

## SPINNER DOLPHIN (*Stenella longirostris longirostris*): Puerto Rico and U.S. Virgin Islands Stock

### STOCK DEFINITION AND GEOGRAPHIC RANGE

The spinner dolphin is distributed worldwide in tropical to temperate oceanic waters (Leatherwood and Reeves 1983; Perrin and Gilpatrick 1994; Perrin 1998). Spinner dolphins have been sighted in Puerto Rico and the U.S. Virgin Islands as well as other areas of the Caribbean Sea. For example, Erdman *et al.* (1973) described 2 spinner dolphin sightings from Puerto Rico made during 1956. Taruski and Winn (1976) recorded spinner dolphins during the late 1960's and early 1970's in the vicinity of Puerto Rico and the Virgin Islands as well as a sighting off St. Vincent; sightings were made on the banks and in deeper waters (~37m-366m). Watkins and Moore (1982) sighted 5 groups off St. Vincent and the Grenadines in 1981, and Watkins *et al.* (1985) sighted 3 groups during 1983-1984 while surveying waters from Guadeloupe to St. Vincent and the Grenadines in the eastern Caribbean. Spinner dolphins were sighted off the west coast of Dominica in waters >100m during fieldwork conducted from 1995 to 1997 by Gordon *et al.* (1998). One sighting was made in deep waters (>2000m) west of Grenada by Yoshida *et al.* (2010) during a 2004 survey of eastern Caribbean waters. Jefferson and Lynn (1994) sighted 1 group of spinner dolphins in deep water (4330m) north of the Netherlands Antilles, and Debrot and Barros (1994) also reported a sighting in waters of the Netherlands Antilles near Curacao. Spinner dolphins have been described as fairly common in the eastern and central waters of Venezuela (Romero *et al.* 2001). Recently Pardo *et al.* (2009) reported an older sighting from 1988 of spinner dolphins in Panamanian waters at a depth of 548m, and described this as the first record for southwestern Caribbean waters. Photographic data confirmed the presence of the spinner dolphin off Cuba (Perrin *et al.* 1981).

Mignucci-Giannoni (1998) found 41 sightings records of spinner dolphins from published and unpublished data between 1956 and 1989 for waters of Puerto Rico and the U.S. and British Virgin Islands, and suggested spinner dolphins occur year-round but with fewer sightings during summer and fall. Seventy-two and a half percent of sightings documented by Mignucci-Giannoni (1998) were in continental shelf waters less than 183 m deep. One winter NMFS survey in 2001 sighted 2 groups of spinner dolphins in waters of Puerto Rico at depths of about 800 m (Figure 1; see Population Size section); however, most waters surveyed were >200 m deep due to the bottom topography of the region and the size of the survey vessel (Swartz *et al.* 2002). An additional NMFS winter survey in 2000 sighted spinner dolphins off Grenada in the southeastern Caribbean Sea at depths >1000 m. Additional surveys covering continental shelf, continental slope and oceanic waters of Puerto Rico and the U.S. Virgin Islands are needed to better assess spinner dolphin distribution in the area. Upon examination of stranding records from 1867 through 1995, 3 spinner dolphins were reported stranded in waters of Puerto Rico and the Virgin Islands (Mignucci-Giannoni *et al.* 1999).

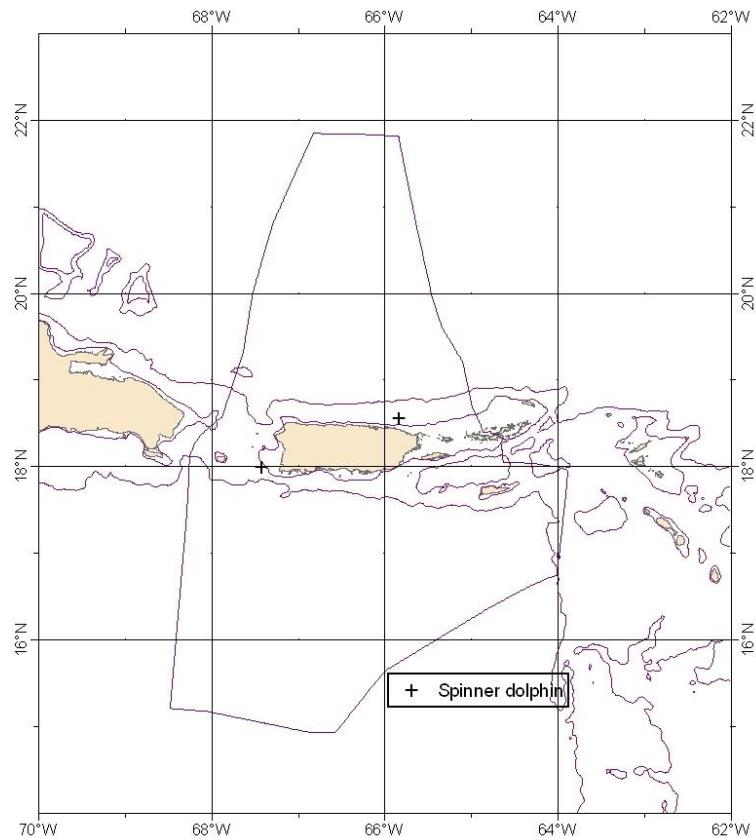


Figure 1. Distribution of spinner dolphin sightings from a SEFSC shipboard survey during winter of 2001. Solid lines indicate the 200-m and 2,000-m isobaths and the boundary of the U.S. EEZ.

The Puerto Rico and U.S. Virgin Islands spinner dolphin population is provisionally being considered a separate stock for management purposes, although there is currently no information to differentiate this stock from the Atlantic Ocean and Gulf of Mexico stocks. Additional morphological, genetic and/or behavioral data are needed to provide further information on stock delineation. Spinner dolphins of this stock are likely trans-boundary with, at a minimum, waters near adjacent Caribbean islands and are not likely to occur exclusively within the bounds of the U.S. EEZ.

### **POPULATION SIZE**

The abundance of the Puerto Rico and U.S. Virgin Islands stock of spinner dolphins is unknown. A line-transect survey was conducted during January-March 1995 on NOAA Ship *Oregon II*, and was designed to cover a wide range of water depths surrounding Puerto Rico and the Virgin Islands. However, due to the bottom topography of the region and the size of the vessel, most waters surveyed were >200 m deep; no sightings of spinner dolphins were made in U.S. or other waters (Roden and Mullin 2000). Another line-transect survey for humpback whales was conducted during February-March 2000 aboard NOAA Ship *Gordon Gunter* in the eastern and southern Caribbean Sea. A portion of the survey effort occurred in U.S. waters during transit, but no spinner dolphins were seen. However, 2 sightings were made in waters off Grenada at depths >1000 m (Swartz and Burks 2000). During February-March 2001 a line-transect survey was conducted in waters of the eastern Bahamas, eastern Dominican Republic, Puerto Rico and Virgin Islands. Two sightings of spinner dolphins were made, both in U.S. waters, in depths of 759 and 831 m (Figure 1; Swartz *et al.* 2002). It was not possible to estimate abundance from these surveys using line-transect methods due to so few sightings.

### **Minimum Population Estimate**

Present data are insufficient to calculate a minimum population estimate for this stock of spinner *dolphins*.

### **Current Population Trend**

There are insufficient data to determine the population trends for this stock.

### **CURRENT AND MAXIMUM NET PRODUCTIVITY RATES**

Current and maximum net productivity rates are unknown for this stock. The maximum net productivity rate is 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 life history (Barlow *et al.* 1995).

### **POTENTIAL BIOLOGICAL REMOVAL**

Potential biological removal level (PBR) is the product of 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 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 the stock is of unknown status. PBR for this stock of spinner dolphins is unknown.

### **ANNUAL HUMAN-CAUSED MORTALITY AND SERIOUS INJURY**

Estimates of annual human-caused mortality and serious injury are unknown for this stock.

### **Fisheries Information**

The level of past or current, direct, human-caused mortality of spinner dolphins in U.S. waters of the Caribbean Sea is unknown. Pelagic swordfish, tunas and billfish are the targets of the longline fishery operating in the Caribbean Sea. There has been no reported fishing-related mortality of a spinner dolphin during recent years (2001-2009) in waters surrounding Puerto Rico or the U.S. Virgin Islands (Garrison 2003; Garrison and Richards 2004; Garrison 2005; Fairfield Walsh and Garrison 2006; Fairfield-Walsh and Garrison 2007; Fairfield and Garrison 2008; Garrison *et al.* 2009; Garrison and Stokes 2010). However, it is important to note that for some recent years, 2006, 2008 and 2009, there has been no observer coverage of the pelagic longline fishery in the Caribbean region (Fairfield-Walsh and Garrison 2007; Garrison *et al.* 2009; Garrison and Stokes 2010).

While no whaling or dolphin fishery occurs at present in the waters of Puerto Rico and the U.S. Virgin Islands, small-scale whaling and dolphin fisheries, conducted by local whalers, are still carried out by the eastern Caribbean nations of Dominica, St. Lucia, and St. Vincent and the Grenadines (e.g., Caldwell *et al.* 1971; Caldwell and Caldwell 1975; Price 1985; Reeves 1988; Hoyt and Hvenegaard 2002; Romero *et al.* 2002; Mohammed *et al.* 2003; World Council of Whalers 2008), and by Venezuela (Romero *et al.* 1997; Romero *et al.* 2002). It is difficult to

determine the extent that the spinner dolphin, or any other particular dolphin species, has been taken in the dolphin fisheries because the smaller cetacean species hunted have generally been lumped by weight under the heading “porpoise” and reported as such (Caldwell and Caldwell 1975; Price 1985), and it is difficult to identify animals to species based on common names used by local fisherman (Reeves 1988). However, the spinner dolphin has been and is still being taken in dolphin fisheries in the eastern and southern Caribbean Sea (e.g., Caldwell *et al.* 1971; Caldwell and Caldwell 1975; Gaskin and Smith 1977; Romero *et al.* 1997; Romero *et al.* 2002; Mohammed *et al.* 2003). Reeves (1988) suggested that dolphins belonging to the genus *Stenella* are commonly caught off St. Lucia.

### **Other Mortality**

One spinner dolphin was found stranded in U.S. waters of the Caribbean Sea from 2005 through 2009 (NOAA National Marine Mammal Health and Stranding Response Database unpublished data, accessed 17 November 2010). No evidence of human interactions (e.g., gear entanglement, mutilation, gunshot wounds) was found for this stranded animal. Stranding data probably underestimate the extent of fishery-related mortality and serious injury because not all of the marine mammals which die or are seriously injured in fishery interactions wash ashore, not all that wash ashore are discovered, reported or investigated, nor will all of those that do wash ashore necessarily show signs of entanglement or other fishery-interaction. Finally, the level of technical expertise among stranding network personnel varies widely as does the ability to recognize signs of fishery interactions.

The potential impact of coastal pollution may be an issue for this species in portions of its habitat. The U.S. Navy and the U.S. Marine Corps used the Atlantic Fleet Weapons Training Facility operated out of Vieques Island, Puerto Rico, from 1948 to 2003, including the training of pilots for live ordnance delivery and amphibious assault landings by the Marine Corps. The U.S. Environmental Protection Agency has designated parts of Vieques Island on the Superfund National Priorities List because various parts of the island and nearby waters have become contaminated by solid and/or hazardous waste resulting from decades of military activity (EPA 2009). Identified areas of concern include ship anchoring areas north of Vieques, waters impacted by target practice on eastern Vieques and waters near western Vieques. Remnants of exploded ordnance and large amounts of unexploded ordnance have been identified in the range areas of Vieques and in the surrounding waters. Hazardous substances associated with ordnance use may include lead, mercury, lithium, magnesium, copper, perchlorate, napalm, TNT, and depleted uranium, among others. At both the eastern and western ends of Vieques, hazardous materials present may also include an assortment of chemicals such as pesticides, solvents and PCBs (EPA 2009). The naval station at Roosevelt Roads in Puerto Rico operated from 1943 to 2004 (between 1943 and 1957 it was opened and closed multiple times). It operated as a major training site for fleet exercises, but potential impacts, if any, on spinner dolphins are unknown.

### **STATUS OF STOCK**

The status of spinner dolphins, relative to OSP, in U.S. waters of the Caribbean Sea is unknown. The size of this stock or any population of spinner dolphins in the northeast Caribbean has never been assessed. The species is not listed as threatened or endangered under the Endangered Species Act. There are insufficient data to determine population trends for this stock. Total human-caused mortality and serious injury for this stock is not known. There is no systematic monitoring of all fisheries that may take this stock. There is insufficient information available to determine whether the total fishery-related mortality and serious injury for this stock is insignificant and approaching zero mortality and serious injury rate. For these reasons and because the stock size is currently unknown and PBR undetermined, this stock is a strategic stock.

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