alter the extinction risk. Accordingly, we have determined that the GOMx Bryde's whale warrants listing as an endangered species under the ESA. We evaluated the threats to the species alone and in combination; however, we note that the whale's small population size (and the associated risks) and restricted range alone would support our determination.

Effects of This Rulemaking

Conservation measures provided for species listed as endangered under the ESA include recovery actions (16 U.S.C. 1533(f)); concurrent designation of critical habitat, if prudent and determinable (16 U.S.C. 1533(a)(3)(A)); Federal agency consultation requirements (16 U.S.C. 1536); and prohibitions on taking the species (16 U.S.C. 1538). Recognition of the species' plight through listing promotes conservation actions by Federal and state agencies, foreign entities, private groups, individuals, as well as the international community. The main effects of the listing are prohibitions on take. Both a recovery program and designation of critical habitat could result from this final listing. Given its narrow range in the De Soto Canyon region of the northeastern Gulf of Mexico, and existing threats, a regional cooperative effort to protect and restore

the population is necessary. Federal, state, and the private sectors will need to cooperate to conserve listed GOMx Bryde's whales and the ecosystem upon which they depend.

Marine Mammal Protection Act

The MMPA provides substantial protections to all marine mammals, such as GOMx Bryde's whales, whether they are listed under the ESA or not. In addition, the MMPA provides heightened protections to marine mammals designated as ''depleted'' (*e.g.,* additional restrictions on the issuance of permits for research, importation, and captive maintenance). Section 3(1) of the MMPA defines ''depleted'' as ''any case in which'': (1) The Secretary determines that a species or population stock is below its optimum sustainable population; (2) a State to which authority has been delegated makes the same determination; or (3) a species or stock is listed as an endangered species or a threatened species under the ESA (16 U.S.C. 1362(1)). Section 115(a)(1) of the MMPA establishes that in any action by the Secretary to determine if a species or stock should be designated as depleted, or should no longer be designated as depleted, such determination must be made by rule, after public notice and an opportunity for comment, and after a call for information (16 U.S.C. 1383b(a)(1)). It is our position that a marine mammal species or stock automatically gains ''depleted'' status under the MMPA when it is listed under the ESA.

Identifying ESA Section 7 Consultation Requirements

Section 7(a)(2) of the ESA and joint NMFS/U.S. Fish and Wildlife Service regulations require Federal agencies to consult with us on any actions they authorize, fund, or carry out if those actions may affect the listed species or designated critical habitat within our jurisdiction. Based on currently available information, we conclude that examples of Federal actions that may affect GOMx Bryde's whale include, but are not limited to: Authorizations for energy exploration (*e.g.,* habitat modification, noise from seismic surveys), energy production (*e.g.,* oil drilling and production), actions such as port deepening and expansion that directly or indirectly introduce vessel traffic that could result in collisions, and military activities and fisheries regulations that may impact the species.

Prohibitions and Protective Measures

All of the ESA section 9(a)(1) (16 U.S.C. 1538(a)(1)) prohibitions apply to all species listed as endangered. Under section 9(a)(1), it is unlawful for any person subject to the jurisdiction of the United States to (A) import any such species into, or export any such species from the United States; (B) take any such species within the United States or the territorial sea of the United States; (C) take any such species upon the high seas; (D) possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any such species taken in violation of subparagraphs (B) and (C); (E) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity, any such species; (F) sell or offer for sale in interstate or foreign commerce any such species. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. 16 U.S.C. 1532(3)(19). These prohibitions apply to all persons subject to the jurisdiction of the United States, including in the United States or on the high seas.

Sections 10(a)(1)(A) and (B) of the ESA (16 U.S.C. 1539(a)(1)(A) and (B)) provide us with authority to grant exceptions to the ESA's section 9 ''take'' prohibitions. Section 10(a)(1)(A) scientific research and enhancement permits may be issued to entities (Federal and non-Federal) for scientific purposes or to enhance the propagation or survival of a listed species. The type of activities potentially requiring a section 10(a)(1)(A) research/enhancement permit include scientific research that targets GOMx Bryde's whales, including the importation of non-U.S. samples for research conducted in the United States. Section 10(a)(1)(B) incidental take permits are required for non-Federal activities that may incidentally take a listed species in the course of an otherwise lawful activity.

Identification of Those Activities That Would Likely Constitute a Violation of Section 9 of the ESA

On July 1, 1994, NMFS and the FWS issued an *Interagency Cooperative Policy for Endangered Species Act Section 9 Prohibitions* (59 FR 34272). The intent of this policy is to increase public awareness of the effect of our ESA listings on proposed and ongoing activities within the species' range. We identify specific activities that will be considered likely to result in violation of section 9, as well as activities that will not be considered likely to result in violation. Activities that we believe could result in violation of section 9 prohibitions against ''take'' of the GOMx Bryde's whale include: (1) Unauthorized harvest or lethal takes by U.S. citizens; (2) in-water activities conducted by U.S. citizens that produce high levels of underwater noise, which may harass or injure the whales; (3) vessel strikes from ships operating in U.S. waters of the Gulf of Mexico; (4) U.S. fisheries that may result in entanglement of the whales; and (5) discharging or dumping toxic chemicals or other pollutants by U.S. citizens into habitat used by GOMx Bryde's whale.

We expect, based on the best available scientific and commercial information, the following actions are not likely to result in a violation of section 9: (1) Federally funded or approved projects for which ESA section 7 consultation has been completed and necessary mitigation developed, and that are conducted in accordance with any terms and conditions we provide in any incidental take statement accompanying a biological opinion; and (2) takes of GOMx Bryde's whales that have been authorized by NMFS pursuant to section 10 of the ESA.

These lists are not exhaustive. They are intended to provide some examples of the types of activities that may not constitute a take of the GOMx Bryde's whale. Whether a violation results from a particular activity is entirely dependent upon the facts and circumstances of each incident. Further, an activity not listed may in fact constitute or result in a violation.

Critical Habitat

Critical habitat is defined in section 3 of the ESA (16 U.S.C. 1532(5)(A)) as (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed in accordance with the ESA, upon a determination that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures which are necessary to bring the species to the point at which listing under the ESA is no longer necessary (16 U.S.C. 1532(3)). Designations of critical habitat must be based on the best scientific data available and must take into consideration the economic, national security, and other relevant impacts of specifying any particular area as critical habitat (16 U.S.C. 1533(b)(2)). Once critical habitat is designated, section 7 of the ESA requires Federal agencies to

ensure that any action they authorize, fund, or carry out is not likely to destroy or adversely modify that habitat (16 U.S.C. 1536(a)(2)). This requirement is in addition to the section 7 requirement that Federal agencies ensure that their actions are not likely to jeopardize the continued existence of listed species.

Section 4(a)(3)(A) of the ESA (16 U.S.C. 1533(a)(3)(A)) requires that, to the maximum extent prudent and determinable, critical habitat be designated concurrently with the listing of a species, unless as described in section 4(b)(6)(C), critical habitat is not then determinable, in which case we may take an additional year to publish the final critical habitat determination (16 U.S.C. 1533(b)(6)(C)(ii)). We are currently evaluating the areas within the geographical area currently occupied by the species as well as the areas outside the geographical area occupied by the species that may meet the definition of critical habitat under the ESA. However, critical habitat is not determinable at this time. Therefore, we will propose critical habitat in a future rulemaking if determinable, as appropriate.

Peer Review

In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review establishing minimum standards for when peer review is required for scientific information and the types of peer review that should be considered by agencies in different circumstances, a transparent process for public disclosure of peer review planning, and opportunities for public participation. The OMB Bulletin implemented under the IQA (Pub. L. 106–554) and OMB's general authorities to oversee the quality of agency information, analyses, and regulatory actions is intended to enhance the quality and credibility of the Federal government's scientific information, and applies to influential or highly influential scientific information disseminated on or after June 16, 2005. To satisfy our requirements under the OMB Bulletin, we received peer reviews from three independent peer reviewers on the status review (Rosel *et al.* 2016). All pertinent peer reviewer comments were addressed prior to dissemination of the final status review, the proposed rule, and publication of this final rule. We conclude that these experts' reviews satisfy the requirements for ''adequate [prior] peer review'' contained in the Bulletin (sec. II.2.). The peer review report is available at: *http://www.cio.noaa.gov/services_programs/prplans/ID337.html*

References

A complete list of the references used in this final rule is available upon request, and also available at: *http://sero.nmfs.noaa.gov/protected_resources/brydes_whale/index.html.*

Classification

National Environmental Policy Act (NEPA)

The 1982 amendments to the ESA, in section 4(b)(1)(A), restrict the information that may be considered when assessing species for listing (16 U.S.C. 1533(b)(1)(A)). Based on this limitation of criteria for a listing decision and the opinion in *Pacific Legal Foundation* v. *Andrus,* 657 F. 2d 829 (6th Cir. 1981), we have concluded that NEPA does not apply to ESA listing actions. (See NOAA Administrative Order 216–6A and the Companion Manual for NOAA Administrative Order 216–6A, regarding Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities).

Executive Order (E.O.) 12866, Paperwork Reduction Act, and Regulatory Flexibility Act

This rule is exempt from review under E.O. 12866. This final rule does not contain a collection of information requirement for the purposes of the Paperwork Reduction Act.

As noted in the Conference Report on the 1982 amendments to the ESA, economic impacts cannot be considered when assessing the status of a species. Therefore, the economic analyses required by the Regulatory Flexibility Act are not applicable to the listing process.

E.O. 13132, Federalism

E.O. 13132 requires agencies to take into account any federalism impacts of regulations under development. It includes specific directives for consultation in situations where a regulation has federalism implications and will either preempt state law or impose substantial direct compliance costs on state and local governments (unless required by statute). Policies that have federalism implications refers to regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. This final rule does not have federalism implications; therefore the agency did not follow the additional consultation procedures outlined in E.O. 13132.

Executive Order 12898, Environmental Justice

Executive Order 12898 requires that Federal actions address environmental justice in the decision-making process. In particular, the environmental effects of the actions should not have a disproportionate effect on minority and low-income communities. This final rule is not expected to have a disproportionately high effect on minority populations or low-income populations.

List of Subjects in 50 CFR Part 224

Endangered and threatened species.

Dated: April 3, 2019.

Samuel D. Rauch, III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 224 is amended as follows:

PART 224—ENDANGERED MARINE AND ANADROMOUS SPECIES

■ 1. The authority citation for part 224 continues to read as follows:

Authority: 16 U.S.C. 1531–1543 and 16 U.S.C. 1361 *et seq.*

■ 2. In § 224.101, in the table in paragraph (h), add an entry for ''Whale, Bryde's (Gulf of Mexico subspecies)'' under MARINE MAMMALS in alphabetical order by common name to read as follows:

§ 224.101 Enumeration of endangered marine and anadromous species.

* * * * *

(h) * * *

Species [1]			Citation(s) for listing determination(s)	Critical habitat	ESA rules
Common name	Scientific name	Description of listed entity			
*	*	*	*	*	*
Marine mammals					
*	*	*	*	*	*
Whale, Bryde's (Gulf of Mexico subspecies).	*Balaenoptera edeni (unnamed subspecies).*	Bryde's whales that breed and feed in the Gulf of Mexico.	84 FR [Insert **Federal Register** page where the document begins], April 15, 2019.	NA	NA
*	*	*	*	*	*

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement, see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement, see 56 FR 58612, November 20, 1991).

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