

FRASER'S DOLPHIN (*Lagenodelphis hosei*): Western North Atlantic Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Fraser's dolphin is distributed worldwide in tropical waters (Perrin et al. 1994), and has recently been reported from temperate and subtropical areas of the North Atlantic (Gomes-Pereira et al. 2013). They are generally oceanic in distribution but may be seen closer to shore where deep water can be found near the shore, such as in the Lesser Antilles of the Caribbean Sea (Dolar 2009). Sightings of this species are rare, and in fact there has been only a single sighting on NMFS surveys in the western North Atlantic (Figure 1). Sightings in the more extensively surveyed northern Gulf of Mexico are uncommon but occur on a regular basis in oceanic waters (>200m) and in all seasons (Leatherwood et al. 1993; Hansen et al. 1996; Mullin and Hoggard 2000; Mullin and Fulling, 2004). Fraser's dolphins in the western North Atlantic are managed separately from those in the northern Gulf of Mexico. Although there have been no directed studies of the degree of demographic independence between the two areas, this management structure is consistent with the fact that the western North Atlantic and Gulf of Mexico belong to distinct marine ecoregions (Spalding et al. 2007; Moore and Merrick 2011). Due to the paucity of sightings in the western North Atlantic, there are insufficient data to determine whether the western North Atlantic stock comprises multiple demographically independent populations. Additional morphological, acoustic, genetic, and/or behavioral data are needed to further delineate population structure within the western North Atlantic and across the broader geographic area. Because there are confirmed sightings within waters of the Bahamas, this is likely a transboundary stock (e.g., Halpin et al. 2009; Dunn 2013).

POPULATION SIZE

The numbers of Fraser's dolphins off the U.S. or Canadian Atlantic coast are unknown since it was rarely seen in any surveys. A group of an estimated 250 Fraser's dolphins was sighted in waters 3300 m deep in the western North Atlantic off Cape Hatteras during a 1999 vessel survey (Figure 1; NMFS 1999). Abundances have not been estimated from the 1999 vessel survey in western North Atlantic (NMFS 1999) because the sighting was not made during line-transect sampling effort. Therefore, the population size of Fraser's dolphins is unknown. No Fraser's dolphins have been observed in any other NMFS surveys. However, there has been at least one additional sighting of a Fraser's dolphin off North Carolina (Halpin et al. 2009; McLellan 2014).

Minimum Population Estimate

Present data are insufficient to calculate a minimum population estimate for this stock (Table 1).

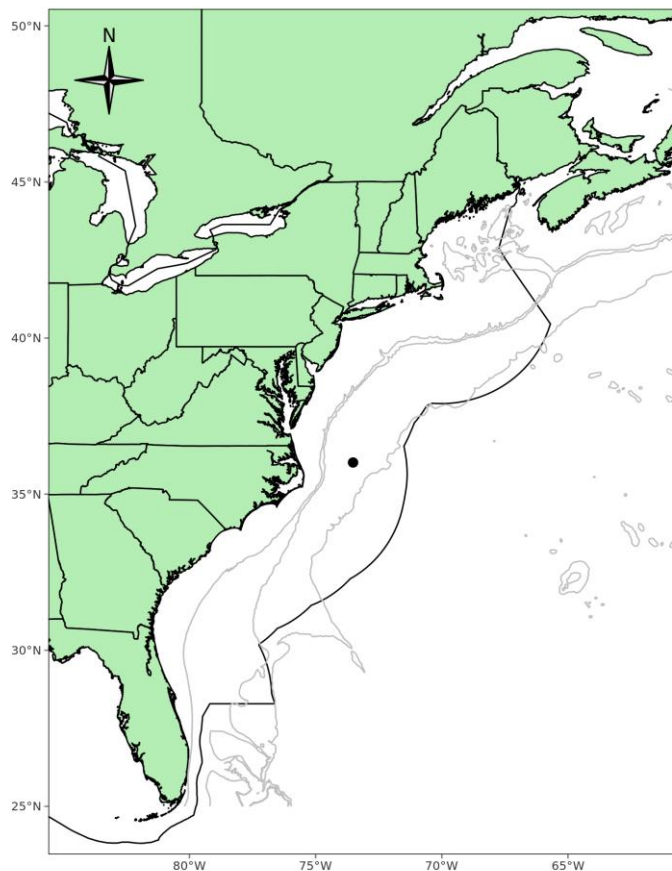


Figure 1. Distribution of a Fraser's dolphin sighting from a SEFSC vessel survey during summer 1999. NEFSC and SEFSC shipboard and aerial surveys were conducted during 1995, 1998, 1999, 2002, 2004, 2006, 2007, 2008, 2010, 2011, 2016, and 2021. Isobaths are the 200-m, 1,000-m, and 4,000-m depth contours. The darker line indicates the U.S. EEZ.

Current Population Trend

There are insufficient data to determine the population trends for this stock because no estimates of population size are available.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

Current and maximum net productivity rates are unknown for this stock. For purposes of this assessment, the maximum net productivity rate was assumed to be 0.04. This value is based on theoretical modeling showing that cetacean populations may not grow at rates much greater than 4% given the constraints of their reproductive history (Barlow et al. 1995).

POTENTIAL BIOLOGICAL REMOVAL

Potential Biological Removal level (PBR) is the product of the minimum population size, one-half the maximum productivity rate, and a recovery factor (MMPA Sec. 3.16 U.S.C. 1362; Wade and Angliss 1997). The minimum population size is unknown. The maximum productivity rate is 0.04, the default value for cetaceans. The “recovery” factor, which accounts for endangered, depleted, threatened stocks, or stocks of unknown status relative to optimum sustainable population (OSP), is assumed to be 0.5 because this stock is of unknown status. PBR for the western North Atlantic Fraser’s dolphin stock is unknown (Table 1).

Table 1. Best and minimum abundance estimates for the western North Atlantic Fraser’s dolphin (*Lagenodelphis hosei*) with Maximum Productivity Rate (R_{max}), Recovery Factor (F_r) and PBR.

N_{est}	CV_{Nest}	N_{min}	F_r	R_{max}	PBR
Unknown	-	Unknown	0.5	0.04	Unknown

ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Total annual estimated human-caused mortality and serious injury to this stock during 2017–2021 was presumed to be zero, as there were no reports of mortalities or serious injuries to Fraser’s dolphins in the western North Atlantic. This species is rare and as a result the likelihood of observing a take is very low. Survey effort and observer effort are insufficient to effectively estimate takes for this species.

Fishery Information

There are two Category I commercial fisheries that interact, or that could potentially interact, with this stock in the Atlantic Ocean. These are the Atlantic Highly Migratory Species longline and the Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics longline fisheries (Appendix III). Percent observer coverage (percentage of sets observed) for these longline fisheries in the Atlantic for each year during 2017–2021 was 11, 10, 10, 9, and 8, respectively.

The Atlantic Highly Migratory Species longline fishery operates outside the U.S. EEZ. No takes of Fraser’s dolphins within high seas waters of the Atlantic Ocean have been observed or reported thus far.

The Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics longline fishery operates in the U.S. Atlantic (including Caribbean) and Gulf of Mexico EEZ, and pelagic swordfish, tunas and billfish are the target species. There were no observed mortalities or serious injuries to Fraser’s dolphins by this fishery in the Atlantic Ocean during 2017–2021 (Garrison and Stokes 2020a; 2020b; 2021; 2023a; 2023b).

STATUS OF STOCK

Fraser’s dolphins are not listed as threatened or endangered under the Endangered Species Act, and the Western North Atlantic stock is not considered strategic under the Marine Mammal Protection Act. No fishery-related mortality or serious injury has been observed during recent years; however, because this stock is rare, it is unknown whether total fishery-related mortality and serious injury can be considered insignificant and approaching the zero mortality and serious injury rate. The status of Fraser’s dolphins in the western U.S. Atlantic EEZ relative to optimum sustainable population is unknown. There are insufficient data to determine the population trends for this species.

OTHER FACTORS THAT MAY BE AFFECTING THE STOCK

Strandings

During 2017–2021, one Fraser’s dolphin was reported stranded on the U.S. East Coast (NOAA National Marine Mammal Health and Stranding Response Database unpublished data, accessed 13 October 2022 (Southeast Region) and 18 September 2022 (Northeast Region)). This animal stranded in Florida in 2021, and there was evidence of human interaction (small linear scarring near the mouth/lip region). It should be noted that evidence of human interaction does not necessarily mean the interaction caused the animal’s stranding or death.

Stranding data probably underestimate the extent of human and fishery-related mortality and serious injury because not all of the marine mammals that die or are seriously injured in human interactions wash ashore, or, if they do, they are not all recovered (Peltier et al. 2012; Wells et al. 2015; Carretta et al. 2016). In particular, shelf and slope stocks in the western North Atlantic are less likely to strand than nearshore coastal stocks. Additionally, not all carcasses will show evidence of human interaction, entanglement or other fishery-related interaction due to decomposition, scavenger damage, etc. (Byrd et al. 2014). Finally, the level of technical expertise among stranding network personnel varies widely as does the ability to recognize signs of human interaction.

Habitat Issues

Anthropogenic sound in the world’s oceans has been shown to affect marine mammals, with vessel traffic, seismic surveys, and active naval sonars being the main anthropogenic contributors to low- and mid-frequency noise in oceanic waters (e.g., Nowacek et al. 2015; Gomez et al. 2016; NMFS 2018). The long-term and population consequences of these impacts are less well-documented and likely vary by species and other factors. Impacts on marine mammal prey from sound are also possible (Carroll et al. 2017), but the duration and severity of any such prey effects on marine mammals are unknown.

The chronic impacts of contaminants (polychlorinated biphenyls [PCBs] and chlorinated pesticides [DDT, DDE, dieldrin, etc.]) on marine mammal reproduction and health are of concern (e.g., Schwacke et al. 2002; Jepson et al. 2016; Hall et al. 2018), but research on contaminant levels for this stock is lacking.

Climate-related changes in spatial distribution and abundance, including poleward and depth shifts, have been documented in or predicted for plankton species and commercially important fish stocks (Nye et al. 2009; Pinsky et al. 2013; Poloczanska et al. 2013; Grieve et al. 2017; Morley et al. 2018) and cetacean species (e.g., MacLeod 2009; Sousa et al. 2019). There is uncertainty in how, if at all, the changes in distribution and population size of cetacean species may interact with changes in distribution of prey species and how the ecological shifts will affect human impacts to the species.

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