February 6, 2017

Via Regulations.gov Portal

National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

Re: Comments of the American Petroleum Institute and the International Association of Geophysical Contractors on the National Marine Fisheries Service's 12-Month Finding on a Petition to List the Gulf of Mexico Bryde's Whale as Endangered under the Endangered Species Act (NOAA-NMFS-2014-0157)

Dear Sir/Madam:

This letter provides the public comments of the American Petroleum Institute ("API"), the International Association of Geophysical Contractors ("IAGC"), and the Offshore Operators Committee ("OOC") (collectively, "the Associations") in response to the National Marine Fisheries Service's ("NMFS" or "the Service") 12-month finding that the Gulf of Mexico ("GoM") Bryde's whale is taxonomically a subspecies of the Bryde's whale and meets the definition of an endangered species under the Endangered Species Act ("ESA").[1] As further explained below, the scientific evidence does not support designating Bryde's whales in the GoM as a separate subspecies of the Bryde's whale, and even if it did, information and evidence support the conclusion that the alleged threats to the Bryde's whale are not so severe as to place it in danger of extinction throughout all or a significant portion of its range. In fact, there is no statutory or scientific rationale to consider Bryde's whales in the GoM separately from the abundant global population of Bryde's whales. The best available evidence demonstrates that listing is not warranted.

The Associations appreciate the opportunity to provide this information and analysis. We hope and expect that NMFS will give close consideration of the comments set forth below. Because these comments are somewhat lengthy, we provide below a table of contents identifying the location of each heading and subheading.

[1] 81 Fed. Reg. 88,639 (Dec. 8, 2016).

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I. INTRODUCTION

A. The Associations

API is a national trade association representing over 640 member companies involved in all aspects of the oil and natural gas industry. API's members include producers, refiners, suppliers, pipeline operators, and marine transporters, as well as service and supply companies that support all segments of the industry. API member companies are leaders of a technology-driven industry that supplies most of America's energy, supports more than 9.8 million jobs and 8% of the U.S. economy, and since 2000 has invested nearly $2 trillion in U.S. capital projects to advance all forms of energy, including alternatives.

IAGC is the international trade association representing companies that provide geophysical services, geophysical data acquisition, seismic data ownership and licensing, geophysical data processing and interpretation, and associated services and products to the oil and

gas industry. IAGC member companies play an integral role in the successful exploration and development of offshore hydrocarbon resources through the acquisition and processing of geophysical data.

OOC is an organization of 47 producing companies and 61 service providers to the industry who conduct essentially all of the Outer Continental Shelf ("OCS") oil and gas exploration and production activities in the GoM. Founded in 1948, the OOC is a technical advocate for the oil and gas industry regarding the regulation of offshore exploration, development, and production operations in the GoM.

The Associations may be impacted by designation of the GoM Bryde's whale as an endangered subspecies because a number of their members maintain significant offshore and shore-side operations in the GoM that could be subject to increased regulatory constraints and delays that are neither justified nor necessary. Every cetacean in the GoM is already protected under the Marine Mammal Protection Act ("MMPA"), as well as a number of other domestic and national statutes, treaties, and conventions. The members of our Associations work closely with federal agencies to ensure that potential impacts on species are mitigated.

Together, the members represented by these Associations provide a tremendous economic benefit to the region that is expected to continue into the future. In 2010, at the height of oil and gas development in the GoM, the industry supported 220,000 jobs;[2] by 2035, despite existing moratoria on and challenges to production, oil and gas development is expected to provide 215,000 jobs in the GoM states and 230,000 jobs nationwide.[3] The Bureau of Offshore Energy Management ("BOEM") expects that the GoM program could support as many as 250,000 jobs and as much as $15 billion in labor income.[4] The federal government could accrue as much as $945.5 billion in bonus bids, rental payments, and royalty payments.[5]

B. Summary of Comments

As set forth in detail in Section II of these comments, NMFS's 12-month finding incorrectly determined that Bryde's whales in the GoM represent a new subspecies, and that this population warranted listing under the ESA.

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[2] Quest Offshore Resources Inc., The State of the Offshore U.S. Oil and Gas Industry: An In-Depth Study of the Outlook of the Industry Investment Flows Offshore 44 (Dec. 2011), *available at* http://www.api.org/~/media/files/news/2012/the%20state%20of%20the%20offshore%20us%20oil%20and%20gas%20industry.pdf?la=en.

[3] Quest Offshore Resources, Inc., The Economic Benefits of Increasing U.S. Access to Offshore Oil and Natural Gas Resources in the Easter Gulf of Mexico 12 (November 2014), *available at* http://www.api.org/~/media/Files/Oil-and-Natural-Gas/Exploration/Offshore/Eastern-Gulf-OCS/Economic-Benefits-of-Increasing-US-Access-to-Offshore-Oil-Natural-Gas-Resources-in-Eastern-GoM.PDF.

[4] U.S. Department of the Interior, Bureau of Energy Management, OCS EIS/EA BOEM 2016-060, Outer Continental Shelf Oil and Gas Leasing Program: 2017-2022: Final Programmatic Environmental Impact Statement 4-207 (Nov. 2016), *available at* http://boemoceaninfo.com/u/fpeis/fpeis_volume1.pdf [hereinafter OCS OGLP 2017-2022].

[5] *Id.*

Bryde's whales in the GoM are not a new subspecies, and it is beyond NMFS's authority to create a new subspecies for purposes of listing under the ESA. Bryde's whales are not recognized as a subspecies by any relevant scientific body, nor has party even petitioned to recognize GoM Bryde's whales as a new subspecies. The best scientific information available suggests that Bryde's whales are physiologically, morphologically, and behaviorally indistinct from all other Bryde's whale populations. While there is some evidence that Bryde's whales in the GoM exhibit some genetic differences from Bryde's whales in other oceans, there is very little data to suggest that Bryde's whales are distinct from contiguous populations. In fact, the only genetic test of Bryde's whales in the eastern North Atlantic found that the whales were genetically indistinct from samples taken in the GoM.

NMFS's unique conclusion of the taxonomic status of Bryde's whales in the GoM is taken from its Status Review Team ("SRT"). The SRT's conclusion is based, in its entirely, on a single study conducted by an SRT member, which was characterized at the time as "preliminary," and which found evidence only that Bryde's whales in the GoM were genetically distinct from Bryde's whales off Japan.

The SRT attempted to bolster its taxonomic conclusions by soliciting an opinion from the Society for Marine Mammalogy's Taxonomy Committee, but provided the Committee with so little information there is no way it could credibly render a credible taxonomic assessment. And given the participation of several SRT and NMFS staff on the Committee, there is good reason to question whether its opinion constitutes a concurrence, or the opinions of the same personnel speaking through different affiliations.

Even assuming that NMFS had the authority to create subspecies classifications and exercised that authority through a credible scientific process—which the Associations dispute—the best scientific information available indicates that the putative subspecies does not meet the ESA's definition of a threatened or endangered species.

Even if the analyzed subset of Bryde's whales was small, small population size alone is not an indicator of extinction risk particularly where, as here, the species does not occupy a high trophic level and is not constrained to a small geographic range. Bryde's whales are protected domestically and internationally under a number of statutes, treaties and conventions. Whaling, their largest historic threat, has almost entirely been eliminated. Ship strikes of Bryde's whales are exceptionally rare, and almost nonexistent in the GoM. Bryde's whales are very unlikely to become entangled in fishing gear, particularly because they are incidental beneficiaries of gear restrictions and spatial and temporal closures in place for other species. Further, the only type of gear that could potentially interfere with the whale, the large pelagic longline fishery, has been prohibited since 2001 in De Soto Canyon. Similarly, there is no evidence that Bryde's whales were harmed by the Deepwater Horizon incident, no direct evidence that Bryde's whales are adversely impacted by anthropogenic noise, and yet, extensive regulatory protections are already in place to protect Bryde's whales from hydrocarbon development activities.

NMFS's conclusions otherwise are either unexplained or simply wrong. These errors and omissions are the product of analytical process that was deeply flawed. The Associations provided NMFS over 50 pages of detailed comments on NMFS's 90-day finding, which remain relevant today, but the content of the Status Review Report and the citations accompanying the Status Review Report suggest that the SRT never reviewed those comments. The Associations received no response to those comments at all. Similarly, after being requested to provide them, NMFS staff made a peer review report available, but extracted the redlined comments from the underlying document, thereby forcing readers to guess at the intended references in statements like "This is confusing, "This last one is problematic, and "You might want to check on this."

The product of this flawed process is a 12-month finding that fails to rely on the best scientific information available. Should NMFS persist in listing Bryde's whales in the GoM as a threatened or endangered subspecies based on this analysis (or a substantially similar analysis), that listing would be arbitrary, capricious, an abuse of NMFS's discretion, and impermissible under the ESA.

II. DETAILED COMMENTS

A. Overview of Bryde's Whales

Bryde's whales, *Balaenoptera edeni*, are the least known of the large baleen whales,[6] and the International Union for Conservation of Nature considers the Bryde's whale species to be "data deficient."[7] This lack of understanding of Bryde's whales is a function of both relatively low survey effort and the natural behaviors of this incredibly elusive species. However, through observations, scientists have been able to outline basic characteristics of the species. Bryde's whales are found across the globe in tropical and warm-temperature waters in the Atlantic, Pacific, and Indian Oceans and several adjoining seas, typically between 40º N and 40º S.[8] Bryde's whales are capable of diving to depths of up to 300 meters,[9] and do not remain at the surface for long periods or surface in a predictable manner, which can make them hard to observe.[10] They are habitat generalists within the broad confines of their tropical and sub-tropical range, and will aggregate in areas that offer superior feeding opportunities.[11] Bryde's whales are opportunistic feeders that consume schooling pelagic fish including sardines, mackerel, and herring, and also feed on euphausids, copepods, cephalopods, and pelagic crabs.[12] They do not exhibit the migration patterns of other baleen whales, preferring instead to remain in areas of predictable biological abundance.[13]

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[6] Kato & Perrin (2009).
[7] Balaenoptera edeni, THE IUCN RED LIST OF THREATENED SPECIES, http://www.iucnredlist.org/details/2476/0 (last visited Dec. 21, 2016).
[8] 80 Fed. Reg. 18,343, 18,344 (Apr. 6, 2015); Kanda *et al.* (2007).
[9] *Bryde's Whale (*Balaenoptera edeni*)*, NOAA FISHERIES OFFICE OF PROTECTED RESOURCES, http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/brydeswhale.htm (last updated Sept. 30, 2014).
[10] Alves *et al.* (2010).
[11] *See* Best (1996).
[12] *See* Siciliano *et al.* (2004).
[13] *See* Best (1996).

Bryde's whales have a streamlined and sleek body shape, a large falcate dorsal fin, and a counter-shaded color that is fairly uniformly dark dorsally and light to pinkish ventrally.[14] The length of Bryde's whales varies, but most range between 11 meters and 15 meters.[15] Bryde's whales are similar in size and appearance to the sei whale, *B. borealis*, and so decades' worth of sightings, strandings, and samplings of Bryde's whales and sei whales may be confounded and thus inaccurate or misleading for analytical purposes.[16] Bryde's whales' most distinguishing characteristic is their pointed, flat rostrum that has three prominent ridges: a large center ridge with smaller left and right lateral ridges.[17] Because observation of the distinguishing three rostrum ridges is difficult,[18] Bryde's whales are among the most commonly misidentified cetaceans.

There is no evidence that Bryde's whale populations are declining or that their range is contracting. To the contrary, the greatest historic threat to Bryde's whales worldwide—commercial whaling—has been all but eliminated. Currently, global Bryde's whale abundance is believed to be at or near its all-time high and Bryde's whales appear to occupy the full extent of what is believed to be their historic range.[19]

1. Range

Increasing efforts to survey for and observe marine mammals are helping the scientific community to learn more about the Bryde's whale's worldwide distribution and, as relevant here, its distribution in the western Atlantic and the proximate seas and gulfs, including the GoM. The best available information shows that Bryde's whales are spread across the globe and are not declining or contracting in range. In fact, as survey efforts specifically for Bryde's whales have increased, so too have abundance estimates in known populations as well as the number of newly discovered populations in areas Bryde's whales were not known to inhabit.

a. Global Distribution

Bryde's whales range throughout the Atlantic, Pacific, and Indian Oceans, and prefer highly productive tropical, subtropical, and warm temperate waters around 61–72° F (16–22° C). These temperatures, and thus Bryde's whales, are most frequently found between 40° N and 40° S.[20] Intermittent sightings of Bryde's whales outside of these parallels may reflect a distribution of the species that is broader than identified in the limited survey data or potentially connected to larger-scale climate variability and long-term climate trends.[21] Indeed, to the extent an increase in

[14] 81 Fed. Reg. 88,641.
[15] *Id.*
[16] Steiner *et al.* (2008); Rosel & Wilcox (2014).
[17] 81 Fed. Reg. 88,641.
[18] *See Sei Whale & Bryde's Whale*, AMERICAN CETACEAN SOCIETY, http://acsonline.org/fact-sheets/sei-whale/ (last visited Dec. 27, 2016).
[19] *See Sei Whale & Bryde's Whale*, AMERICAN CETACEAN SOCIETY, http://acsonline.org/fact-sheets/sei-whale/ (last visited Dec. 27, 2016).
[20] Kanda *et al.* (2007).
[21] Kerosky *et al.* (2012).

ocean temperatures can be predicted, those increases could substantially expand the range of the species.[22]

Recent survey efforts and sightings have led to a number of discoveries of previously unknown Bryde's whale populations, or have otherwise increased our understanding of population dynamics. In 2004, a team of scientists off the Azores observed a total of seven individual whales on twenty-four occasions, marking the first time Bryde's whales have been observed in the area.[23] In November 2016, fishermen trained in cetacean observation identified a pod of five Bryde's whales and a pod of three Bryde's whales near the Indus River, in an area of Pakistani waters where knowledge of Bryde's whales was based mainly on beached carcasses.[24] Researchers have also made a number of discoveries of new populations of Omura's whale (*B. omurai*), a species closely related to the Bryde's whale.[25] These survey data suggest that the relative dearth of historic Bryde's whale sightings may be related, in part, to specifically focused survey efforts to locate Bryde's whales.

b. GoM Distribution

Although Bryde's whales in the GoM are most commonly observed feeding in the biologically rich waters of De Soto Canyon, it is likely that the GoM represents at least a portion of a larger, more dispersed population of Bryde's whale.[26] Within the GoM, the species has also been observed in waters off the coast of Texas and Louisiana.[27] Bryde's whale strandings have been recorded from Louisiana east to Panacea, Florida, and as far south on the Florida panhandle as Tampa.[28] The Roberts *et al.* (2016) distribution model, which attempts to estimate Bryde's whale abundance from sighting and stranding data, projects Bryde's whale occurrence along a track from De Soto Canyon southward around the southern tip of Florida, and west along the coast stretching past Louisiana and to the waters off the coast of Texas.[29]

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[22] Kerosky *et al.* (2012).
[23] Steiner *et al.* (2008).
[24] *WWF-Pakistan Trained Fishermen Record Two Pods of Rare Bryde's Whale Along Sindh Coast*, WORLD WILDLIFE FOUNDATION (Nov. 24, 2016), http://www.wwfpak.org/newsroom/241116_Bryde.php.
[25] *See, e.g.*, Sharif Ranjbar *et al.*, *Omura's Whale* Balaenoptera omurai *Stranding on Qeshm Island, Iran, Persian Gulf: Further Evidence for a Wide (Sub) Tropical Distribution*, J. MARINE BIOLOGY & OCEANOGRAPHY (Oct. 2016) (first discovery of Omura's whale in the northwest Indian Ocean); Ana Lucia Cypriano-Souza *et al.*, *Rare or Cryptic? The First Report of an Omura's Whale (*Balaenoptera *omurai) in the South Atlantic Ocean*, 33 MARINE MAMMAL SCI. 80 (Jan. 2017) (first sighting of an Omura's whale in the southwestern Atlantic Ocean); *Rare Omura's Whale Spotted Off Australia*, PHYS.ORG (Dec. 15, 2016), http://phys.org/news/2016-12-rare-omura-whale-australia.html (first sighting of an Omura's whale in the Great Barrier Reef); Shannon Fischer, *How a Researcher Discovered a Completely Undocumented Whale*, PHYS.ORG (Nov. 30, 2016), http://phys.org/news/2016-11-undocumented-whale.html (first discovery of Omura's whales off the coast of Madagascar in 2013).
[26] Davis & Fargion (1996).
[27] Davis & Fargion (1996).
[28] Waring, G.T., Josephson, E., Maze-Foley, K., Rosel, P.E. (2016) U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments - 2015. NOAA Technical Memorandum NMFS-NE-238. Woods Hole, Massachusetts [hereinafter Stock Assessment Report (2015)]; Mullin (1994); Mead (1977).
[29] Roberts *et al.* (2016).

Accumulation of, as well as the periodic lack of, Bryde's whales in the De Soto Canyon area may be due to high but unpredictable concentrations of food, especially small pelagic fishes that form large schools.[30] NMFS mischaracterizes De Soto Canyon as defining the geographic extent of the GoM Bryde's whale population and whales outside the area as strays or outliers.[31] In reality, however, the De Soto Canyon is better characterized as a prime location for observing Bryde's whales, a bountiful feeding area for them amongst a number of other possible areas of residence in the GoM and western Atlantic, and one of the few places in the GoM and western Atlantic that has been frequently surveyed for Bryde's whales. There has been minimal effort to survey for Bryde's whales in the GoM outside of the De Soto Canyon and particularly outside of the U.S. Exclusive Economic Zone ("EEZ"). At most, the data suggest that the geographic extent of Bryde's whales in the GoM has not been characterized.

c. Atlantic Distribution

Given the overall data deficiency and the lack of specifically targeted survey efforts for Bryde's whales, it seems premature of NMFS to dismiss the possibility that these whales also are resident in the deep waters off the U.S. Atlantic coast. NMFS's presumption is particularly premature because Bryde's whales *are* found elsewhere throughout the Atlantic Ocean. In the eastern Atlantic, Bryde's whales have been observed off Madeira,[32] the Canary Islands,[33] and in 2004 were observed for the first time near the Azores—what marine biologists consider a potential range expansion of the eastern Atlantic Bryde's whale population.[34] In the south Atlantic, Bryde's whales have been observed in both coastal and oceanic waters along the entire coast of Brazil.[35] A recent study found that Bryde's whales are common along the southeastern coast of Brazil, and that scarcity of offshore records is more related to the research effort in the oceanic region than the absence of the whales.[36] To date, in the northwest Atlantic, Bryde's whales have been found stranded in North Carolina, South Carolina, and as far north as the Chesapeake Bay.[37] Additionally, four whales were spotted during Southeast Fisheries Science Center surveys off the Atlantic coasts of North Carolina and Florida, both on and off the continental shelf.[38]

Intermediate and directly contiguous to whales observed in the GoM are numerous sightings in the Caribbean Sea.[39] In the northern Caribbean, they have been found off the coast of Cuba.[40] Sightings of Bryde's whales also have been recorded in the Greater Antilles off the coast

[30] Davis & Fargion (1996).
[31] 81 Fed. Reg. at 88,642.
[32] Rosel & Wilcox (2014).
[33] Mead (1977).
[34] Steiner *et al.* (2008).
[35] Figueiredo & Simao (2014); Figueiredo *et al.* (2014).
[36] De Moura & Siciliano (2012).
[37] Mead (1977)
[38] Roberts *et al.* (2016).
[39] *See* Kato & Perrin (2009).
[40] Mignucci-Giannoni (1989); Mead (1977).

of Dominican Republic,[41] Puerto Rico, and the Virgin Islands.[42] Closer to South America, Bryde's whales have been found off the coast of Bonaire, Curacao,[43] Grenada,[44] Saba, St. Estatius, St. Maarten, the Saba Bank,[45] and St. Vincent and the Grenadines.[46] Bryde's whales are most commonly observed and closely studied off the coast of Venezuela, where they were successfully radio-tagged in the 1970s.[47] Observations from the area have revealed that the whales are most abundant from late spring to December, which suggests that they may be migratory to some degree.[48]

2. Survey Efforts

Low survey data for Bryde's whales in the GoM and U.S. waters, in combination with small observed population size, make it currently impossible to determine population trends.[49] Lack of survey effort and reliance on surveys designed for other species can severely limit our ability to estimate the abundance and range of even commonly observed species. For a relatively uncommon and difficult-to-observe or -identify species like the Bryde's whale, limited survey data entirely undermines our ability to assess abundance and range and makes it impossible to identify population trends.

The use of surveys to observe Bryde's whales, particularly opportunistic and incidental observations of mammals on vessels and transects surveying for other species such as bluefin tuna (*Thunnus thynnus*) and icthyoplantkton, have their limitations. They may take place only during the spring and summer in the GoM, when Bryde's whales are less frequently observed.[50] Additionally, they may not survey the geographical areas, contours or depths where Bryde's whales are most likely to be found. Finally, vessels may not be equipped with the proper technology to engage in acoustic tracking and other sorts of observation systems for Bryde's whales.

As described above, where concerted effort is made to survey for marine mammals and Bryde's whales, they are often found—sometimes in places where they were not previously known to exist.

The SRT largely ignored the lack of survey effort where Bryde's whales are not commonly observed in suggesting that they are absent in these areas. The survey data, however, do not

[41] Bonelly de Calventi (1986).
[42] Erdman (1973).
[43] Mignucci-Giannoni (1989).
[44] Mignucci-Giannoni (1989); Mead (1977).
[45] Debrot *et al.* (2013).
[46] Ward *et al.* (2001).
[47] *See* Kato & Perrin (2009).
[48] Ward *et al.* (2001).
[49] Stock Assessment Report (2015).
[50] E.g., the Southeast Area Monitoring and Assessment Program ("SEAMAP") surveys. *Southeast Area Monitoring and Assessment Program (SEAMAP)*, GULF STATES MARINE FISHERIES COMMISSION, http://www.gsmfc.org/seamap.php (last visited Dec. 30, 2016).

provide evidence that Bryde's whale range is limited to the De Soto Canyon in the GoM—where Bryde's are commonly observed. We have not even begun to meaningfully survey for Bryde's whales in waters near or contiguous to the De Soto Canyon, and therefore any suggestion that we can delineate a discrete Bryde's whale population around the De Soto Canyon is speculative. Indeed, the scant available evidence suggests that Bryde's whales observed in and around the De Soto Canyon are connected to whales observed and stranded in the Western Atlantic and elsewhere in the GoM.[51]

a. Gulf of Mexico

The first systematic vessel surveys to assess marine mammal distribution and abundance in the GoM did not start until 1990, and have only been conducted in a subset of U.S. waters.[52] Therefore, even if every square kilometer of the EEZ in the GoM was surveyed for Bryde's whales (which would be unlikely), 65% of the GoM would remain largely unsurveyed.[53] The scientific literature is rich with examples of marine species that were considered rare or extirpated until an effort was made to look for them. Indeed, some of the 29 cetacean species that are now known to occur regularly were once considered rare (such as Risso's dolphin, *Grampus griseus*), or else they had never been sighted alive (such as the melon-headed whale, *Peponocephala electra*) until these GoM surveys began to take place in deep, oceanic waters of the northern GoM in 1990.[54]

Survey effort outside of the U.S. EEZ is extremely limited. In the Mexican part of the GoM, survey efforts have also been limited despite the fact that historical whaling logbooks reported numerous sightings of baleen whales in the Bay of Campeche in the southern GoM and elsewhere outside of U.S. waters.[55] Mexico conducted six generic marine mammal surveys between June 1997 and June 1999.[56] This survey effort, which represents the sole effort to survey marine mammals in the Mexican portion of the GoM, covered only 4,000 km of transact lines—much of which took place at depths where Bryde's whales are rarely found.[57] Not surprisingly, no Bryde's whales were positively identified. In fact, few whales of any species were observed—

[51] *See, e.g.*, Roberts *et al.* (2016); Rosel & Wilcox (2014).
[52] *See* Stock Assessment Report (2015).
[53] Rosel & Wilcox (2014).
[54] Jefferson & Schiro (1997). There are a number of upcoming survey efforts and studies that may collect more data in order to fill in gaps in observations. BOEM's Environmental Studies Program is developing a Passive Acoustic Monitoring program network for the GoM. *See Environmental Studies Planning*, Bureau of Ocean Energy Management, https://www.boem.gov/Environmental-Studies-Planning/ (last visited Feb. 3, 2017). The Gulf of Mexico Marine Assessment Program for Protected Species ("GoMMAPPS") will conduct also surveys in the GoM to estimate cetacean stocks in oceanic waters off the GoM. Letter from Donna S. Wieting, Director, Office of Protected Resources, National Marine Fisheries Service, to Dr. Randall S. Wells, Acting Chair, Atlantic Scientific Review Group, More Marine Laboratory (June 9, 2016), *available at* http://www.nmfs.noaa.gov/pr/sars/pdf/asrg_2016_recs_response__6-9-2016_.pdf (summarizing marine mammal science and management efforts). Nonetheless, these studies can, at best, improve our understanding of Bryde's whale distribution in the U.S. EEZ portion of the GoM.
[55] *See* Reeves *et al.* (2011).
[56] Ortega-Ortiz (2002).
[57] Ortega-Ortiz (2002).

only 58 cetaceans were sighted over the survey area.[58] Far from providing evidence of the absence of Bryde's whales from the Mexican portion of the GoM, this effort demonstrates that we have barely begun looking for Bryde's whales in the southern GoM.

b. Western Atlantic

In the eastern U.S. Atlantic, there have been few surveys which would have provided an opportunity to observe Bryde's whales. Despite the fact that there have been sightings and a number of strandings, including those in North Carolina, South Carolina, Virginia, and on Florida's west coast, survey effort of Atlantic waters where Bryde's whales are likely to be present is extremely low. As displayed in Figure 3 of the Status Review Report, the vast majority of survey effort off the eastern seaboard takes places inshore of the 100m isobaths, at depths where Bryde's whales would not be expected to be found. The only survey project that appears to be potentially well-positioned to observe Bryde's whales is the Southeast Fisheries Science Center marine mammal abundance survey that has made only a few survey efforts farther off of the coast to the limits of the OCS.[59] And while these surveys occasionally transect depths associated with Bryde's whales, they remain generic marine mammal surveys that are not designed to specifically track Bryde's whales and their unique behaviors and habitat preferences. As with the Mexican portion of the GoM, these surveys provide more evidence of the limited efforts to find Bryde's whales than evidence of the absence of Bryde's whales.

3. Population Estimates

The limitations on currently available survey data are unfortunately reflected in the unavailability and variability of Bryde's whale population estimates. The SRT misstates the findings based on using insufficient survey data as a reliable indicator of the absence of Bryde's whales.

a. Gulf of Mexico

From the time the spring bluefin tuna and ichthyoplankton surveys were first used to estimate abundance, the survey-derived estimates have been so variable as to not only prevent the identification of any trend but to call into question the validity of the underlying survey design. For example, in 1991, NMFS estimated that 218 Bryde's whales were present in the GoM.[60] In 1992, 1993, and 1994, NMFS estimated that there were no Bryde's whales in the GoM at all.[61] The 2003 and 2005 Stock Assessment Reports estimated there were 40 Bryde's whales in the GoM, and were based on the same survey data from multiple surveys conducted between 1996 and 2001.[62] After new survey data became available from the spring 2004 survey effort, the 2008, 2009, and 2011 Stock Assessments lowered their best estimate of Bryde's whale abundance in the

[58] Ortega-Ortiz (2002).
[59] *See* Rosel, et al. (2016) at fig.3 [hereinafter Status Review].
[60] Stock Assessment Report (1995).
[61] Stock Assessment Report (1995).
[62] Stock Assessment Report (2005); Stock Assessment Report (2003).

GoM to 15.[63] The latest Stock Assessment Report continues to be based on a 2009 survey that occurred during the summer over oceanic waters from the 200m isobaths to the seaward extent of the U.S. EEZ.[64] Estimated Bryde's whale abundance remains at 33, an estimate first introduced in the 2012 Stock Assessment.[65]

Either NMFS's assumptions regarding connectivity with other populations or its population estimates are wrong—or maybe both. The observed variability in population estimates cannot be attributed to mortality and reproduction in an isolated population. Bryde's whales have 12-month gestation periods, only give birth to a single calf at a time, and are estimated to have a maximum productivity rate of 0.04.[66] Thus, population growth is not the cause of these differences. If the discrepancy lies with the population estimates, then survey efforts are not successful at capturing all the individuals in the GoM and surrounding area. It could be the case that the survey data portray an incomplete picture; it could also be the case that surveys are unable to capture the movement and migration of Bryde's whale populations, presumably in pursuit of prey opportunities. Either way, there is good reason to suspect that abundance is being underestimated, perhaps substantially.

Separate from the NMFS stock assessments, Roberts *et al.* (2016) attempted to develop a more accurate population estimate for Bryde's whales in the GoM by interpreting previous survey data in a new analysis.[67] The study team reviewed sightings data for Bryde's whales in seven kinds of Southeast Fisheries Science Center ("SEFSC") surveys along with data for proxy species, necessitated by the low sightings numbers. Unlike the NMFS Stock Assessments, Roberts *et al.* (2016) attempted to account for misidentified whales and unidentifiable whale sightings—the exclusion of which would lead to an underestimate of abundance since these ambiguous sightings most likely were Bryde's whales.[68] Roberts *et al.* (2016) also relied on a larger survey database, evaluating survey data from multiple government and university surveys in addition to the single 2009 cetacean abundance survey that the Stock Assessment Report mentions. Additionally, Roberts *et al.* (2016) made an effort to pool the data over the entire study period in order to get a more long-ranging abundance estimate.

In contrast, NOAA's stock assessments estimate abundance for a particular snapshot in time.[69] NOAA's estimates also do not adequately factor in availability and perception bias, therefore assuming all whales in the vicinity of the survey were observed and counted. This leads to underestimation.[70]

[63] Stock Assessment Report (2011); Stock Assessment Report (2009); Stock Assessment Report (2008).
[64] Stock Assessment Report (2015).
[65] Stock Assessment Report (2015); Stock Assessment Report (2012).
[66] Stock Assessment Report (2015).
[67] Roberts *et al.* (2016).
[68] Roberts *et al.* (2016).
[69] Roberts *et al.* (2016).
[70] Roberts *et al.* (2016).

Roberts *et al.* (2016), on the other hand, attempted to account for present but unobservable whales.[71] The detection functions in the Roberts *et al.* (2016) model also showed a faster falloff in detectability with distance than was used in NOAA estimates, leading to NOAA's assumption that a larger area was effectively surveyed and leading to an underestimation in populations.[72] While Roberts *et al.* (2016) may still underestimate Bryde's whale populations because it only reinterprets the limited survey data rather than contributing additional survey effort, it concluded that the latest NMFS stock assessments underestimate abundance in the GoM by one-third (estimated abundance of 44 with a coefficient of variation of 0.27).[73]

Inexplicably, the SRT repeatedly cites, but then entirely ignores this improved estimate of abundance, seemingly opting instead to base the Status Review Report's threat analyses on the outdated estimate of 33.[74] The Status Review Report provides no explanation as to why the SRT ignored the data in Roberts *et al.* (2016).[75]

Moreover, while the SRT attempted to extrapolate a GoM-wide abundance estimate from estimates from the U.S. portion of the GoM, readers cannot tell which estimate (Roberts *et al.* (2016) or NMFS Stock Assessments) were used for the extrapolation. We also do not know how the SRT conducted the extrapolation. We cannot even surmise the GoM-wide abundance estimate the SRT ultimately reached. Notwithstanding a relatively lengthy discussion of Bryde's whale abundance in the GoM, everything readers know about the SRT's GoM-wide abundance estimate and the means by which the SRT reached the estimate is contained in the following sentence: "[t]he Team agreed by consensus that even allowing for the uncertainty about presence of Bryde's whales in non-U.S. waters of the GOMx, given the best available science, there are fewer than 250 mature individuals, and more likely that a value of 100 or fewer is plausible."[76] This estimate does not appear to be based on the best scientific information available, and is not the product of a credible scientific analysis.

b. Western Atlantic

There remain no abundance estimates for the south Atlantic,[77] and prior to Roberts *et al.* (2016), there were no estimates for a Bryde's whale population in Atlantic waters off the eastern U.S. coast.[78] Where strandings have been recorded and where Bryde's whales have been observed,

[71] Roberts *et al.* (2016).
[72] Roberts *et al.* (2016).
[73] Roberts *et al.* (2016).
[74] *See, e.g.*, Status Review at 41, 55.
[75] Importantly, the Associations do not endorse the conclusions of Roberts *et al.* (2016) or suggest that the study provides the best available evidence of the distribution and abundance of Bryde's whales or other marine mammals. We cite to the study herein to point out the SRT's selective treatment of data, to portray the variability population estimates, and to show that a growing body of scientific evidence suggests that NMFS's prior estimates are biased low.
[76] Status Review at 41.
[77] Balaenoptera edeni, THE IUCN RED LIST OF THREATENED SPECIES, http://www.iucnredlist.org/details/2476/0 (last visited Dec. 21, 2016).
[78] Roberts *et al.* (2016).

NMFS has dismissed such accounts as strays or vagrants,[79] and therefore does not currently define a western north Atlantic stock of Bryde's whales.[80]

Roberts *et al.* (2016), however, found evidence that Bryde's whales occupy the Florida to Cape Hatteras portion of the U.S. EEZ.[81] The authors included four sightings of whales in stratified density models it developed from existing data gathered during 23 years' worth of aerial and shipboard surveys. Roberts *et al.* (2016) used proxy species where necessary and arrived at an estimate of 7 individuals in the area, with a coefficient of variation of 0.58. While a population estimate of 7 individuals does not suggest the species is abundant, this remains a substantial finding given the limitations of the survey data relied on and considering that NMFS's estimates for the GoM are not exponentially higher. It is also limited to the U.S. EEZ, which is a small subset of the areas in the Western Atlantic where Bryde's whales have been observed.

Even within the U.S. EEZ, the Roberts *et al.* (2016) assessment is still likely to underestimate the number of Bryde's whales because it is limited by the low amount of survey data in the area. The small number of sightings prevents Roberts *et al.* (2016) from running the habitat-based density model that the team used for species with higher numbers; the team had to fall back instead on a stratified model that likely provides a less accurate estimate.[82] Additionally, because Roberts *et al.* (2016) is reinterpreting available survey data,[83] it remains limited by those data, which only minimally cover areas in the western Atlantic in which Bryde's whales may be found. For example, off the southeast coast of the United States, only the SEFSC marine mammal abundance surveys extended past coastal waters before the 100m isobaths all the way out to the OCS, leaving the vast amount of the farther-out waters unsurveyed (excepting a small number of transects).[84] This is critically important when considering that two of the four whale sightings factored into the Roberts *et al.* (2016) Bryde's whale western Atlantic population analysis were observed during the SEFSC marine mammal abundance survey.[85] This seems to indicate that low abundance estimates are, to a potentially significant degree, a function of low survey effort.

4. Evidence of Error in Current Population Estimates

As discussed above, the Status Review Report provides little information to suggest that the SRT's population estimates are reliable or derived through a credible scientific process. There is significant evidence that current survey methods are not properly assessing the abundance of Bryde's whales in the GoM, and that current population estimates are artificially low. Other available data for the GoM, such as acoustic surveys and carcass recovery rates, indicate that Bryde's whale populations may be considerably higher than the estimates produced by NMFS. What follows below is a discussion of evidence indicating the Status Review Report's estimates

[79] *E.g.*, Rosel & Wilcox (2014).
[80] Roberts *et al.* (2016).
[81] Roberts *et al.* (2016).
[82] Roberts *et al.* (2016).
[83] Roberts *et al.* (2016).
[84] Roberts *et al.* (2016).
[85] Roberts *et al.* (2016).

may, in fact, be low—particularly in the GoM where there is seemingly contradictory evidence of abundance.

a. Acoustic Survey Data

Recent passive acoustic surveys being conducted in De Soto Canyon are likely to show an underwater abundance of Bryde's whales that far exceeds what surveys have managed to observe on the surface. Importantly, unlike all prior visual surveys, these acoustic surveys specifically target Bryde's whales.[86] Given the potential elusive nature of Bryde's whales near observer vessels, these acoustic samples may play a critical role in obtaining more accurate abundance estimates and a better understanding of the geographical extent of Bryde's whales in the GoM.

Recent acoustic studies also seem to confirm the discord between the relatively high level of acoustic activity attributed to Bryde's whales and the relatively low level of visual observations. Sirovic *et al.* (2014) detected a total of 680 Bryde's whale calls over 53 days of passive recordings from De Soto Canyon.[87] Another call type that was possibly a Bryde's whale was recorded 93 times during 5 days in late June, which was concurrent with the peak of the other calls.[88] During a 110-day recording period from late spring to early fall 2010, another research team—Rice *et al.* (2014)—heard Bryde's whale calls during as much as 69% of the total recording hours.[89] Altogether, the 4 receiver sites each recorded between 3,495 and 9,212 Bryde's whale calls.[90] Another 460 calls were recorded during a separate 3-day period.[91] The numbers in Rice *et al.* (2014) are an order of magnitude greater than calls recorded by Sirovic *et al.* (2014). To estimate the call rate per whale, Rice *et al.* (2014) applied the number of calls to a "recently documented minimum estimate of 40 animals" and derived a rate of 22 calls per day per animal and 8.2 calls per hour.[92] In the Gulf of California, where Bryde's whales are considered relatively abundant, a similar passive acoustic study calculated that an increase in average call rates that never exceeded 4.8 calls per day suggested an increase in abundance.[93] Although there are limitations to estimating abundance from acoustic detection, the observed calling rates provide evidence that Bryde's whales are more abundant than current abundance estimates suggest.

These acoustic methods, which are in their infancy, may play a critical role in obtaining more accurate abundance estimates and a better understanding of the geographical extent of Bryde's whales in the GoM. Bryde's whales produce long and distinct low frequency calls that can be used for long-term acoustic monitoring of whale presence.[94] Despite the abundance of acoustic signals that were heard during these acoustic surveys, whales remained rare during

[86] Rice *et al.* (2014); Širović *et al.* (2014).
[87] Širović *et al.* (2014).
[88] Širović *et al.* (2014).
[89] Rice *et al.* (2014).
[90] Rice *et al.* (2014).
[91] Rice *et al.* (2014).
[92] Rice *et al.* (2014).
[93] Kerosky *et al.* (2012).
[94] Rice *et al.* (2014); Širović *et al.* (2014); Kerosky *et al.* (2012).

concurrent visual survey efforts, all of which supports the likelihood that the population in the GoM is larger than estimated by NMFS.

b. Carcass Recovery Data

The carcass recovery rates that the SRT cites in its own analysis on the threat of ship strikes call into question the accuracy of the SRT's estimates of Bryde's whale abundance. In the Status Review Report's discussion of ship strikes, the SRT explains:

> If GOMx Bryde's whale carcass recovery-rates are similar to those of other offshore GOMx cetacean species, the mean annual number of observed strandings might range between 0.00132 and 0.044 carcasses [lowest: 33 population estimate * (1–0.99 natural adult survival rate) * 0.4% carcass recovery rate; highest: 44 population estimate * (1–0.95 natural adult survival rate) * 2% carcass recovery rate. These numbers indicate that under the best conditions, the recovery rate for Bryde's whales in the GOMx dying of natural causes would be about one whale every 23 years. So most ship-struck whales would likely go undetected.[95]

Elsewhere in the Status Review Report, however, the SRT catalogued a total of 22 *B. edeni* carcasses found in the GoM from 1954 to 2012—a mean annual number of observed strandings of 0.38 carcasses.[96] Applying this actual mean number of observed strandings to the calculation used by the SRT and using the SRT's own calculation of natural adult survival and carcass recovery rates would result in abundance estimates of 380 and 9,500 Bryde's whales. The Status Review Report also lists a total of 9 Bryde's whale strandings on the U.S. Atlantic coast between 1923 and 2003; six of these are confirmed. The mean number of observed strandings is thus .075 per year if using only confirmed strandings and .1125 if counting all. Once again, applying this actual mean to the calculations used by the SRT, abundance estimates should range between 75 and 2,800.

More than likely, the carcass recovery rate cited by the SRT is artificially inflated and therefore should not be used as evidence that Bryde's whales are at risk of extinction from ship strikes. Even if actual recovery rates are far higher than the SRT estimates, however, the number of actual observed strandings strongly suggests that Bryde's whale populations far exceed the SRT's estimates. The SRT's analysis is internally incongruous, and points more strongly toward the existence of more Bryde's whales in the GoM than NMFS recognizes.

[95] Status Review at 58.
[96] Status Review at 10.

c. Rosel & Wilcox (2014) Genetic Survey Data

One additional potential indicator that Bryde's whale abundance in the GoM may be underestimated can be found within the Rosel & Wilcox (2014) genetic analysis which is discussed in further detail below. That study purports to be based on genetic samples taken from 21 different Bryde's whales in the GoM and 2 Bryde's whales stranded on the north Atlantic coast.[97] Twenty-one genetic samples reflect roughly 64% of the Service's current best estimate of abundance (33), and more than 131% of the minimum population estimate (16).[98] While we recognize that these samples were not all taken in a single year, it would be remarkable to suggest that biologists have been able to extract genetic samples from 64% of Bryde's whales in the GoM—particularly so given the unique difficulties inherent in tracking or even observing Bryde's whales.

Further, Rosel & Wilcox (2014) started with 23 genetic samples from living Bryde's whales in the GoM and eliminated 2 after testing revealed that 2 individual whales were sampled twice.[99] Given the longevity of Bryde's whales, one would assume that far more samples would have been duplicates. Reasonably assuming that the researchers sampling the whales were not able to use visual observation to screen which whales to try to sample, and that samples were taken whenever they encountered a Bryde's whale that could be sampled, there is only a 0.57% chance that 23 random samples from a population of 33 whales would result in only two duplicates.[100]

Even accounting for the fact that the samples were taken in multiple years, the most logical interpretation of this data is not that biologists had the most remarkable success sampling one of the most difficult whales to observe. It is much more logical to interpret this Bryde's whale genetic sampling data as suggesting that the best population estimate of 33 may significantly underestimate Bryde's whales currently in the GoM, and/or that 33 whales represents the best estimate of Bryde's whales occurring in the GoM at any one time that are part of a larger Bryde's whale population migrating inside and outside of the U.S. EEZ of the GoM.[101] Indeed, from a statistical standpoint, a population of between 79 and 125 whales presents the greatest likelihood of being randomly sampled 23 times with only two duplicates.[102] The best available information, therefore, may suggest that Bryde's whales are substantially more abundant than previously estimated.

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[97] Rosel & Wilcox (2014).

[98] Stock Assessment Report (2015).

[99] The two stranded whales are not counted in these calculations.

[100] To calculate the chance of finding exactly 2 duplicates if the population was 33 Bryde's whales (N = population, n = sample size, r = number of duplicate pairs), the Associations used the formula found at the following website: *Probability of Duplicate Pairs*, THE MATH FORUM, http://mathforum.org/library/drmath/view/62941.html (last visited Jan. 19, 2017).

[101] As discussed below, the low number of duplicate samples may also reveal flaws in the genetic analysis (i.e., that the genetic testing failed to identify samples from the same animal).

[102] The Associations used the following formula:

$$\frac{N!\ n!}{(N-n+r)!\ (n-2r)!\ r!\ 2^{r}\ N^{n}}$$

B. Disputed Taxonomic Status of Bryde's Whale Complex

The taxonomic status of the Bryde's whale complex has been the subject of scientific dispute for decades. To this day, there is significant debate over whether Bryde's whales are a different species from other whales in the Bryde's whale complex, whether they are a subspecies within a larger taxonomic class, or whether other taxa and subspecies of whales should be considered subspecies of Bryde's whales. As discussed below, the reasons the Bryde's whale remains the subject of substantial scientific debate are numerous and complicated. The present impact of this conflict, however, is quite clear—the most basic and essential prerequisite to listing species under the ESA is the identification of the species.

While the ESA allows NMFS to list species, subspecies, and distinct population segments ("DPSs") of species, its ability to create taxonomic units for purposes of listing is largely limited to the creation of DPSs. Even then, NMFS must satisfy rigorous analytical requirements. In the limited circumstances where NMFS has adopted a subspecies classification prior to its adoption in the larger scientific community, it has done so where the evidence of distinction was well-established and readily observable, where the taxonomic status was widely recognized (not the subject of ongoing dispute), and where the sole remaining obstacle to "official" recognition of the subspecies was the cumbersome or protracted approval process utilized by many taxonomic organizations. These narrow circumstances are not present here.

Here, NMFS's taxonomic conclusions are not in agreement with the best available science: no independent taxonomic organizations or scientists have recognized the subspecies proposed by Rosel & Wilcox (2014), nor have any petitions for recognition been filed. The only evidence suggesting genetic distinctiveness is the putative subspecies is morphologically, physiologically, and behaviorally indistinct from all other populations in all material respects, and evidence of genetic distinctiveness is too limited and preliminary to allow for taxonomic determinations.

In its Status Review Report, the SRT never confronted this debate, nor did it conduct even the most minimal of analyses. Instead, it presented highly selective data to a select group of colleagues, accepted their answer as definitive, and evaded the taxonomic debate altogether. While the ESA does not require NMFS to base listing decisions on taxonomic certainty, it also does not allow NMFS to ignore data or to design their analytical framework to reach a preferred conclusion.

1. Taxonomy under the Endangered Species Act

The ESA allows the Listing Services[103] to list a species, which by ESA definition "includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species of

[103] The ESA directs implementation by the Secretary of the Interior and the Secretary of Commerce, who have delegated those responsibilities to the Director of the FWS and to the Assistant Administrator for Fisheries, respectively. Id. § 1533(15); 81 Fed. Reg. 7413, 7415 (Feb. 11, 2016).

vertebrate fish or wildlife which interbreeds when mature."[104] While species and subspecies are clear taxonomic classifications, the "DPS" concept was created by the ESA and the Listing Services to designate conservation units based on a combination of biology and policy. What NMFS is proposing to determine here is not whether a population constitutes as DPS or whether a species, subspecies, or DPS meets the ESA's "threatened" or "endangered" definitions—NMFS is effectively proposing to create a species that does not yet exist.

Even though the ESA does not confer NMFS the authority to create species and subspecies classifications that are typically in the purview of independent scientific organizations, NMFS issued regulations seemingly conferring to itself authority to "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."[105] While this regulation did not impose any standards for NMFS's exercise of it biological expertise in unilaterally adopting otherwise unrecognized species and subspecies classifications, the ESA requires NMFS to utilize the best available evidence in making listing decisions, including when making taxonomic determinations.

In addition to reliance on the best scientific information available, NMFS should also utilize the criteria it set out for itself in its Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the Endangered Species Act ("DPS Policy").[106] The DPS Policy sets a framework for determining whether a population constitutes a DPS, and if so, whether that DPS merits listing under the ESA.[107] Importantly, the DPS Policy applies to taxonomic determinations specifically assigned to the discretion of the Listing Services – and not higher order species- and subspecies-level taxonomic classifications that are typically recognized through independent scientific bodies. As such, the factors considered under the DPS Policy should be viewed as the minimal criteria for guiding NMFS's unilateral recognition of higher order taxonomic classifications.

In order to be considered a DPS under the DPS Policy, a population must be both discrete in relation to the remainder of the species, and significant to the species. A population segment is discrete if it satisfies either one of the two following conditions:

1. It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors; or

[104] 16 U.S.C. § 1532(16). Generally, NMFS manages marine species while FWS manages land and freshwater species. *See Endangered Species Act (ESA)*, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, http://www.nmfs.noaa.gov/pr/laws/esa/ (last updated Feb. 11, 2016).
[105] 50 C.F.R. § 424.11.
[106] 61 Fed. Reg. 4,721 (Feb. 7, 1996).
[107] 61 Fed. Reg. 4,725.

2. It is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act.[108]

If the Listing Services decide that a population segment is discrete, then they consider its biological and ecological significance by considering scientific evidence that may include, but is not limited to:

1. Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon;

2. Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon;

3. Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; or

4. Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.[109]

If the Listing Service determines that the population segment is both discrete and significant, then it reviews whether the DPS is threatened or endangered under the listing factors applied to all species.[110] These are: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or manmade factors affecting its continued existence.[111]

As the peer reviewers noted with significant concern, NMFS's analysis of the taxonomy of Bryde's whales in the GoM did not include any consideration of the DPS Policy criteria.[112] NMFS, in fact, entirely sidestepped this required analysis by declining to consider GoM Bryde's whales as a DPS and instead proposing to unilaterally recognize GoM Bryde's whales as a new subspecies. The ESA cannot be read to so easily allow NMFS to unburden itself of important analytical requirements by taxonomically deconstructing species through unilateral recognition of new subspecies instead of the designation of DPS.

Congress noted with respect to DPS designations in reauthorizing the ESA that it "is aware of the great potential for abuse of this authority," and admonished the listing services to use their taxonomic authority "sparingly and only when the biological evidence indicates that such action

[108] *Id.*
[109] *Id.*
[110] *Id.*
[111] 16 U.S.C. § 1533(A)(1).
[112] See Peer Review Report.

is warranted."[113] Biologists in the Listing Services have similarly noted that NMFS and FWS must avoid using "careless taxonomy" in ESA listings through "over-application of the subspecies concept for species that attract human interest."[114] These same biologists found that use of poorly defined or invalid subspecies by FWS have resulted in unwarranted adverse economic impacts.[115]

As opposed to DPSs, which are designated by the listing services alone, species and subspecies are typically identified by researchers and taxonomists, who name and describe in the form of a scientific paper a new species of organism and explain how it differs from species that have previously been described or that are related.[116] Taxonomic naming in zoology is governed by the International Code of Zoological Nomenclature, issued by the International Commission on Zoological Nomenclature ("ICZN").[117] Other scientists and researchers often then validate or build upon the discoverer's conclusion, thereby creating a form of scientific consensus. Various organizations, such as the Integrated Taxonomic Information System, Society of Marine Mammalogy, the International Whaling Commission, and others maintain lists of what they consider to be accurate, scientifically credible, and current taxonomic data. These cataloguing organizations typically have detailed guidelines for classifying species and subspecies, and similarly detailed guidelines for proposing, reviewing, and adopting taxonomic classifications proposals.[118] Subspecies have traditionally been defined by morphological traits or color variations.[119] Where molecular data are used to assess distinctiveness, it is typically used to support morphological or behavioral distinctions.[120] Molecular data alone are rarely considered sufficient to establish taxonomic distinctions.[121]

In the incredibly rare instances where a NMFS listing action has utilized a subspecies' taxonomic classification before it had been adopted by the larger scientific community, NMFS's recognition was based on conspicuous morphological differences, where NMFS's view of the taxonomy mirrored the consensus of the larger scientific community, and where formal recognition by the relevant scientific organizations was impeded or delayed for non-substantive procedures. For instance, when NMFS listed the Southern Resident killer whale DPS (*Orcinus orca*), it used an unnamed subspecies of North Pacific resident killer whales as a reference taxon for the DPS analysis. The subspecies, however, was distinguishable by observation because of its different color pattern, size, habitat, feeding ecology, morphology, and more.[122] NMFS took a similar approach when listing DPSs of the humpback whales (*Megaptera novaeanglie*), agreeing with the

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[113] S. Rep. No. 95-151, at 7 (1979), reprinted in ESA Legislative History, *supra* note 144, at 1397.
[114] *See* Susan M. Haig *et al.*, United States Geological Survey, *Taxonomic Considerations in Listing Subspecies Under the U.S. Endangered Species Act*, Paper 671 (Jan. 1, 2006).
[115] Haig (2006) at 1590.
[116] *See generally* Susan M. Haig *et al.*, United States Geological Survey, *Taxonomic Considerations in Listing Subspecies Under the U.S. Endangered Species Act*, Paper 671 (Jan. 1, 2006).
[117] INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, http://www.iczn.org/ (last visited Dec. 20, 2016).
[118] *See Guidelines for Case Preparation*, INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, http://www.iczn.org/content/guidelines-case-preparation (last visited Jan 18, 2017).
[119] Haig (2006) at 1586.
[120] Haig (2006) at 1591.
[121] Haig (2006) at 1591.
[122] 70 Fed. Reg. 69,903, 69,904–05 (Nov. 18, 2005).

Biological Review Team's assessment that there were three subspecies—North Pacific, North Atlantic, and Southern Oceans—and using these subspecies as the reference taxa for the DPS analysis.[123] These three subspecies of humpback whale are also distinguishable by reproductive seasonality, migrations and behavior, color patterns, and genetic differences.[124]

In contrast, there is no scientific evidence to support recognized morphological or behavior differences that distinguish Bryde's whales in the GoM. Bryde's whales in the GoM are physically and behaviorally identical to Bryde's whales in every other ocean and adjoining sea in which they are found.[125] At most, Bryde's whales in the GoM exhibit molecular-level differences from Bryde's whales in other oceans. Moreover, these genetic distinctions—again, the sole basis for NMFS's assertion that GoM Bryde's whales are a subspecies—are only preliminarily described, not well understood, and poorly delineated.

Bryde's whale taxonomy is, in fact, currently the subject of significant scientific dispute. That dispute is the reason no scientific bodies recognize GoM Bryde's whale as a new subspecies. That dispute is also likely the reason no party has even petitioned the relevant scientific bodies to recognize GoM Bryde's whales as a new subspecies. To properly recognize GoM Bryde's whale as a distinct subspecies, NMFS should submit its methodology used to determine this classification to the taxonomic publication that can peer-review this information.

2. Dispute Over Bryde's Whale Taxonomy

The taxonomic status of the various whales within the "Bryde's whale complex" has been the subject of numerous scientific disputes. Recent genetic studies of Bryde's whales have not resolved the uncertain taxonomic status of the few Bryde's whale populations that have been sampled. In fact, these studies demonstrate that the taxonomic structure of the Bryde's whale complex is more uncertain than previously understood.

a. History of Bryde's Whale Taxonomy

Bryde's whales were not identified as a species distinct from sei whales (*Balaenoptera borealis*) until 1913. In the ensuing decades, biologists identified two clades of Bryde's whales:

[123] 80 Fed. Reg. 22,303, 22,311 (Apr. 21, 2015).
[124] 80 Fed. Reg. at 22,310
[125] The SRT raises but seemingly dismisses "unique acoustic signatures" as evidence of distinction. As the SRT Report elsewhere, all widespread marine mammal are believed to develop localized coda variations. These "dialects" are therefore emblematic of widespread species—not evidence of distinction. The SRT's peer reviewers cautioned the SRT to clarify this point. *See Peer Review Report.* Moreover, in the Final Rule to reject the listing of the GoM sperm whale as a DPS (78 FR 68032), NMFS stated "Because there is evidence of different types of coda variation (*i.e.*, macrogeographic versus microgeographic dialects) within the GOM, communication is passed down from the mother, and adult male sperm whales travel outside the Gulf of Mexico, the communication difference between GOM sperm whales and sperm whales from other populations does not indicate sperm whales in the GOM are ''markedly'' separate." It is unclear why NMFS would propose to reach a contradictory conclusion here, particularly because the sperm whale vocal repertoire has been intensely studied for decades. (Whitehead et al. 1998, Journal of Animal Ecology Current Biology 21, 687–691).

B. e. brydei and *B. e. edeni*. In 2003, Wada *et al.* (2003) concluded, based on morphological comparisons, that these two clades are not subspecies of the Bryde's whale but rather two separate species, *Balaenoptera brydei* and *Balaenoptera edeni*. It remains a matter of debate whether these two clades constitute two species or two subspecies of Bryde's whale. Wada *et al.* (2003) also concluded that the Omura's whale, which was previously considered to be within the Bryde's whale complex, may also constitute a distinct species (*Balaenoptera omurai*).

Several biologists disputed the methodology used by Wada *et al.* (2003), were critical of the proposed new species classifications, and raised their disagreement with the International Whaling Commission ("IWC"). In 2004, the IWC Scientific Committee found that it was premature to declare *Balaenoptera omurai* a separate species.[126]

Noting the taxonomic dispute that continued after Wada *et al.* (2003), Sazaki *et al.* (2006) used genetic comparisons to test the three-species taxonomic classification first identified in the Wada *et al.* (2003) morphological comparisons. Sazaki *et al.* (2006) sampled each of the three species proposed by Wada *et al.* (2003) by identifying four specimens (one *Balaenoptera edeni*, one *Balaenoptera brydei*, and two *Balaenoptera omurai*) using the morphological characteristics identified by Wada *et al.* (2003). The specimens were taken from the GenBank repository[127] and were extracted from whales found in the following locations:

Identified Specimen	**GenBank Accession Number**	**Tissue Type**	**Location**
B. omurai #1	AB201256	Muscle	Sea of Japan off Tsunoshima Island, Japan
B. omurai #2	AB201257	Muscle	Sea of Japan off Awishima Island, Japan
B. edeni	AB201258	Skin	Ariake Sea off Kumamoto, Japan
B. brydei	AB201259	Not Identified	North Pacific Ocean off Natori, Japan

Sazaki *et al.* (2006) largely confirmed the results reported in Wada *et al.* (2003), but further noted that *B. edeni* and *B. brydei* may be in the same genetic complex as the sei whale (*Balaenoptera borealis*)—the species from which the Bryde's whale taxon was first identified as distinct in 1913, and the species most commonly misidentified as Bryde's whales. The relationship of *B. edeni* and *B. brydei* to *B. borealis* and not to *B. omurai* has been described in other genetic studies as well.

[126] The IWC does now recognize the species. *See Taxonomy of Whales*, INTERNATIONAL WHALING COMMISSION, https://iwc.int/cetacea (last visited Dec. 21, 2016).

[127] The GenBank is the U.S. National Institutes Of Health's genetic sequence database collecting all publicly available DNA sequences. *GenBank Overview*, NATIONAL CENTER FOR BIOTECHNOLOGY INFORMATION, https://www.ncbi.nlm.nih.gov/genbank/ (last updated Nov. 15, 2016).

In the Encyclopedia of Marine Mammals, however, Kato & Perrin (2009) examined Wada *et al.* (2003) and Sazaki *et al.* (2006) and disputed the suggestion that *B. edeni* and *B. brydei* in those studies "should be considered full species" because "the degree of differentiation between the two forms is of a level that could be consistent with subspecific separation." Kato & Perrin (2009) further noted that taxonomic classification is premature given that studies identifying potential distinctions are doing so based on comparisons in discrete regions,[128] but that global comparisons have not been undertaken.

Rosel & Wilcox (2014) provides one such global comparison, and analyzed for the first time the genetics of Bryde's whales found in, or near, the Atlantic Ocean. Rosel & Wilcox (2014) compared mitochondrial DNA from 23 whales in the GoM or North Atlantic with the four whale samples taken off the coast of Japan in Sazaki *et al.* (2006). At most, it provides preliminary evidence that whales in the GoM and North Atlantic may be somewhat distinct from whales off the coast of Japan.

b. Rosel & Wilcox (2014) Does Not Settle the Bryde's Whale Taxonomic Debate

The Rosel & Wilcox (2014) study was based on only three new DNA samples from the GoM and two new samples from the Northwest Atlantic. The origins of the remaining 21 purported GoM samples on which Rosel & Wilcox (2014) relied were not identified in the study.

It is possible that the samples were taken from GenBank, on which Rosel & Wilcox (2014) relied for samples to populate the mtDNA control regions for their study. Given the confusion about the morphological characteristics of Bryde's whales, any technique used to compare the molecular differences between and among species is an important tool for taxonomic research. Reliance on GenBank for DNA samples of whales, however, is problematic given the likelihood of misidentification and the evolving, often contradictory, nomenclature used to identify species and samples suspected to be within the Bryde's whale complex (*B. brydei*, *B. e. brydei*, *B. edeni*, *B. e. edeni*, *B. omurai*, *B. borealis*). Rosel & Wilcox (2014) noted that the study relied on potentially mislabeled voucher specimens and reported that a number of the samples that were used to differentiate between the sampled populations were named *B. edeni*, but are believed to represent *B. brydei*.

Table S1a in the study's supplement lists the individual genetic sequences used to compare GoM Bryde's whales with other species in the complex. Those in red type in the table are believed to be misidentified in GenBank based on the phylogenetic analysis. Misidentification of specimens has been a problem for many years with even the simplest of organisms.[129] One paper stated that "GenBank is riddled with errors, which are often dismissed by many authors using their data for their own research."[130]

[128] *E.g.*, Sazaki *et al.* (2006) only examined whales found off the coast of Japan; Best (1977) compared inshore and offshore whales near South Africa.
[129] Bridge *et al.* (2003); Sole-Cava & Worheide (2007).
[130] Sole-Cava & Worheide (2007).

Rosel & Wilcox (2014) also faced the same problem with sei whales, saying that "[g]iven the [molecular] difficulties in distinguishing sei whales from Bryde's whales, sei whale records should be re-examined as well." This is because the preliminary mitochondrial DNA analyses in Rosel & Wilcox (2014) indicate that *B. e. brydei* is more closely related to sei whales than to *B. e. edeni*.[131]

i. Rosel & Wilcox Observe a Distinction between Two Distant Populations

Notwithstanding the questionable provenance of the majority of DNA samples on which they relied, Rosel & Wilcox (2014) were able to identify differences in mtDNA patterns between the samples from the GoM and North Atlantic and those reference samples characterizing genetic profiles for *B. e. brydei*, *B. e. edeni*, and *B. omurai*. Notably, these reference points from which all distinctions with whales in the GoM and North Atlantic were measured were based on a single whale representing *B. e. brydei*, a single whale for *B. e. edeni*, and two whales for *B. omurai*. Perhaps more importantly, all four of these whale samples were taken from the waters around Japan. Far from providing precise reference points for the named species from which to measure all genetic deviations, the samples in Sazaki *et al.* (2006) represent the mtDNA patterns of four whales near Japan that were assigned to *B. brydei*, *B. edeni*, and *B. omurai* based on the disputed morphological analysis proposed by Wada *et al.* (2003).

Even if these mtDNA patterns show statistically significant differentiation between oceans, as NMFS appropriately found with respect to the sperm whale:

> mtDNA does not alone describe population structure. Because mtDNA is maternally inherited, differences in mtDNA haplotypes between populations do not necessarily mean that the populations are substantially reproductively isolated from each other because they do not provide any information on males.[132]

Differences in mtDNA may indicate discreteness in species in which male and female movement patterns are the same,[133] but these patterns are not known for the Bryde's whale. Almost no tagging data exist for Bryde's whales and its migratory patterns (or lack thereof) are disputed.[134]

Subsequent to Rosel & Wilcox (2014), researchers successfully satellite tracked two *B. edeni* in the North Pacific.[135] One whale was tracked for 13 days and traveled a distance of 917.3

[131] Dizon *et al.* (1997).
[132] 78 Fed. Reg. 68,032, 68,035 (Nov. 13, 2013).
[133] 78 Fed. Reg. at 68,035.
[134] Kato & Perrin (2009) identify a north-south migratory pattern; Steiner (2007) suggests Bryde's whales "do not exhibit the normal migration patterns of baleen whales"; Best (1977) identifies resident populations.
[135] See IWC SC/F16/JR/45.

km.[136] The second whale was tracked for 20 days and traveled a distance of 2649.7 km.[137] Previously, Bryde's whales were not known to travel these lengthy distances. Movements of this distance over relatively short periods of time are significant because they denote increased potential for connectivity over long distances. While the sex of these whales is unknown, if these data suggest that males make longer-distance movements that could maintain genetic connectivity between populations, that connectivity would not be reflected in the Rosel & Wilcox (2014) analysis of maternally inherited DNA. A comprehensive analysis of genetic differentiation requires more extensive evaluation of paternally inherited genes. As noted by one of the SRT's peer reviewers, "I would have liked to see a bit more about differentiation at nuclear genes, since patterns can differ strongly from those at mtDNA."[138]

ii. Rosel & Wilcox (2014) Does not Delineate the Putative Subspecies

Even if mtDNA patterns showed Bryde's whales in the GoM to be distinct from some other population, there is no evidence of the requisite "marked distinction." Moreover, Rosel & Wilcox (2014) does not answer the essential question, "distinct from what?" Stripped of the questionable samples from GenBank, Rosel & Wilcox (2014) is a study of five whales in the GoM and North Atlantic and four whales off Japan. The study remains valuable as it provides the first credible genetic evaluation of Bryde's whales outside of the Indian or Pacific Oceans, but it is a preliminary study only, as recognized in the authors' appropriate caveat that further research is needed.

Since the publication of Rosel & Wilcox (2014), genetic testing has identified the presence of the subspecies *B. e. brydei* in the southern Caribbean[139] and off southern Brazil.[140] Whales genetically identified as *B. omurai* were confirmed off northern Brazil[141] and West Africa.[142] Notably, these are the first *B. omurai* ever discovered in the Atlantic Ocean. These discoveries, along with another discovery of *B. omurai* off Madagascar[143] (where the species was previously thought to be absent) reveal that the taxonomic delineation of the Bryde's whale complex has only begun to be understood.

Additionally, the discovery of *B. omurai* for the first time in the Atlantic Ocean reveals that whales within the Bryde's whale complex may exist in a series of discontinuous populations that are connected through the occasional long-distance movements of a few individuals.[144] There is some preliminary indication that these movements (and therefore genetic connections) may follow ocean currents.[145] Indeed, even Rosel & Wilcox (2014) supports the inference that

[136] See IWC SC/F16/JR/45.
[137] See IWC SC/F16/JR/45.
[138] See Peer Review Report.
[139] Luksenburg *et al.* (2015).
[140] Pastene (2015).
[141] Cypriano-Souza (2016).
[142] Jung (2016).
[143] Cerchio *et al.* (2015).
[144] Jung (2016).
[145] Jung (2016).

population connectivity may align with ocean currents. Two of the five samples obtained for the study (40%) were from the North Atlantic. In fact, these two strandings from South Carolina (1992) and North Carolina (2003) were found to be nearly identical to the other whales sampled from the GoM, which suggests that they are connected to an Atlantic population.[146] This can be explained by positing that either: (1) the whales died in the Northern GoM (where they are supposedly restricted), entrained in the Florida Current to the Gulf Stream, and floated (with no predation) for more than 1,000 miles before coming ashore along the mid-Atlantic coast; or, (2) they were part of an Atlantic population that is not distinct from the GoM population.

While both explanations are possible, the latter explanation is infinitely more reasonable. As such, the best scientific evidence available, which is admittedly lacking in quantity, demonstrates that whales in the GoM are genetically indistinct from whales in the North Atlantic Ocean and potentially elsewhere. Given the changes in our understanding of the taxonomic delineation of the Bryde's whale complex that have occurred just the last year, there is no basis to conclude that the genetic distinctions Rosel & Wilcox (2014) reported in the GoM and North Atlantic are not connected to a larger as-yet unidentified discontinuous population.

It is within the current atmosphere of global taxonomic dispute that NMFS now proposes that Bryde's whales in the GoM can be declared a subspecies distinct from all other populations, including those in the Atlantic—which are genetically indistinct. Notwithstanding NMFS's suggestion otherwise, Rosel & Wilcox (2014) does not clarify the subspecies identification or resolve the taxonomic debate at the global species or subspecies level.

b. GoM Bryde's Whales are Not Recognized by the Scientific Community as a Subspecies

While some individual biologists agree with NMFS that Rosel & Wilcox (2014) provides sufficient evidence that Bryde's whales in the GoM are a new subspecies, no scientific body has adopted this classification. In fact, the Associations can find no evidence that any scientific body is even considering recognizing GoM Bryde's whales as a subspecies. There does not even appear to be any requests that any organizations reconsider the taxonomic status of Bryde's whales.

One such organization is the Society of Marine Mammalogy ("SMM"), which maintains and routinely updates the List of Marine Mammal Species and Subspecies. The SMM's List of Marine Mammal Species and Subspecies, which was updated in May 2016, only recognizes the two already-designated subspecies of Bryde's whale, *B. e. brydei* and *B. e. edeni*—no GoM subspecies is included.[147]

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[146] NOAA reports online that genetic testing was conducted on the whales and makes the claim that they were distinct from whales in Caribbean and Pacific, yet no data were provided and more recent studies do not cite this testing (http://www.noaanews.noaa.gov/stories/s2094.htm).

[147] *See List of Marine Mammal Species and Subspecies*, SOCIETY FOR MARINE MAMMALOGY, https://www.marinemammalscience.org/species-information/list-marine-mammal-species-subspecies/ (last updated Nov. 13, 2016).

Similarly, The International Whaling Commission ("IWC"), the foremost intergovernmental organization on whale conservation, closely tracks whale taxonomy given the importance of species and sub-specific identification in regulating and enforcing whaling activity. It lists only *B. edeni*, Bryde's whale, as a species, and notes that the name includes more than one species but that nomenclature is unsettled. It makes no reference to a possible subspecies in the GoM.[148]

GoM Bryde's whales are similarly unrecognized as a subspecies by scientific organizations outside the marine mammal and whaling community. The Catalogue of Life, which is maintained by the Integrated Taxonomic Information System, is thought to be one of the most comprehensive listings of known species and organisms. It includes entries for Bryde's whales and Eden's whales, but does not recognize Bryde's whales in the GoM as a subspecies.[149] The International Union for Conservation ("IUCN") maintains the Red List of Threatened Species," which it characterizes as "the world's most comprehensive inventory of the global conservation of plant and animal species."[150] The Red List's entry for the Bryde's whale seemingly recognizes the three species within the Bryde's whale complex (*B. brydei*, *B. edeni*, and *B. omurai*) but notes that the taxonomic status of the Bryde's whale complex is unsettled. It does not discuss at all the possibility that the GoM Bryde's whale population constitutes a separate subspecies.[151]

NMFS's proposal to unilaterally recognize GoM Bryde's whales as a subspecies cannot plausibly be construed as a reflection of the consensus of the larger scientific community or an action made necessary by the slow moving taxonomic procedures of the foremost scientific institutions. No scientific organization recognizes Bryde's whales in the GoM as a subspecies. There is no evidence that any organization is even considering recognizing GoM Bryde's whales as a subspecies. And, there is no evidence that any organization has even been asked to recognize Bryde's whales in the GoM as a subspecies. The best available information remains that GoM Bryde's whales are not a subspecies.

As discussed below, the SRT's efforts to develop record support for the creation of the GoM Bryde's whale subspecies does not change the best available evidence. In fact, it reveals that the SRT's bases for proposing to create the subspecies are largely illusory.

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[148] *See Taxonomy of Whales*, INTERNATIONAL WHALING COMMISSION, https://iwc.int/cetacea (last visited Dec. 21, 2016).

[149] *See Search All Names – Results for "Balaenoptera*, CATALOGUE OF LIFE, http://www.catalogueoflife.org/col/search/all/key/balaenoptera/fossil/0/match/1/page/1/sort/direction/asc//direction/asc (last updated Nov. 30, 2016).

[150] *IUCN Red List of Threatened Species*, IUCN, https://www.iucn.org/resources/conservation-tools/iucn-red-list-threatened-species (last visited Jan. 19, 2017).

[151] Balaenoptera edeni, THE IUCN RED LIST OF THREATENED SPECIES, http://www.iucnredlist.org/details/2476/0 (last visited Dec. 21, 2016).

c. The Information the SRT Used to Support its Taxonomic Conclusions is Not the Best Available

Because the SRT's conclusions about the taxonomic status of GoM Bryde's whales was based entirely on the preliminary conclusions of Rosel & Wilcox (2014), and not morphological or behavioral differences, or more conclusive genetic data, the SRT sought out additional support for its conclusions through expert opinion. On its face, expert opinion can indeed qualify as the best scientific information available. In this instance, however, the expert opinion contributed little to no information relevant to the taxonomic status of Bryde's whales in the GoM.

In seeking validation of its unique conclusion that Bryde's whales in the Gulf of Mexico constitute a new subspecies, the SRT requested that the SMM's Committee on Taxonomy rate the likelihood of sub-specific status as high or low.[152] Critically, the SRT did not ask the SMM to consider the taxonomic status of Bryde's whales in the GoM, nor did the SRT ask that the SMM recognize GoM Bryde's whales as a new subspecies. In fact, the SMM's most recent List of Marine Mammal Species and Subspecies—published nearly a year after the SRT asserts that the SMM Taxonomy Committee validated the taxonomic status of GoM Bryde's whales—demonstrates that the SMM does not recognize Bryde's whales in the GoM as a subspecies.

The SMM Taxonomy Committee which rendered the expert opinion consists of 15 members, five of which are currently employed by, or were previously employed by NOAA.[153] The-chair of the Taxonomy Committee—William Perrin—emailed the Taxonomy Committee's expert opinion from "william.perrin@noaa.gov" to Barbara Taylor, who worked in the same office at NMFS at her "noaa.gov" address and to Dr. Patricia Rosel at her "noaa.gov" address.[154]

Dr. Rosel is the lead author of Rosel & Wilcox (2014), the study on which the SRT's taxonomic conclusions are entirely based. Dr. Rosel is also a member of the SMM Taxonomy Committee that rendered the expert opinion and one of the seven SRT members that sought out the Taxonomy Committee's expert Opinion.[155] Dr. Rosel is now the current chair of the Taxonomy Committee.[156]

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[152] Status Review at appx. 1.

[153] These include Chair William F. Perrin, Southwest Fisheries Science Center; Robert J. Brownell, Jr. and Thomas A. Jefferson, both listed as affiliated with NOAA Fisheries; Dale W. Rice, listed as formerly affiliated with NOAA's National Marine Mammal Laboratory; and Patricia E. Rosel, listed as affiliated with the Southeast Fisheries Science Center. *See Committees*, SOCIETY FOR MARINE MAMMALOGY, https://web.archive.org/web/20150626155429/https://www.marinemammalscience.org/about-us/committees/ (June 26, 2015) (available through WayBack Machine Internet Archive).

[154] Status Review at 123.

[155] Because NMFS has failed to provide the names of the Committee members that voted on the SRT's request, it is impossible to tell whether those committee members that have conflicts of interest—most notably Ms. Rosel—abstained from voting, and thus whether the SMM's conclusion is legitimate.

[156] *See Committees*, SOCIETY FOR MARINE MAMMALOGY, https://www.marinemammalscience.org/about-us/committees/ (last visited Dec. 18, 2016).

Dr. Rosel also co-authored the working group report that underlies the SRT's damage assessment and is listed first on the byline for the Status Review Report, presumably indicating that she is its lead author. We suspect, but cannot confirm, that Dr. Rosel also likely helped draft the 12-month finding that relied on the Status Review Report.

The Associations do not raise this issue to suggest that the various affiliations of SRT members (and other NMFS members) were improper or that the contributions from these affiliations are necessarily biased. To the contrary, we believe this information suggests that the SRT members are experts in their respective fields and passionate about their mission. These overlapping affiliations, however, call into question the extent of data underlying the SRT's conclusions. What appears to be validation by multiple sources is, in reality, the opinion of the same individuals speaking through different affiliations.

The Taxonomy Committee's opinion lacks scientific rigor in other ways as well. As an initial matter, the opinion provides no narrative or explanation of the basis for the opinion. It simply notes the committee's top line conclusion that "Gulf of Mexico Bryde's whales comprise at least an undescribed subspecies."[157] Moreover, the Taxonomy Committee reached this conclusion based on very little data.

The Taxonomy Committee received a short two-page overview of Bryde's whales in the GoM.[158] The majority of the two pages of information provided background on the listing effort and the SRT's view of the urgent threats faced by the species.[159] This information is irrelevant to a taxonomic assessment and its inclusion—and prominence—was improper. It was also missing key information. The summary, for instance, did not include the population estimates in *Roberts et al. (2016)* or any evidence of Bryde's whales in the Atlantic.

The information that the SRT provided on potential taxonomic distinctiveness consisted of only four paragraphs, which favorably summarize the SRT's conclusions.[160] In fact, it offered the conclusion the SRT hoped the Taxonomy Committee would reach: "Recent genetic and acoustic evidence have been acquired that suggest this population of Bryde's whales represents a unique evolutionary lineage."[161]

The SRT also provided the Taxonomy Committee four maps.[162] One map purports to plot Bryde's whale observations, but limits those observations in and around the De Soto Canyon. The SRT did not provide the Taxonomy Committee any sighting or stranding coordinates for the Caribbean, North Atlantic, or South Atlantic. It is unclear how the Taxonomy Committee rendered an expert opinion that Bryde's whales in the GoM are discrete from contiguous populations, when it was not provided any information on contiguous populations.

[157] Status Review at 123.
[158] Status Review at 123.
[159] Status Review at 123.
[160] Status Review at 123.
[161] Status Review at appx. 1.
[162] Status Review at 121-22.

It is equally unclear how the Taxonomy Committee rendered an expert opinion on Bryde's whales in the GoM when it was not provided Rosel & Wilcox (2014), which provides the sole basis for the SRT's taxonomic conclusions. Presumably, this deficiency was mitigated by the lead author's presence on the Taxonomy Committee and the SRT, but, based on the record, we cannot tell whether the Taxonomy Committee reviewed Rosel & Wilcox (2014) at all.

Neither the SRT's conclusions nor the Taxonomy Committee's expert opinion constitute the best scientific information available. The best available information continues to demonstrate that Bryde's whales in the GoM are not a subspecies.

C. Even if Bryde's Whales in the GoM Are a Subspecies, the Best Available Information Indicates They Are Not Endangered

The 12-month finding relies on the spurious taxonomic disaggregation of Bryde's whales in order to make a globally abundant and well-protected species appear to be at risk of extinction. The best scientific data available suggest that Bryde's whales in the GoM are part of a larger population that is healthy, abundant, protected, and widely dispersed. The SRT relies on its misinterpretations of the abundance and discreteness of whales in the GoM for its assessment of the Bryde's whale's risk of extinction. Because the Associations discussed these issues at length above, however, we do not repeat those critiques here. Instead, in this section the Associations discuss the threat analysis provided in the Status Review Report.

Under the ESA, an endangered species is "any species in danger of extinction throughout all or a significant portion of its range."[163] A "threatened" species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."[164] Bryde's whales in the GoM do not meet either definition.

The ESA mandates that NMFS evaluate the Bryde's whale's risk of extinction by considering five listing factors: (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or manmade factors affecting its continued existence.[165] NMFS found that Bryde's whales are endangered by the present or threatened modification of its habitat, the inadequacy of existing regulatory mechanisms, and other natural or manmade factors.[166] NMFS determined that there is no overutilization of the species that endangers or threatens the species, and no disease or predation that pose a threat to the Bryde's whale's continued existence; therefore, we do not discuss those factors here. We discuss each of the remaining three factors in turn below. For context, however, it is important to note that whales, including Bryde's whales,

[163] 16 U.S.C. § 1532(6).
[164] 16 U.S.C. § 1532(20).
[165] 16 U.S.C. § 1533(a)(1)(A)–(E); 50 C.F.R. § 424.11(c)(1)–(5).
[166] 81 Fed. Reg. at 88,652.

have been living in close proximity to the offshore oil and gas industry for decades,[167] and there is no evidence that Bryde's whale populations in the GoM are declining and no evidence that they are being harmed by these operations.

Documented anthropogenic losses of Bryde's whales are exceptionally low in the GoM and, with the exception of observed mortalities off New Zealand where a Bryde's whale population resides in the small and heavily trafficked Hauraki Gulf, anthropogenic losses also appear low throughout their worldwide range.

1. Flaws in the SRT's Threat Analysis Process

Not only are the SRT's conclusions about threats to Bryde's whales in the GOM incorrect, they were developed through a process that bears little resemblance to a credible scientific inquiry. Indeed, the SRT's analytical framework is both opaque and seemingly designed to reach a single conclusion—that Bryde's whales in the GoM are a subspecies on the brink of extinction. The SRT's analysis is not based upon the best scientific information available.

The SRT was established by NMFS to evaluate the taxonomic and conservation status of Bryde's whales. That SRT, which consists of seven NMFS employees, evaluated conservation status by establishing three tiers of severity rankings, identifying threat severity as low, medium, or high.[168] There is no tier that would allow SRT members to conclude that a factor does not threaten Bryde's whales, much less conclude that certain factors or conditions may benefit Bryde's whale abundance.

The SRT also established three tiers of "certainty" with which they could rank the amount of data supporting the factors predetermined to threaten Bryde's whales.[169] Again, the tier required SRT members to conclude that the amount of data supporting their threat conclusions was large, medium or small.[170] SRT members could not find that an identified threat had no scientific support or that a small, medium, or large amount of data disproved that threat analysis.

Accordingly, based on the categories and tiers the SRT assigned for itself for the assessment, it was compelled to conclude that some level of data suggest that Bryde's whales in the GoM were threatened with extinction. It could not evaluate data about population stability or persistence, much less conclude that the conservation status of Bryde's is favorable. Based on this flawed framework alone, the SRT's conclusions should be rejected.

The SRT's conclusion-driven analytical framework, however, is not the only procedural flaw employed in the SRT's Status Review Report. Threats were required to be delineated and

[167] Sperm Whale Seismic Study Synthesis Report (2008) at 271 (*hereinafter* SWSS Report).
[168] Status Review at 84.
[169] Status Review at 84.
[170] Status Review at 84.

separately analyzed based on whether they were presently occurring or likely to occur in the future.[171] There is no evidence that the SRT conducted such an analysis.

Further, in some cases, the SRT declined to evaluate the severity and certainty of threats at all. In evaluating the "inadequacy of existing regulatory mechanisms"[172] the Status Review Report stated that "the Team unanimously agreed this factor is a high threat to Bryde's whales in the GOMx,"[173] and then omitted individual voting on the tiers and provided no explanation of how this unanimous conclusion was reached. Notably, the SRT declined to remedy this issue even when concerns were raised by peer reviewers.[174]

The peer reviewers also raised concerns that the Status Review Report was difficult to interpret because it introduced undefined terms and concepts such as "dangerously small population" and "high risk of extinction," which are not utilized in an ESA analysis.[175] As such, even if the meaning of the concepts could be surmised, their relevance to the Status Review Report cannot.[176]

The Status Review Report is not the best available evidence. The SRT posed questions for itself that could only be answered in the affirmative. It considered information outside of what is properly considered in a status review, failed to consider a large amount of relevant information (including the Associations' previous comments), and ignored the critiques of peer reviewers. Were the Status Review Report used as a basis for listing GoM Bryde's whales under the ESA, that determination would be arbitrary, capricious, and an abuse of discretion.

2. Bryde's Whale Habitat Is Not Under Threat of Destruction or Modification

One of the products of the SRT's flawed analytical framework is a conclusion that Bryde's whale habitat is threatened by energy exploration and development, oil spills and, spill response.[177] As further described below, these factors are not placing GoM Bryde's whales at risk of extinction because they are, at best, conjectural threats that may, or may not, arise based on future leasing decisions, lease interest, production rates, and highly uncertain presumptions about geology and

[171] *See* Status Review at 131–33.
[172] Status Review at 83.
[173] Status Review at 86.
[174] Robin S. Waples, *et al.*, *Bryde's Whale Status Review Report (ID 337): Peer Review Report* [hereinafter Peer Review].
[175] See Peer Review Comments.
[176] The peer reviewers raised numerous other concerns that are difficult to understand because NMFS has only made the comment text available but not the draft Status Review that would show what part of document the peer reviewer is discussing. The Associations asked NMFS to provide the complete documents on two occasions. NMFS did not respond.
[177] The SRT also considered persistent organic pollutants, harmful algal blooms, discharge from oil and gas activities, and heavy metals as potentially destroying, modifying, or curtailing the Bryde's whale habitat or range. (See Status Review at 23–32). However, the SRT determined that those are low-risk threats to the species (Status Review at 85) and NMFS agreed. (81 Fed. Reg. at 88,645). Therefore, we do not address those alleged threats here.

market speculation. Moreover, regardless of whether oil and gas activities occur in areas presumed important to Bryde's whales now or in the future, those activities will be highly regulated by a strict regulatory regime, and unprecedented industry-driven safety initiatives such as task forces, industry standards, and industry-created guidance documents.

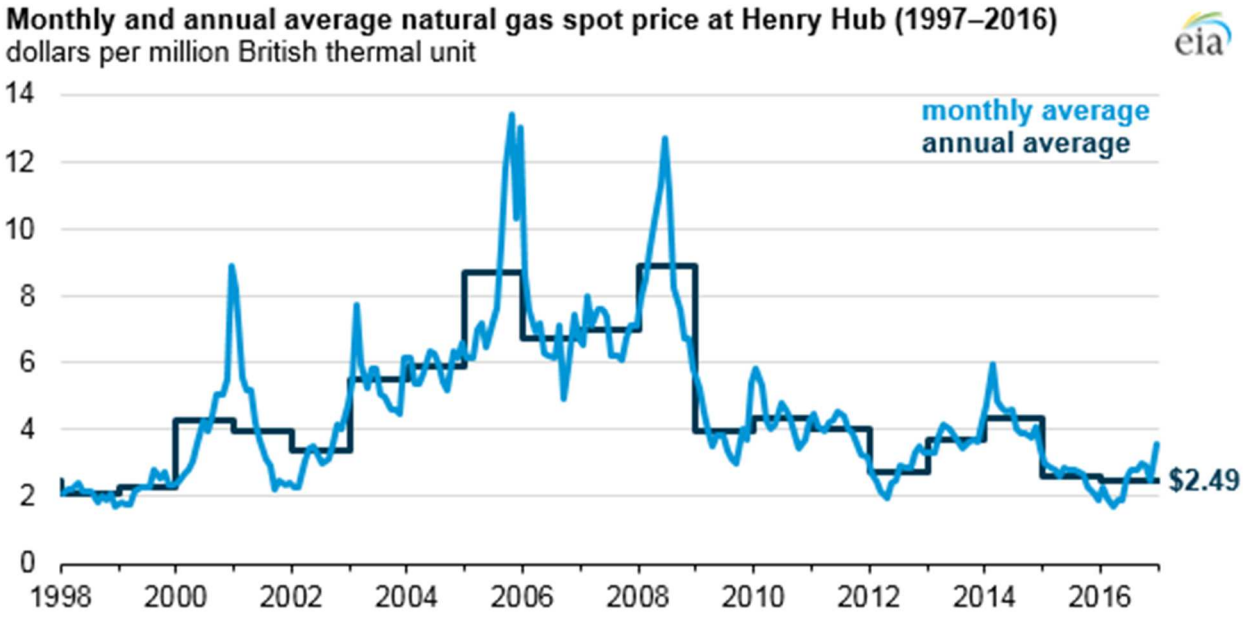
a. *Energy Exploration and Development Is Not a Threat*

The SRT alleges that the construction of platforms and pipelines is a "high" severity threat with "moderate" certainty that is currently pushing Bryde's whales in the GoM to the brink of extinction. The SRT reached this conclusion even though the De Soto Canyon area of the GoM is currently under a lease moratorium until 2022, and there is no production activity in the entire Eastern Planning Area. As such, NMFS both conflates present threats with future threats while also overestimating the likelihood of oil and gas production activity in the future.

The Eastern Planning Area, which includes biologically rich areas that NMFS considers the most important to Bryde's whale conservation, covers more than 261,000 square kilometers (km^2)—roughly the size of Colorado.[178] Only 0.3% of this area is leased through 37 active leases.[179]

Only 105 wells have been drilled in this area, and none have been put into production. The lack of production from existing leases is likely because only natural gas has been discovered in significant quantities.[180] Given the 20-year low in natural gas prices observed in 2016 and the likelihood that onshore natural gas production will meet market demands at lower cost well into the future, NMFS cannot reasonably conclude that oil and gas activity will increase in areas considered important to Bryde's whale conservation or that such increases will threaten Bryde's whales.

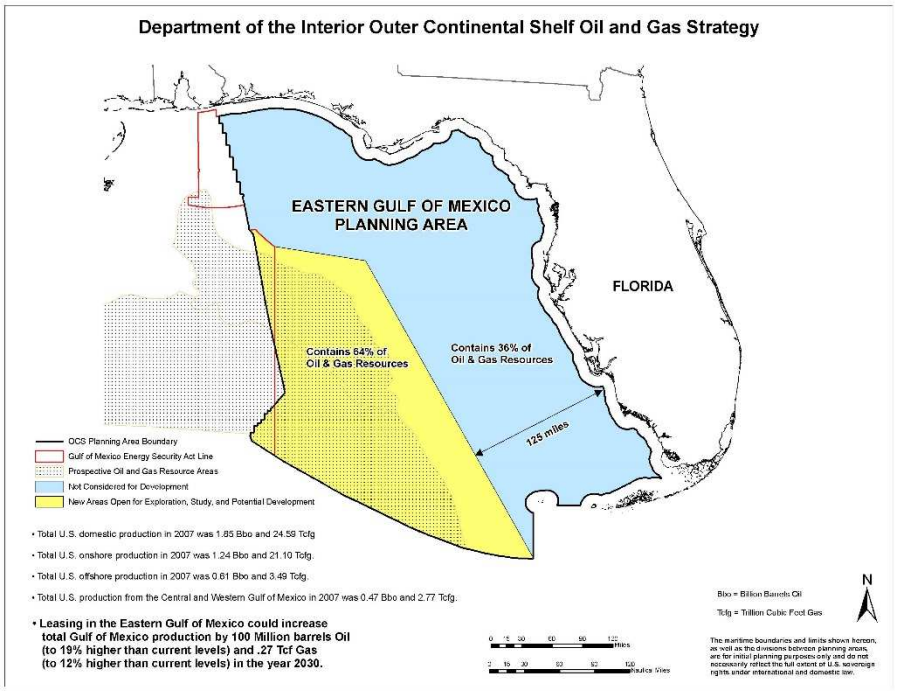
[178] *See Geography*, UNITED STATED CENSUS BUREAU, https://www.census.gov/geo/reference/state-area.html (last visited Jan. 18, 2017).
[179] BUREAU OF OCEAN ENERGY MANAGEMENT GULF OF MEXICO OUTER CONTINENTAL SHELF REGION, BLOCKS AND ACTIVE LEASES BY PLANNING Area (Jan. 3, 2017), *available at* https://www.boem.gov/Gulf-of-Mexico-Region-Lease-Map/.
[180] *See generally Oil and Natural Gas Exploratory Drilling Down in Second Quarter of 2016*, AMERICAN PETROLEUM INSTITUTE (July 7, 2016), http://www.api.org/news-policy-and-issues/news/2016/07/07/drilling-down-in-second-quarter-of-2016.



Natural Gas Prices in 2016 Were the Lowest in Nearly 20 Years, U.S. ENERGY INFORMATION ADMINISTRATION (JAN. 13, 2017), https://www.eia.gov/todayinenergy/detail.php?id=29552.

Indeed, BOEM conducted only two lease sales (in 2014 and 2016) in the minority of the Eastern Planning Area that remains available for leasing—neither received a single bid.[181] The remainder of the Eastern Planning Area remains under a moratorium until 2022.[182]

[181] *Eastern Planning Area Lease Sale 226 Information*, BUREAU OF OCEAN ENERGY MANAGEMENT, https://www.boem.gov/Sale-226/ (last visited Jan. 18, 2017).
[182] OCS OGLP 2017-2022 at 2-20.



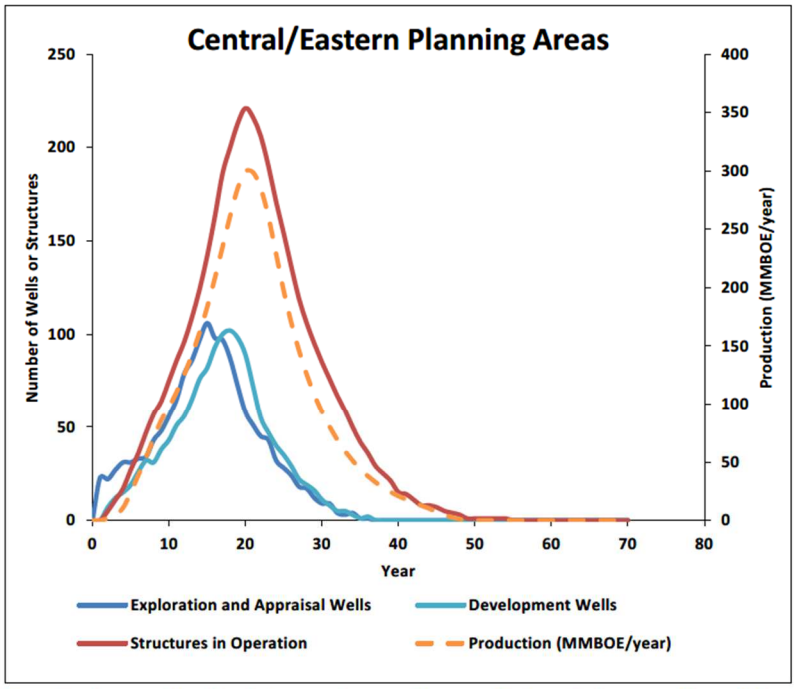
Areas Under Moratoria, BUREAU OF OCEAN ENERGY MANAGEMENT, https://www.boem.gov/Areas-Under-Moratoria/ (last visited Jan. 18, 2017).

Even if the lease moratorium is lifted in the Eastern Planning Area, the level of exploration and pipeline activity is largely unknown. Because a larger-scale opening of the Eastern Planning Area to leasing is not possible until 2022 and even then remains hypothetical, BOEM has conducted no analysis of the potential impacts of such an uncertain event. The most geographically relevant forward-looking analysis is likely the Environmental Impact Statement ("EIS") for multiple lease sales in the Central and Eastern Planning Areas between 2017 and 2022.[183] While this EIS covers only a small portion of the EIS, it provides the best available information on the level of activity that BOEM expects would occur for hypothetical future lease sales in the Eastern Planning Area.

For areas in the Central and Eastern Planning Areas offered for leasing between 2017–2022, 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—a nearly 40-year period.[184] Additionally, all these activities will take place in waters more than 800m deep, beyond the depths where Bryde's whales are commonly found.[185] This level of exploration and production activity remains purely speculative, but in no way can credibly be considered "high."

[183] *20127-2022 Gulf of Mexico Multisale Environmental Impact Statement*, BUREAU OF OCEAN ENERGY MANAGEMENT, https://www.boem.gov/GOM-Multisale-EIS/#Final-Programmatic-EIS (last visited Feb. 6, 2017).
[184] U.S. Department of the Interior, Bureau of Energy Management, OCS EIS/EA BOEM 2015-033, Gulf of Mexico OCS Oil and Gas Lease Sales: 2016 and 2017 (Sept. 2015) at Tables-8, *available at* https://www.boem.gov/BOEM-2015-033/.
[185] Status Review at 27.

Assuming lease sales are allowed throughout the Eastern Planning Area in 2022, and further assuming that the hypothetical lease sales attract bidders, and even further assuming that the leases are developed, the best information available from the EIS for the 2017–2022 lease sale schedule suggest that peak well construction and operation would not occur until several years after a hypothetical lease sale.[186]



Notes: Development wells could include some exploration wells re-entered and completed; structures do not include subsea structures. Vertical scale is consistent across similar figures to illustrate the relative differences within and across program areas.

Figure 3.2-6b. Timing and Magnitude of Exploration and Appraisal Wells, Development Wells, Structures in Operation, and Production in the Central/Eastern Planning Area (Mid-Price Scenario, Year 0 = 2017)

U.S. Department of the Interior, Bureau of Energy Management, OCS EIS/EA BOEM 2015-033, Gulf of Mexico OCS Oil and Gas Lease Sales: 2016 and 2017 (Sept. 2015) at 3-20, *available at* https://www.boem.gov/BOEM-2015-033/.

Similarly with respect to the construction of new pipelines under the 2017–2022 lease sale, BOEM concluded that "[r]elatively few new pipeline landfalls are anticipated because of the extensive nature of the existing pipeline network in the GOM."[187] Even if pipelines were expanded near areas where Bryde's whale are most commonly observed, the majority of the infrastructure development would not occur until many years after the hypothetical lifting of the moratorium.[188]

[186] OCS OGLP 2017-2022 at 3-20.
[187] OCS OGLP 2017-2022 at 3-25.
[188] OCS OGLP 2017-2022 at 3-25.

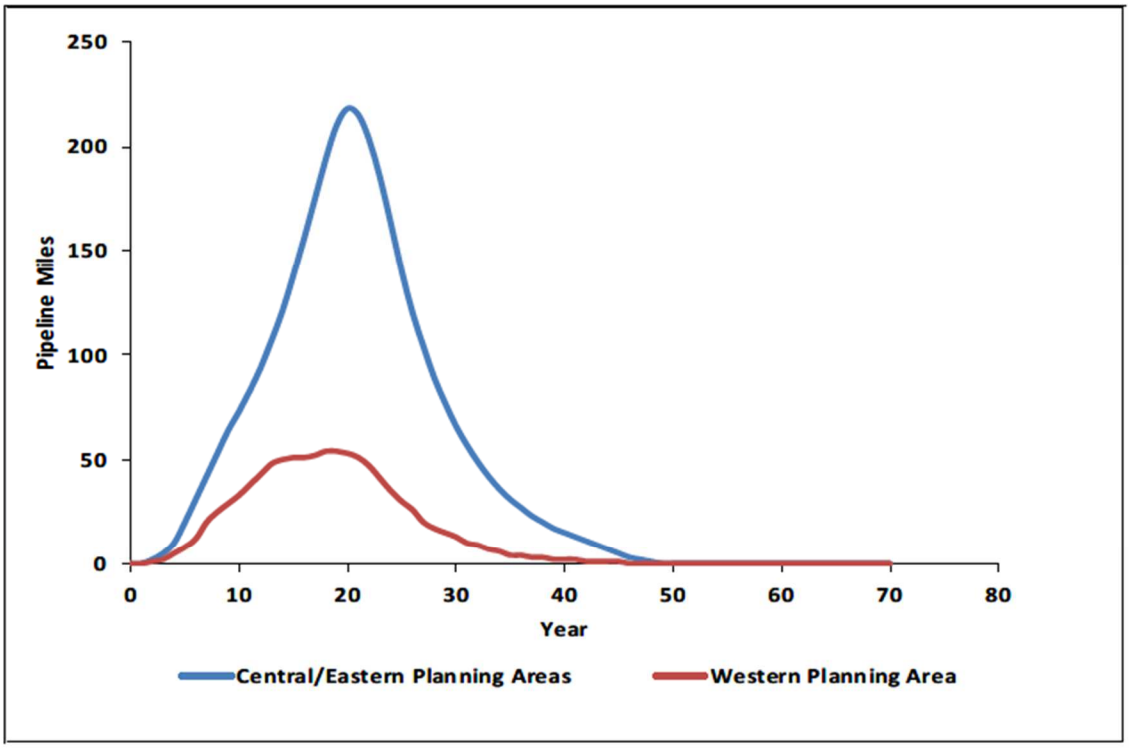


Figure 3.2-10. Pipeline Miles installed in the GOM Program Area (Mid-Price Scenario, Year 0 = 2017)

U.S. Department of the Interior, Bureau of Energy Management, OCS EIS/EA BOEM 2015-033, Gulf of Mexico OCS Oil and Gas Lease Sales: 2016 and 2017 (Sept. 2015) at 3-25, *available at* https://www.boem.gov/BOEM-2015-033/.

Therefore, the best information available suggests that any potential risks from oil and gas activities can only occur, if at all, many years in the future. Whether oil and gas activities increase at all in areas NMFS considers important to Bryde's whale conservation requires a tortured series of speculations about lifting the moratorium, newfound lease interest, the potential for hydrocarbon discoveries, and future market conditions.

Although other parts of the GoM have more oil and gas production activity, these activities do not impact areas that NMFS has identified as important for Bryde's whale conservation, and, in fact, only occur in areas where NMFS surmises (likely incorrectly) that no Bryde's whales are present.[189] In reality, 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 GoM are declining or that individuals are being harmed.[190] The best available data indicate that oil and gas development presents no current threat to Bryde's whales and, given the numerous protections in

[189] *See* 81 Fed. Reg. at 88,644.

[190] *See* A. Jochens *et al.*, U.S. DEPARTMENT OF THE INTERIOR MINERALS MANAGEMENT SERVICE, SPERM WHALE SEISMIC STUDY IN THE GULF OF MEXICO (MMS 2008-06) at 271 (Apr. 2008).

place to protect marine mammals (discussed in Section II.F.2. below), these threats are not likely to arise in the future.

b. Oil Spills and Spill Response Are Not Threats

In addition to the surmised risks from energy infrastructure, NMFS also considered potential impacts on Bryde's whales from oil spills and spill response activities. Here again, NMFS overestimates the likelihood that these impacts will occur as well as the risks presented by them, while, at the same time, significantly underestimating the impact of measures to prevent such incidents from occurring.

As described in detail above, the majority of the Eastern Planning Area is currently under a leasing moratorium and there is currently no production activity in the area. Only one pipeline passes through the De Soto Canyon, where Bryde's whales are most commonly observed.[191] In other areas of the GoM, where more oil and gas activity takes place, BOEM has recognized that "[r]ecently implemented safeguards, including additional subsea blowout preventer testing, required downhole mechanical barriers, well containment systems, and additional regulatory oversight make such an event less likely than in the past."[192] BOEM in the Final Environmental Impact Statement for its OCS leasing plan estimated probability of a catastrophic spill based on drilling and spill data; it found the chance infinitesimal, and explained that no spills greater than 150,000 barrels are expected to occur during the 2017–2022 period.[193]

Among the measures referenced by BOEM are those that industry undertook after Deepwater Horizon to prevent oil spills and improve oil spill responses. In addition to the added regulations, the oil and gas industry has also helped formulate 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.[194] The four JITFs covered Operating Procedures, Offshore Equipment, Subsea Well Control and Containment, and Oil Spill Preparedness and Response, and produced reports to form comprehensive and safe drilling operations.[195] API has also developed more than nine new standards that cover issues such as well design and construction, high-pressure and high-temperature design and equipment, and subsea issues; revised more than six documents on blowout prevention, choke and kill systems, and remotely operated tools and interfaces; and is developing at least nine recommended practices and specifications to cover drill-through equipment, marine drilling riser systems and equipment, and well control equipment.[196] Following Deepwater Horizon, industry also facilitated the development of the Center for Offshore Safety, an industry-sponsored group whose mission is to

[191] Status Review at 24 fig.9.
[192] OCS OGLP 2017-2022 at 3-27.
[193] OCS OGLP 2017-2022 at 3-27 to 3-29.
[194] AMERICAN PETROLEUM INSTITUTE, IMPROVEMENTS TO OFFSHORE SAFETY BY INDUSTRY AND GOVERNMENT (April 2015), *available at* http://www.api.org/~/media/Files/Oil-and-Natural-Gas/Exploration/Offshore/Improvements-to-Offshore-Safety-Report.pdf.
[195] *Id.*
[196] *Id.*

promote the highest level of safety for offshore drilling, completions, and operations by offering tools, information, and collaboration opportunities for industry.[197]

The federal government has also 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. These efforts are discussed in-depth in section II.F.2.b.

If a spill were to occur and use of dispersants were needed, there will be impacts to marine life and the environment, but there are reasons to believe that impacts to Bryde's whales may be minimal. As previously noted by NMFS, exposures to petroleum compounds and dispersants may have negative impacts on marine mammals, but those 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.[198]

Indeed, notwithstanding NMFS's conclusions to the contrary, no Bryde's whale mortalities can be positively attributed to the Deepwater Horizon incident, nor were Bryde's whales ever observed within oil during the incident. NMFS previously alleged that two Bryde's whale strandings in 2012—two years after the Deepwater Horizon incident—"are considered part of" an usual mortality event ("UME") which "includes cetaceans stranded prior to the Deepwater Horizon oil spill."[199] As such, even if these two strandings can be attributed to the UME, the UME has not been attributed to the Deepwater Horizon incident.

NMFS now suggests that as many as 17% of Bryde's whales in the GoM were killed by the Deepwater Horizon incident, 22% of reproductive females experienced reproductive failure, and 18% of the total population suffered adverse effects.[200] This information comes from the Final Programmatic Damage Assessment and Restoration Plan published by the Deepwater Horizon Trustees.[201] Its estimates regarding Bryde's whale impacts are largely baseless.

The Marine Mammal Working Group that conducted the analysis for the Damage Assessment did not observe any Bryde's whales in oiled waters in 2010. There was no identified Bryde's whale mortality in 2010 or 2011, no observations of behavioral changes, and no samples showing that Bryde's whales ingested oil or oil dispersants—or were at all impacted by these substances.[202] The sole basis for these incredibly pessimistic estimates was evidence that 48% of

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[197] *Id.*
[198] *See* Stock Assessment Report (2015).
[199] Stock Assessment Report (2015).
[200] 81 Fed. Reg. at 88,644.
[201] NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEEPWATER HORIZON OIL SPILL: FINAL PROGRAMMATIC DAMAGE ASSESSMENT AND RESTORATION PLAN AND FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (Feb. 2016), *available at* http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.
[202] DEEPWATER HORIZON MARINE MAMMAL INJURY QUANTIFICATION TEAM, MODELS AND ANALYSES FOR THE QUANTIFICATION OF INJURY TO GULF OF MEXICO CETACEANS FROM THE DEEPWATER HORIZON OIL SPILL (2015),

Bryde's whale habitat (as narrowly defined by NMFS) is within the least impacted part of the Deepwater Horizon oil footprint.[203] All the exposure risks and impairments were inferred—without explanation—from studies of dolphins in other areas with substantially higher oil exposure and other risk factors.[204] While the Associations are not saying that Bryde's whales did not suffer adverse impacts from the Deepwater Horizon incident, NMFS has presented no credible evidence of adverse impacts—certainly not sufficient evidence to support the SRT's "high" severity rating for the threat of oil spills and spill cleanup. More importantly, the information on which NMFS relies does not support the claim that past or potential future oil spills or responses are likely to drive GoM Bryde's whales to the brink of extinction in the foreseeable future. The best scientific information available indicates that no Bryde's whale mortalities have been attributed to the Deepwater Horizon incident, and that the likelihood of a future incident of that magnitude is too remote to measure at an appreciable level of probability.

3. Existing Regulatory Mechanisms Sufficiently Protect the Bryde's Whale

As previously noted, the SRT declined to evaluate the severity and certainty of threats at all. In evaluating the "inadequacy of existing regulatory mechanisms"[205] the Status Review Report stated that "the Team unanimously agreed this factor is a high threat to Bryde's whales in the GOMx."[206] Nonetheless, NMFS's proposed 12-month finding accepted without question the SRT's unexplained conclusion.[207] In fact, the proposed 12-month finding's characterization of the SRT's finding reveals its analytical deficiency: "Specifically, the SRT found that, given the current status of the Bryde's whale population in the Gulf of Mexico, it is clear that existing regulations have been inadequate to protect them."[208] In other words, the SRT concluded that Bryde's whales are threatened by inadequate regulations because the SRT does not believe Bryde's whales are abundant or widely distributed. Not only is this conclusion based on a profound misreading of the ESA's listing factors, it is substantively baseless—there are no abundance or range trend data for Bryde's whales and therefore there is no basis to infer that current abundance is related to the insufficiency of regulations.

The proposed 12-month finding elsewhere states that ". . . while we acknowledge that existing protective regulations are in place, we agree with the SRT's overall conclusion that the existing regulatory mechanisms have not prevented the current status of the GOMx Bryde's whale."[209] Stated differently, NMFS believes that regulatory mechanisms are in place to protect Bryde's whales in the GoM, but nonetheless concluded that the species was threatened under Factor D because it concluded that Bryde's whales were threatened under other factors.

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available at https://pub-dwhdatadiver.orr.noaa.gov/dwh-ar-documents/876/DWH-AR0105866.pdf (*hereinafter* DWH MMIQT).

[203] DWH MMIQT at Sec. 3.2.4.

[204] DWH MMIQT at Sec. 3.2.4.

[205] Status Review at 83.

[206] Status Review at 86.

[207] 81 Fed. Reg. at 88,648.

[208] 81 Fed. Reg. at 88,648.

[209] 81 Fed. Reg. at 88,648.

Both the drafters of NMFS's 12-month finding and the SRT members (which likely include the same personnel) profoundly misinterpret the analysis mandated under ESA Factor D by offering only the cursory conclusion that any evidence of risk is evidence of the inadequacy of existing regulations. If abundance and range alone determined whether existing regulations were adequate to protect a species, the ESA would not have required this separate inquiry on the adequacy of regulation. The Status Review Report's peer reviewers admonished the SRT on this issue, but were ignored.[210]

Indeed, assuming that Bryde's whale mortality was at its highest during the era of commercial whaling, even the pessimistic status depicted by the SRT indicates that existing regulations are effective. Absent existing regulatory mechanisms banning commercial whaling, the conservation status of Bryde's whales would be much more in question. Using only a population estimate as a measure of regulatory efficacy without any analysis of trends would allow NMFS to conclude that existing regulations rescued Bryde's whales from the brink of extinction just as easily as NMFS uses that single data point to suggest that existing regulations have failed to allow Bryde's whales to reach some indeterminate higher level of abundance.

As it were, the Bryde's whale is currently protected by a comprehensive suite of laws, regulations, and industry-driven initiatives.[211] These mechanisms have entirely eliminated the largest historic threat to the species—commercial whaling. These mechanisms also address each threat identified by NMFS. Although NMFS frames its analysis so that each regulatory mechanism by itself may appear inadequate to protect the species, these mechanisms cannot be viewed in isolation. Rather, the applicable body of regulatory mechanisms, taken as a whole, addresses and effectively minimizes each of the risks identified by NMFS. Furthermore, an ESA listing would not provide additional protection from these risks.[212] The discussion below includes a nonexclusive list of authorities that provide protection to the Bryde's whale, as well as an explanation of how these authorities address particular threats to the species.

Table 1: Statutes and Regulatory Mechanisms Protecting the Bryde's Whale

Statute	Citation	Protections
Marine Mammal Protection Act	16 U.S.C. §§ 1361–1423h	Imposes a moratorium on takings of marine mammals, subject to an exception that allows NMFS to permit some takings while placing conditions upon certain important activities.

[210] See Peer Review report.
[211] These initiatives are further discussed in Section II.C.2.a.
[212] Seismic surveys, oil and gas production, and fishing activities currently take place (albeit with heavy restrictions) within the permitting area, despite the presence of endangered or threatened sperm whales, sea turtles, and fish.

Statute	Citation	Protections
Outer Continental Shelf Lands Act	43 U.S.C. §§ 1331–1356a	Grants power to the Department of the Interior to administer mineral exploration and development in the OCS in a manner that protects natural resources. This includes issuing Notices to Lessees constituting guidance on OCSLA standards or regulations.
Oil Pollution Act	33 U.S.C. §§ 2701–2762	Streamlines and improves the government's and companies' response to oil spills, works to prevent their occurrence, and develops means for covering the cost of cleanup and damages.
Ports and Waterways Safety Act	33 U.S.C. §§ 1221–1236	Provides mechanisms to manage ports and vessel traffic to protect the marine environment and encourage safety and security.
Clean Water Act	33 U.S.C. §§ 1251–1387	Regulates discharges of pollutants into U.S. waters and creates pollution control programs.
International Convention for the Regulation of Whaling	62 Stat. 1716; 161 U.N.T.S. 72	Provides for the proper conservation of whale stocks, makes possible the orderly development of the whaling industry, and establishes the International Whaling Commission
Convention on International Trade in Endangered Species of Wild Fauna and Flora	27 U.S.T. 1087; 993 U.N.T.S. 243	Establishes an international framework to ensure that international trade in wild animals does not threaten the survival of the species in the wild, and establishes lists of species and accords them varying degrees of protection based on the level of their endangerment.

a. *Presence of Oil from Deepwater Horizon and Potential Risk from Future Oil Spills*

The 12-month finding states that "the Status Review suggests that oil and gas development in the Gulf of Mexico have been a contributing factor to limiting the GOMx Bryde's whale's current range to the De Soto Canyon."[213] The statement is wrong in many important ways. First, the best available scientific data indicates that Bryde's whales are not limited to the De Soto Canyon.[214] Second, neither the SRT nor NMFS provide scientific support for this statement.

[213] 81 Fed. Reg. at 88,648.
[214] Roberts *et. al* (2015).

Third, NMFS persisted in making this statement after the Status Review Report's peer reviewers questioned the basis for the conclusion.[215] And, finally, the 12-month finding misstates the conclusion reached by the SRT.

The SRT actually concluded that Bryde's whales' "currently known, limited distribution indicates regulatory mechanisms were not sufficient to maintain the population in the broader GOMx where energy exploration and production started in the 1950s and is now widespread, . . ."[216] Importantly, this sentence fragment represents the SRT's entire discussion of the inadequacy of regulatory mechanisms to protect Bryde's whales from potential impacts from oil and gas activities. Further, to the extent the SRT is suggesting that Bryde's whales ranged throughout the GoM up until offshore development began in the 1950s, that suggestion directly conflicts with the SRT's conclusions throughout the remainder of the Status Report. Moreover, even if the SRT could credibly show that unregulated or under-regulated oil and gas activities in the 1950s pushed Bryde's whales from their once abundant range throughout the GoM, this conclusion has no relevance under the ESA. Factor D requires NMFS to evaluate the adequacy of existing regulatory mechanisms—not opine on the potential inadequacy of regulations from 70 years ago.

Had the SRT examined the adequacy of existing regulatory mechanisms (as the ESA requires), as opposed to regulations in the 1950s, it would understand that offshore oil and gas activities are regulated by a comprehensive set of laws, regulations, and industry-driven initiatives specifically designed to protect marine mammals like Bryde's whales. The SRT would also have observed that comprehensive measures are in place that make the prospect of a future catastrophic oil spill incredibly remote. And, if incidents do occur, many of these same mechanisms would help ensure that potential impacts would be minimized and mitigated.

The primary law related to all aspects of offshore energy production is the Outer Continental Shelf Lands Act ("OCSLA"), as amended by the Energy Policy Act of 2005.[217] The Oil Pollution Act of 1990 further addresses impacts from oil spills,[218] as do a host of other environmental laws. After the Deepwater Horizon spill, the Obama Administration launched an aggressive review and reform of U.S. offshore energy regulation. As a first step, it organized a commission tasked with making recommendations to improve the safety of offshore production, including improving oil spill response.[219] The commission's review highlighted many areas for improvement in administration of the OCSLA. After the commission issued its report, a fundamental restructuring of the management agencies led to the creation of the Bureau of Ocean Energy Management ("BOEM") and the Bureau of Safety and Environmental Enforcement ("BSEE"). The agencies then issued joint regulations, which strengthened oil spill provisions and oversight.[220]

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[215] See Peer Review report.
[216] Status Review at 86.
[217] 43 U.S.C. §§ 1331–1356a.
[218] 33 U.S.C. §§ 2701–2762.
[219] NATIONAL COMMISSION ON THE BP DEEPWATER HORIZON OIL SPILL AND OFFSHORE DRILLING, DEEP WATER: THE GULF OIL DISASTER AND THE FUTURE OF OFFSHORE DRILLING (Jan. 2011).
[220] 76 Fed. Reg. 64,431 (Oct. 18, 2011).

Since the initial response to the Deepwater Horizon incident, BOEM continues to refine its management and increase safety provisions under existing legal authorities. Examples of these improvements include: (1) instituting an investigations and review unit to expose agency and licensee loopholes; (2) implementing a recusal policy for employees; (3) strengthening its adherence to National Environmental Policy Act obligations by conducting a review of the use of categorical exclusions; and (4) renewing its commitment to public input and scientific analysis.[221] The BSEE, for its part, has: (1) issued stricter drilling safety rules; (2) increased its inspection and engineering workforces; and (3) required that all operators demonstrate that they possess the equipment and ability to contain a subsea blowout, among other actions. Both agencies have also increased their commitment to development of emerging technologies to increase environmental and human safety.

The regulatory mechanisms in place to protect Bryde's whales from potential impacts from oil and gas activities have never been stronger or more comprehensive. As such, the best information available demonstrates that these mechanisms are more than adequate.

b. Vessel Strikes

The 12-month finding stated that "We agree that currently there are no regulatory mechanisms in the Gulf of Mexico to address ship strikes, which the SRT identified as one of the primary threats facing the species."[222] As it were, the SRT overstates the risk posed by vessel strikes and is simply wrong about the lack of mechanisms to protect against ship strikes.

Vessel strikes are not a "primary threat" to Bryde's whales—they are incredibly rare. In 2001, the Marine Mammal Commission conducted a comprehensive review of whale strandings and collision reports dating back to the 1800s.[223] That report revealed that, throughout history, there have only been three reports of Bryde's whales being killed by ship strikes: (1) a mortality from 1950 in the Red Sea; (2) a mortality off Australia in 1992; and (3) a mortality in the Caribbean in 2000.[224] Since that report was published, NMFS provided one additional report of a fatal ship strike near Tampa, Florida.[225] Notably, only one of these strandings took place in the GoM.

Notwithstanding the relative absence of risks from vessel strikes, numerous regulations are in place to protect Bryde's whales from ship traffic. Bryde's whales, like all marine mammals, are protected under the Marine Mammal Protection Act ("MMPA").[226] The MMPA confers upon NMFS regulatory authority to limit marine mammal takings to levels that will not be of detriment

[221] *Regulatory Reforms*, BUREAU OF OCEAN ENERGY MANAGEMENT, https://www.boem.gov/Regulatory-Reform/ (last visited Jan. 10, 2016).
[222] 81 Fed. Reg. at 88,648.
[223] *See* Laist (2001).
[224] Laist (2001) at 48, 69.
[225] 2012 Stock Assessment.
[226] 16 U.S.C. §§ 1361–1423h.

to the species.[227] It further imposes a moratorium on all taking and importing of marine mammal species and their products, subject to exceptions for certain activities pursuant to NMFS review and determination.[228] NMFS has used its MMPA authority to protect whale populations when it has deemed it necessary to do so, including to prevent ship strike mortality. In the north Atlantic, for example, NMFS has used this authority to limit vessel speeds in order to prevent North Atlantic right whale strikes.[229]

The Ports and Waterways Safety Act ("PWSA") provides additional authority to regulate against ship strikes,[230] and has similarly been used to protect the North Atlantic right whale. The PWSA requires mandatory ship reporting systems, which are considered a critical aid in preventing strikes as they allow direct communication about mammal sightings to ship operators in high-risk areas and assist in gathering data on where strikes are likely to occur.[231] Narrowed traffic separation lanes, recommended routes, and transit closures could potentially be promulgated under either the PWSA or the MMPA to increase protection to the Bryde's whale.

Finally, there are also specific vessel strike avoidance measures in the GoM, including those identified in a Notice to Lessees and Operators[232]:

> 1. Maintain a vigilant watch for marine mammals and sea turtles and slow down or stop their vessel to avoid striking protected species.
> 2. When whales are sighted, maintain a distance of 100 yards (91 meters) or greater from the whale. If the whale is believed to be a North Atlantic right whale, vessel personnel should maintain a minimum distance of 500 yards (460 meters) from the animal (50 CFR 2224.103).
> 3. When sea turtles or small cetaceans are sighted, attempt to maintain a distance of 50 yards (45 meters) or greater whenever possible.
> 4. When cetaceans are sighted while a vessel is underway, attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area.
> 5. 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. A single cetacean at the

[227] 16 U.S.C. § 1373.
[228] 16 U.S.C. § 1371.
[229] 73 Fed. Reg. 60,173 (Oct. 10, 2008).
[230] 33 U.S.C. §§ 1221–1236.
[231] 66 Fed. Reg. 58,066 (Dec. 20, 2001).
[232] U.S. DEPARTMENT OF THE INTERIOR, JOINT NTL NO. 2016-G01, NOTICE TO LESSEES AND OPERATORS (NTL) OF FEDERAL OIL, GAS, AND SULPHUR LEASES IN THE OCS, GULF OF MEXICO OCS REGION: VESSEL STRIKE AVOIDANCE AND INJURED/DEAD PROTECTED SPECIES REPORTING (Aug. 30, 2016), *available at* https://www.boem.gov/BOEM-NTL-No-2016-G01/.

surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures should always be exercised.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When vessel personnel sight animals in the vessel's path or in close proximity to a moving vessel, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area.

Even if vessel strikes could be shown to have any meaningful impact on Bryde's whale abundance, the MMPA and PWSA provide NMFS and other regulatory agencies ample, adequate authority to implement regulations mitigating that threat. Furthermore, these mechanisms are the most appropriate for doing so, as these processes involve the relevant stakeholders and scientific experts. The best information available demonstrates that regulatory mechanisms are more than adequate to protect Bryde's whales from vessel strikes and that an ESA listing would not provide additional protection.

c. Acoustic Impacts

As with oil and gas production activities, several legal and regulatory measures currently protect Bryde's whales from the potential effects of seismic surveys and activities, including those used for oil and gas production. We also note that for over 40 years, the federal government and academic scientists have studied the potential impacts of seismic activities on marine mammal populations and have concluded that any such potential impacts are insignificant.[233]

BOEM has developed a Draft Programmatic Environmental Impact Statement ("PEIS") for geological and geophysical ("G&G") activities in the GoM, which was made available for public review and comment in September 2016.[234] The PEIS development process, mandated by the National Environmental Policy Act ("NEPA"),[235] requires the agency to take a "hard look" at the alleged environmental impacts of seismic survey activities before deciding whether to permit such activities.[236] Moreover, the environmental review process set forth by NEPA requires public review and comment periods. BOEM has held twelve public meetings so far in its PEIS

[233] *See, e.g.*, BUREAU OF OCEAN ENERGY MANAGEMENT, SCIENCE NOTES (Aug. 22, 2014), *available at* http://www.boem.gov/BOEM-Science-Note-August-2014/ ("To date, there has been no documented scientific evidence of noise from air guns used in geological and geophysical (G&G) seismic activities adversely affecting marine animal populations or coastal communities."; BUREAU OF OCEAN ENERGY MANAGEMENT, SCIENCE NOTES (Mar. 9, 2015), *available at* https://www.boem.gov/BOEM-Science-Note-March-2015/ (there has been "no documented scientific evidence of noise from air guns used in geological and geophysical (G&G) seismic activities adversely affecting animal populations.")

[234] 81 Fed. Reg. 67,380 (Sept. 30, 2016).

[235] 42 U.S.C. § 4321–4370h.

[236] *See Motor Vehicle Manufacturers Association of the United States, Inc. v. State Farm Mutual Automobile Insurance Co.*, 463 U.S.C. 29 (1983).

development process, mostly in communities around the GoM.[237] It also accepted written comments on the scope of the PEIS and on the draft, and will consider these comments and will take comments again on the final version of the PEIS as mandated by NEPA and the Administrative Procedure Act.[238]

NMFS is a cooperating agency with BOEM on the PEIS, and once complete, NMFS will use it as a basis for environmental review of requests for incidental take authorizations ("ITAs") under the MMPA.[239] It is reasonably certain that NMFS will make ITA determinations for individual projects permitted under the PEIS, once it is complete, since NMFS has done so for seismic activities in other regions.[240]

Under OCSLA, BOEM may only permit a geological and geophysical survey if it is not "unduly harmful to aquatic life."[241] While BOEM may permit some seismic activity in areas near the Bryde's whale observed habitat, it may only do so after a rigorous public and scientific review process. BOEM's implementing regulations are even more restrictive, stating that once a permit is issued, the licensee must not cause harm or damage to aquatic life.[242] The OCSLA's strict regulations make it highly unlikely that BOEM will issue seismic survey permits that will inflict undue harm upon Bryde's whales and, even if such a permit were to be issued, an ESA listing would not provide a greater level of protection or scrutiny during the environmental review process.

d. Fishing Gear Entanglement, Overfishing, and Prey Reduction

As discussed below, fishing gear entanglement is not a threat to Bryde's whales because: (1) there are only 2 known Bryde's whale entanglements in U.S. waters in nearly 50 years and both involved gear that has been banned for a decade;[243] and (2) the areas most important to Bryde's whale conservation are closed to most types of fishing. Accordingly, if fishing ever did threaten Bryde's whales, those threats are fully addressed through regulatory mechanisms.

The Magnuson-Stevens Fishery Conservation and Management Act ("MSA") requires federal fisheries catches to remain within annual catch limits such that overfishing does not occur.[244] This law has been hugely successful in rebuilding overfished populations and limiting

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[237] *See Gulf of Mexico Geological and Geophysical (G&G) Activities Programmatic Environmental Impact Statement (EIS)*, BUREAU OF OCEAN ENERGY MANAGEMENT, https://www.boem.gov/Gulf-of-Mexico-Geological-and-Geophysical-Activities-Programmatic-EIS/ (last visited Jan. 12, 2017).
[238] 5 U.S.C. § 553(c).
[239] *See* 78 Fed. Reg. 27,427 (May 10, 2013).
[240] *See, e.g., Oil & Gas: Incidental Take Authorizations*, NOAA FISHERIES, http://www.nmfs.noaa.gov/pr/permits/incidental/oilgas.htm (last updated Dec. 7, 2016) (providing a complete list of Incidental Take Authorizations related to oil and gas activities).
[241] 43 U.S.C. § 1340(a)(1).
[242] 30 C.F.R. § 580.20(b).
[243] Scott-Denton (2011).
[244] 16 U.S.C. § 1853(a)(15).

future threats from depletion.[245] In the GoM, only four stocks are overfished or experiencing overfishing, and prey components of the Bryde's whale diet have actually been increasing or consistently healthy since the mid-1980s, as described above.

United States fishery management laws are among the strictest and most comprehensive in the world, and they mandate ecosystem considerations throughout the management process. Nationwide, fisheries scientists and managers are devoting considerable resources to ecosystem-based management practices. The MSA explicitly requires fishery management councils to consider ecosystem interactions when specifying a fishery's optimum yield.[246] However, it is a matter of scientific consensus that best management practices for ecosystem interactions are highly localized—and MSA therefore directs the development of regionally appropriate ecosystem approaches. In some regions, this means the adoption of formal ecosystem plans. In others, such as the GoM, biological reference points within single-stock assessments are used to account for ecosystem interactions including predation rates and removals. Congress recognized this when it stated in the 2006 MSA reauthorization that "[a] number of the Fishery Management Councils have demonstrated significant progress in integrating ecosystem considerations in fisheries management using the existing authorities provided under this Act."[247]

The Atlantic Tunas Convention Act, which authorizes NMFS to promulgate regulations to carry out recommendations of the International Commission for the Conservation of Atlantic Tunas, is another source of law that restricts fishing activities within the GoM.[248] Under this authority, NMFS implemented a closed area in De Soto Canyon designed to reduce discards of undersized swordfish, billfish, sharks, and other species. Pelagic longline fisheries have been barred from the area for over a decade,[249] and are therefore not contributing to gear entanglement in the whale's observed habitat. While it is possible that derelict gear predating this regulation still is used in the area, fishery regulations have adequately protected the whale from future interactions to the entire extent possible. Although a recently approved Fishery Management Plan amendment would allow transiting of the area, fishing gear must be stowed according to strict regulations and there is thus no risk of fishing activity returning to the De Soto Canyon.[250]

e. International Law

International law entirely obviates the threat of hunting or intentional capture of the Bryde's whale, both now and in the future. The International Whaling Commission, which is tasked with whale conservation and whaling regulation under the International Convention for the

[245] *See, e.g.*, Eric Schwaab, *Taking Stock: The Magnuson-Stevens Act Revisited: The Magnuson Act Thirty-Five Years Later*, 17 ROGER WILLIAMS U. L. REV. 14 (2012).
[246] 16 U.S.C. § 1802(33)(A).
[247] 16 U.S.C. § 1801(a)(11).
[248] 16 U.S.C. §§ 971–971k.
[249] 50 C.F.R. § 635.21(c)(2)(iv).
[250] NOAA FISHERIES, FINAL AMENDMENT 7 TO THE 2006 CONSOLIDATED ATLANTIC HIGHLY MIGRATORY SPECIES FISHERY MANAGEMENT PLAN (Aug. 2014).

Regulation of Whaling,[251] has maintained a moratorium on commercial whaling since 1986.[252] Even if such whaling were to occur, CITES has listed the Bryde's whale throughout its range under Appendix 1.[253] This listing means that the species is considered threatened with extinction and has the effect of prohibiting international trade in its specimens and parts.[254] Taken together, these laws effectively eliminate any threat from direct harvest.

4. Other Natural or Manmade Factors Do Not Threaten the Bryde's Whale

NMFS identifies vessel strikes, fishing gear entanglement, anthropogenic noise, and small population size as "other natural or manmade factors" that may threaten GoM Bryde's whales with extinction.[255] As discussed below, NMFS significantly misconstrues these factors and the potential impacts they may have on Bryde's whale abundance.

SRT and NMFS also considered a number of other potential factors, such as trophic impacts from commercial harvest of prey, climate change, plastics and debris, and aquaculture.[256] Because the SRT found these threats to be "low" in both certainty and severity, and because NMFS did not name them as threats to the continued existence of the Bryde's whale subspecies, we do not discuss them here.

a. Vessel Strikes

The 12-month finding cites the SRT's "highly certain" finding that vessel strikes pose a "high severity" threat to the Bryde's whale with high certainty; however, NMFS identified only a single instance of a Bryde's whale in the GoM being killed from a ship strike.[257] In fact, the very study cited by the SRT and NMFS to support the threat analysis reported that, of the 31 dead whale strandings in the GoM from 1975 to 1996, only one stranding of a sperm whale was identified as a possible ship strike.[258] Similarly, in its evaluation of six Bryde's whale strandings on the Atlantic coast between 1975 and 1996, Laist (2001) found that none of the six Bryde's whales showed signs of a ship collision."[259]

With the exception of observed mortalities off New Zealand where a Bryde's whale population resides in the small and heavily trafficked Hauraki Gulf, ship strike mortality is low throughout the Bryde's whale's worldwide range. In 2001, the Marine Mammal Commission conducted a comprehensive review of whale strandings and collision reports dating back to the

[251] Convention for the Regulation of Whaling with Schedule of Whaling Regulations, Dec. 2, 1946, 62 Stat. 1577, TIAS No. 1708, 161 U.N.T.S. 361, *codified at* 16 U.S.C. §§ 916–916l.
[252] Chairman's Report of the Thirty-Fourth Annual Meeting, 22 Rep. Intl. Whaling Comm'n 20, 201 (1983).
[253] Convention on International Trade in Endangered Species, Appx 1.
[254] 50 C.F.R. § 23.13.
[255] 82 Fed. Reg. at 88,652.
[256] 82 Fed. Reg. at 88,648–52.
[257] 82 Fed. Reg. at 88,648–49.
[258] Laist (2001).
[259] Laist (2001).

1800s;[260] the IWC also maintains a worldwide ship strike database that includes both historical and current records.[261] These sources reveal that, throughout history, there have only been three reports of Bryde's whales being killed by ship strikes outside of New Zealand: (1) a mortality off the Canary Islands in 1999, which has not been confirmed; (2) a mortality from 2000 in the Caribbean Sea; and (3) a mortality in the southern Pacific Ocean in 2009.[262] The best available information is therefore rather conclusive—vessel strikes have never been a significant source of Bryde's whale mortality in the GoM or, with the exception of the Hauraki Gulf off New Zealand, anywhere else in the world.

The relative absence of vessel collisions with Bryde's whales in the GoM is likely attributed to multiple factors, including the low level of vessel traffic that occurs within the area of the GoM where most Bryde's whales are found.[263] Notably, this fact is demonstrated by NOAA's tracking of transponder data and the SRT's analysis of that data.[264]

Notwithstanding the historic absence of collision morality in the GoM and the low level of vessel traffic that occurs in areas important for Bryde's whale conservation, NMFS suggests that this threat will now arise due to construction of the third lane of the Panama Canal and NMFS's presumptions of the impact of that expansion on vessel traffic in the GoM.[265] For this proposition, NMFS cites a report on port modernization focused on changes after the expansion of the Canal; the report cites figures not on increased vessel traffic but rather increased *cargo tonnage*.[266] In reality, the report explained that there is an expected increase in traffic of post-Panamax vessels (larger ships that can carry nearly three times the cargo that ships previously navigating the Panama Canal were able to carry).[267] As such, projected increases in cargo tonnage do not provide evidence of a net increase in vessel traffic. To the contrary, the projected expansion of post-Panamax vessels and their significantly larger capacity could result in decrease in shipping traffic in the GoM.

Moreover, shipping between the Panama Canal and the GoM's two largest ports (Port of South Louisiana and Port of Houston)[268] would likely not traverse those areas where Bryde's whales are most commonly found. For the modest amount of vessel traffic that would continue to traverse areas important to Bryde's whale conservation, there are measures such as vessel speed

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[260] *See* Laist (2001).
[261] *Ship Strikes: Collisions Between Whales and Vessels*, INTERNATIONAL WHALING COMMISSION, https://iwc.int/ship-strikes (last visited Feb. 3, 2017).
[262] Laist (2001) at 48, 69.
[263] Status Review at 73.
[264] Status Review at 73.
[265] 82 Fed. Reg. at 88,648.
[266] INSTITUTE FOR WATER RESOURCES & U.S. ARMY CORPS OF ENGINEERS, U.S PORT AND WATERWAYS MODERNIZATION: PREPARING FOR POST-PANAMAX VESSELS 11 (June 20, 2012), *available at* http://www.iwr.usace.army.mil/Portals/70/docs/portswaterways/rpt/June_20_U.S._Port_and_Inland_Waterways_Preparing_for_Post_Panamax_Vessels.pdf.
[267] U.S. PORT AND WATERWAYS MODERNIZATION passim.
[268] U.S. ARMY CORPS OF ENGINEERS, SOUTHWESTERN DIVISION, GALVESTON DISTRICT, COASTAL TEXAS PROTECTION AND RESTORATION STUDY (2015), *available at* http://www.swg.usace.army.mil/Portals/26/docs/PAO/TC/Coastal%20Texas%20Section%20905_b_%20-2015%20May%2018.pdf.

restrictions and detailed marine mammals avoidance protocols that further protect Bryde's whales against the threat of vessel strikes.[269]

In sum, the best available information indicates that vessel collisions with Bryde's whales in the GoM are incredibly rare, and that vessel traffic in areas where Bryde's whales are most commonly found is low and will likely remain low. Where vessel traffic occurs near Bryde's whales, speed restrictions and protocols are in place to avoid collisions. As such, the best available information indicates that vessel collisions do not threaten Bryde's whales and never have threatened Bryde's whales.

b. Fishing Gear Entanglement

NMFS concludes that the threat of entanglement in fishing gear is a moderate threat to Bryde's whales in the GoM.[270] Gear entanglement of Bryde's whales, however, has never been shown to pose a threat of extinction in the GoM or anywhere else in their worldwide range.

Worldwide, NMFS cites a handful of instances where Bryde's whales became entangled in fishing gear, and fewer instances where the entanglement resulted in mortality.[271] Moreover, in the few instances where Bryde's whales became entangled in fishing gear, the fisheries and gear are not used near areas considered important to Bryde's whale conservation – or at all. Indeed, in the GoM, there have been no reports of Bryde's whale entanglement or other fishing-related mortality or serious injury between 1998 and 2013.[272] In fact, there are no known interactions between Bryde's whales and pelagic longline gear or bottom longline gear.[273]

Of the twelve fisheries listed in Table 7 of the Status Review Report, only six are likely to have effort near the De Soto Canyon.[274] Of these, three use hook-and-line gear that is unlikely to harm Bryde's whales.[275] Of the remaining three listed fisheries: the GoM pelagics longline fishery is prohibited in the De Soto Canyon[276] and the GoM shrimp trawl fishery has highest effort west of the De Soto Canyon and takes place in shallower water than those the Bryde's whale is known to inhabit.[277] This leaves only the GoM butterfish trawl fishery as a potential threat to Bryde's

[269] *See* U.S. DEPARTMENT OF THE INTERIOR, JOINT NTL NO. 2016-G01, NOTICE TO LESSEES AND OPERATORS (NTL) OF FEDERAL OIL, GAS, AND SULPHUR LEASES IN THE OCS, GULF OF MEXICO OCS REGION: VESSEL STRIKE AVOIDANCE AND INJURED/DEAD PROTECTED SPECIES REPORTING (Aug. 30, 2016), *available at* https://www.boem.gov/BOEM-NTL-No-2016-G01/.
[270] 82 Fed. Reg. at 88,649.
[271] Status Review at 63.
[272] Stock Assessment Report (2015).
[273] 82 Fed. Reg. at 88,649.
[274] Status Review at 64–68.
[275] Status Review at 64–68.
[276] Status Review at 65.
[277] Status Review at 66.

whales,[278] but the butterfish trawl fishery is small and has only two participants currently permitted.[279]

There is also no reasonable prospect that gear entanglement risks will suddenly materialize in the GoM. The De Soto Canyon, the only place in the GoM where NMFS believes Bryde's whales exist, is closed to longline fishing.[280] Longline fishing boats are not even allowed to be present in, or traverse, the De Soto Canyon. Additionally, fishing effort in the GoM is declining generally.

Given that NMFS and the SRT have repeatedly recognized that most fisheries do not impact the Bryde's whale and that there are few recognized incidents of Bryde's whale entanglements worldwide and none within the GoM, it is unclear why the SRT rated and NMFS affirmed the risk of entanglement to Bryde's whales as "moderate." The best information available strongly suggests that Bryde's whales in the GoM were never threatened with extinction due to gear entanglement, and there is no reasonable prospect that this threat will suddenly emerge now or in the foreseeable future.

c. Anthropogenic Noise

In evaluating the threats to Bryde's whales, the SRT combined the alleged noise impacts of seismic activity, shipping noise, and oil and gas activities into an "anthropogenic noise" category for which NMFS assigned a "high" threat ranking.[281] The best scientific data available, however, suggest that Bryde's whales are not in danger of extinction because of anthropogenic noise.

NMFS provides no direct evidence that acoustic impacts harm Bryde's whales. Instead, the 12-month finding cites studies describing the range of Bryde's whale calls and studies hypothesizing impacts on other marine mammals or on marine mammals generally.[282] The most generous reading of the studies underpinning NMFS's finding is that some level of some types of anthropogenic noise may adversely impact some marine mammals to some minor degree, if at all. There is no information to suggest that Bryde's whales are presently harmed or would be harmed in the future by anthropogenic noise in the GoM. Generalized assertions of such peril do not constitute the best scientific information available.

Even if adverse impacts from anthropogenic noise could be credibly shown for Bryde's whales, NMFS failed to show that Bryde's whales in the GoM are exposed to that marine sound. Ship noise likely occurs throughout the GoM and every other marine environment inhabited by Bryde's whales, but arguably less so in the De Soto Canyon because a large percentage of GoM

[278] Status Review at 66.
[279] 82 Fed. Reg. at 88,649.
[280] 50 C.F.R. § 635.21.
[281] 82 Fed. Reg. at 88,652.
[282] 82 Fed. Reg. at 88,650.

vessel traffic is constituted of commercial fishing vessels that are prohibited to fish in the area.[283] While NMFS may be correct that noise levels increase with vessel speed,[284] as noted above, much of the area where Bryde's whales are most commonly found are under speed restrictions.[285]

Further, as NMFS has acknowledged,[286] oil and gas exploration does not occur in the De Soto Canyon.[287] Nor is there significant oil and gas activity anywhere in the Eastern Planning Area that would provide a meaningful contribution to anthropogenic noise levels. In fact, one peer reviewer noted that "the Bryde's whale area is as quiet as it gets for the GOM, owing to a lack of nearby seismics and little shipping."[288]

Therefore, the entirety of the threat of noise from oil and gas exploration is a future risk, dependent upon the potential opening of the Eastern Planning Area overlapping the De Soto Canyon after 2022. As discussed above, even if the Eastern Planning Area is more broadly opened for leasing, the increase in anthropogenic noise is, at best, a highly conjectural threat that may, or may not, arise based on future leasing decisions, lease interest, production rates, and highly uncertain presumptions about geology and market speculation.

Moreover, regardless of whether oil and gas activities occur in areas presumed important to Bryde's whales now or in the future, those activities will be highly regulated by a strict regulatory regime. Many of these measures are outlined in a Notice to Lessees and Operators issued by BOEM, and include ramp-up procedures, use of a minimum sound source, protected species observation and reporting, and more.[289] In fact, the best available information shows that no long-lasting or severe impacts to marine mammal populations from seismic activities have occurred in the GoM. BOEM has even concluded that "the best available information, while providing evidence for concern and a basis for continuing research, does not, at this time, provide grounds to conclude that these [seismic] surveys would disrupt behavioral patterns with more than negligible population-level impacts."[290]

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[283] *See* 50 C.F.R. § 635.21.
[284] 82 Fed. Reg. at 88,651.
[285] U.S. DEPARTMENT OF THE INTERIOR, JOINT NTL NO. 2016-G01, NOTICE TO LESSEES AND OPERATORS (NTL) OF FEDERAL OIL, GAS, AND SULPHUR LEASES IN THE OCS, GULF OF MEXICO OCS REGION: VESSEL STRIKE AVOIDANCE AND INJURED/DEAD PROTECTED SPECIES REPORTING (Aug. 30, 2016), *available at* https://www.boem.gov/BOEM-NTL-No-2016-G01/.
[286] 81 Fed. Reg. at 88,644.
[287] *See* OCS OGLP 2017-2022 at 2-20.
[288] Peer Review Report.
[289] U.S. DEPARTMENT OF THE INTERIOR, BOEM NTL NO. 2012-G02, NOTICE TO LESSEES AND OPERATORS (NTL) OF FEDERAL OIL, GAS, AND SULPHUR LEASES IN THE OCS, GULF OF MEXICO OCS REGION: IMPLEMENTATION OF SEISMIC SURVEY MEASURES AND PROTECTED SPECIES OBSERVER PROGRAM (Jan. 1, 2012), *available at* https://www.boem.gov/BOEM-NTL-2016-G02/.
[290] U.S. DEPARTMENT OF THE INTERIOR BUREAU OF OCEAN ENERGY MANAGEMENT, BOEM 2016-049, GULF OF MEXICO OCS PROPOSED GEOLOGICAL AND GEOPHYSICAL ACTIVITIES 4-59 (Sept. 2016), *available at* https://www.boem.gov/BOEM-EIS-2016-049-v1/.

Similarly, the Navy conducts only very limited sonar activity in the GoM.[291] Where seismic surveys are conducted (again, not in or near areas considered important to Bryde's whales), they are conducted pursuant to strict regulatory requirements which include, but are not limited to, observers, start-up clearances, ramp-up procedures, and shut-down requirements to reduce or eliminate harm to marine mammals.[292]

As such, the best scientific information available indicates that the areas considered most important to GoM Bryde's whales are the least impacted by anthropogenic noise. Projections that anthropogenic noise may one day increase in these areas are highly speculative. Even if sources of anthropogenic noise were allowed near areas where Bryde's whales are most commonly found, the best available data show that those activities would be highly regulated and that there are no adverse impacts from those activities on Bryde's whales—or any other marine mammals.

d. Demographic Concerns

The SRT's analysis of the threats posed to the GoM Bryde's whale by its population size is flawed in several ways. To begin with, the SRT presumes that Bryde's whales in the GoM are isolated from other whales.[293] That is not the case. Two of the five samples obtained for the Rosel & Wilcox (2014) analysis—40% of the samples—were from the north Atlantic and were found to be nearly identical to the other whales sampled from the GoM, which suggests that they are connected to an Atlantic population. Absent the SRT's unsupported conclusion of genetic isolation, all of the demographic threats alleged by the SRT cease to be threats at all.

Even assuming the data supported the SRT's conclusions about genetic isolation (which it does not), the number of whales in the GoM is perhaps the second most important consideration in assessing demographic risks. This part of the SRT's analysis is particularly unclear. The SRT first declares that the estimated total abundance for the northern GoM is 33.[294] By using this estimate, the SRT ignored the more rigorously derived estimate of 44 in *Roberts et al. (2016)*. Doing so represents a failure to use the best scientific information available.

Nonetheless, the SRT then introduced two more population estimates that are not used in any scientific literature, not discussed anywhere else in the Status Report, and never explained:

> The Team agreed by consensus that even allowing for the uncertainty about presence of Bryde's whales in non-U.S. waters of the GoMx, given the best available science, there are fewer than 250 mature individuals, and more likely that a value of 100 is plausible.[295]

[291] *See* DEPARTMENT OF THE NAVY, ATLANTIC FLEET TRAINING AND TESTING FINAL ENVIRONMENTAL IMPACT STATEMENT / OVERSEAS ENVIRONMENTAL IMPACT STATEMENT (Aug. 2013).
[292] Stock Assessment Report (2012).
[293] Status Review at 41.
[294] Status Review at 41.
[295] Status Review at 41.

To be clear, with this statement, the SRT herein declares that the best available estimate of mature Bryde's whales in the GoM is between 100 and 250. Importantly, the SRT clearly states that this is an estimate of *mature* whales only.[296] When calves and juveniles are added to the estimate, the SRT's estimate would necessarily exceed 100–250 individuals.

The reason the SRT was estimating the number of mature whales in the GoM was in order to examine the "effective population size" of Bryde's whales. An "effective population size" is an estimate of the number of sexually mature individuals that are capable of reproducing.[297] Effective population size estimates can be important for conservation and recovery planning because they provide a metric for estimating the prospect of genetic depression and loss of biological fitness as a result of genetic depression.[298] As effective population size decreases, inbreeding likely increases and therefore the likelihood of genetic depression increases as well.

Franklin (1980) introduced a generic "rule of thumb" that indicated that populations below 50 individuals are likely to experience inbreeding depression in the short-term, and populations below 500 will experience inbreeding depression in the long-term. Importantly, simply noting that a species is at risk of genetic depression does not mean that the species is necessarily at risk of extinction. Inbreeding depression is present in all small populations and some deleterious recessive alleles will be present in all populations.

Indeed, each study of Bryde's whale genetics identified evidence of low genetic diversity.[299] Low genetic diversity is a characteristic universally shared by all Bryde's whale populations by virtue of their population dynamics.[300] As the Status Review Report's peer reviewers noted to the SRT, low genetic diversity is not, in and of itself, a threat to species.[301] Nor is there evidence that GoM Bryde's whales' observed genetic diversity is lower than historic levels—there are no population trend data for Bryde's whales, much less trends related to Bryde's whale genetic diversity.

For inbreeding and genetic depression to negatively affect a species, they must also affect traits that influence population viability. Indeed, the "50/500 standard" repeatedly cited by the SRT was characterized by the study authors as a genetic "warning light" and a target for conservation planning.[302] As such, even if the effective population size of Bryde's whales in the GoM were below 50 or 500 (and the population were closed off with no connectivity), these facts alone would provide an insufficient basis on which to list the species.

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[296] Status Review at 41.
[297] I.R. Franklin and R. Frankham, How Large Must Populations be to Retain Evolutionary Potential, 1.1, 69-73 (Animal Conservation 1998). Hereafter "Franklin and Frankham (1998)".
[298] Franklin and Frankham (1998).
[299] Jung (2015); Cypriano-Souza (2016); Pastene (2015); Cerchio (2015); Luksenburg (2015); Rosel & Wilcox (2014).
[300] Cypriano-Souza (2016).
[301] See Peer Review Report.
[302] Franklin and Frankham (1998).

As it were, the SRT estimated the GoM Bryde's whales' effective population size as between 100 and 250 sexually mature individuals. This is two to five times higher than Franklin (1980)'s "rule of thumb" for short-term risks of inbreeding depression. Moreover, using the SRT's conclusion that GoM Bryde's whales have a sex ratio of roughly 50-50,[303] and a growth rate of 4%,[304] the effective population of GoM Bryde's whales could exceed 500 in 15 years. And again, that assumes no immigration or connectivity with contiguous populations.

For reasons that are unclear, however, the SRT never compared its effective population size estimate of 100–250 to the Franklin (1980) 50/500 "rule of thumb." In fact, after introducing its 100–250 estimate, the SRT abandoned it and never discussed it again. The SRT instead used its earlier estimate of 33 whales in the northern GoM, assumed only 16 of those were mature and that 8 were males and 8 were females, and concluded that Bryde's whales in the GoM would face an "extinction vortex" fueled by small population size and genetic depression.[305] This is not the best scientific information available.

The best available scientific information strongly indicates that Bryde's whales are far more abundant than the estimate the SRT used to identify demographics as a "highly certain" threat, and that Bryde's whales in the GoM are not isolated from Bryde's whale populations outside of the GoM. The best available scientific information, therefore, indicates that GoM Bryde's whales are not at risk of extinction due to their population size.

III. CONCLUSION

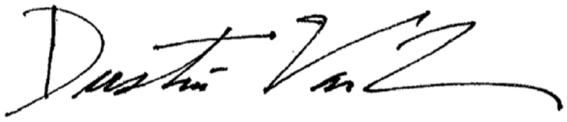
The Associations appreciate the opportunity to provide comments on the Proposed Rule. The best scientific information available indicates that Bryde's whales in the GoM are not a separate subspecies and are not at risk of extinction or likely to become so in the foreseeable future. The best available evidence suggests that Bryde's whales in the GoM are connected to contiguous populations, not threatened by any of the factors required to be assessed under the ESA, and exceptionally well protected throughout their range.

Sincerely,

Andy Radford
American Petroleum Institute
Sr. Policy Advisor – Offshore

Greg Southworth
Offshore Operators Committee
Associate Director

[303] Status Review at 41, citing Rosel & Wilcox (2014).
[304] Status Review at 41.
[305] Status Review at 41.



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