Investigation of the Cetacean Fauna and Former Dolphin Fishery of St. Helena

Grant Recipient: William F. Perrin, Southwest Fisheries Center, National Oceanic and Atmospheric Administration, La Jolla, California.[1]

Grant 2543: To determine the identity of dolphins taken in a former fishery and to investigate historic methods, landings, and present status of the fishery.

The cetacean fauna of St. Helena has been very poorly known scientifically. Melliss (1875) described "five kinds of cetaceous animals commonly known[:] . . . *B. mysticetus* (right whale?) . . . , *P. macrocephalus* (sperm whale) . . . , Delphinus, Linn. . . . one kind only of Dolphin . . . , Phocaena, Linn. . . . two kinds of porpoise . . . Right Whale Porpoise and the Sperm Whale Porpoise . . . ." No further accounts of the cetaceans inhabiting the waters around St. Helena have been published.

Determining the identity of dolphins taken in a small harpoon fishery at St. Helena is important to an ongoing taxonomic study of the dolphins of the genus *Stenella* of the Atlantic. Spotted dolphins in the Atlantic have been referred to in recent years as *Stenella frontalis, S. attenuata, S. plagiodon, S. capensis,* and *S. dubia.* The holotype specimens of all these nominal species consist of skulls only. Unfortunately, our emerging picture of the two apparently valid species shows them to differ markedly not in skull characteristics but in color pattern and vertebral count, data not available for the holotype specimens. To solve this problem we plan to gather skull measurements from all available specimens that are referable to one or the other of the two species based on color patterns or vertebral count, to construct discriminant functions (an analytical technique involving simultaneous consideration of a large number of variables), and finally to apply the discriminant function to the holotype specimens, so that they (and the names they carry) can be assigned to one or the other of the species.

For one of the species, an endemic form to which the name *S. plagiodon* has been most commonly applied, there are a large number of fully

[1] Marilyn J. Perrin assisted the grant recipient on this project.

documented specimens in museums in the United States. Atlantic specimens of the second species, a pantropical form most recently called *S. attenuata* or *S. frontalis*, are much less abundant. We have located only 16 with data on coloration or vertebral count. However, the British Museum has 41 skulls of spotted dolphins taken from St. Helena by local fishermen, mostly in the late 1950s. The skulls came without information on coloration or skeleton but exhibit very low variation, indicating they are all of a single species. The one (ventral) photograph of a St. Helena dolphin in the British Museum Archives shows a color pattern more consistent with that of the pantropical species than with the Atlantic endemic species, but the angle of the photograph prohibits a firm conclusion. We hoped color pattern would identify the type of dolphin taken by the fishermen in St. Helena. If it proved to be the pantropical species, then the large series of skulls in the British Museum could be used in the discriminant analyses aimed at resolving the taxonomic problem.

Research

We observed and photographed dolphins on the lee side of the island from an open fishing boat on five days between May 5 and June 2, 1983. Our usual observation strategy was to make multiple passes through a moving school, taking photographs on the down-swell legs. On May 5 and 26, we observed and photographed the animals underwater.

On May 25, we sailed around the island to observe cetaceans on the south side. However, the weather was very rough, and we saw no cetaceans.

We tape-recorded interviews with 10 fishermen and 1 boat owner concerning the history, methods, catches, and economics of the dolphin fishery, and had more informal discussions with an additional 35 to 40 individuals, including government officials and employees of the St. Helena Fisheries Corporation. We asked for information on the dolphin fishery through a notice in the island newspaper and on a local radio broadcast. We spent several days scanning and abstracting information from books, official records, and 19th-century newspaper files maintained in the island library and archives. Because of lack of time, we examined only a fraction of the material in the archives.

Cetacean Fauna

Pantropical Spotted Dolphin, *Stenella* sp.

This was the dolphin most commonly harpooned in the fishery. Island fishermen call it "bottlenose porpoise" or simply "porpoise." The skulls in the British Museum are of this species. We clearly observed diag-

nostic color-pattern characteristics: white-tipped beak, well-defined cape passing high over the eye and with greatest depth at the level of the dorsal fin, narrow light band subsidiary to the cape, flipper stripe to gape, and dorsoventral division of the peduncle into upper dark and lower light areas. Calves are unspotted, and juveniles have pronounced dark spots below. Dorsal spotting in adults is so poorly developed as to appear absent when the animals are seen at a distance of a few meters.

The school that we observed consisted of several hundred dolphins. It came into shallow water within 0.5 km of shore along the southern half of the lee side of the island in the early morning and moved slowly north and headed back offshore at the northern lee edge before noon. During this slow passage the school appeared to be loosely organized and dispersed over a distance of about 0.5 km in subgroups of about 5 to 10 animals. Groups milled, briefly reversed direction, and made short forays offshore. Aerial activity, including high leaps (mostly by juveniles), forward flips, pitch-poling, and tail lobbing, was extensive. Occasional intense flurries of surface activity involving two or more animals was evidenced by violent, confused splashing.

On each occasion as we approached the school, individual dolphins came to meet the boat and rode the bow briefly. They did not surface at the bow to breathe, but moved a few meters away from the boat, blew, and returned to the bow underwater. This differs from typical bow-riding behavior, in which the animals surface to breathe at the bow, and may be related to the fishermen's practice of harpooning dolphins from the bow.

On one day we followed the dolphins to the edge of the lee, where part of the school spent several minutes "surfing" in short steep swells. Some of the dolphins made several passes in the waves, doubling back after traveling 100 m or so.

Fishermen told us that once the school goes offshore, out of the lee of the island, it breaks into several smaller schools. These may be encountered several kilometers offshore in the afternoon. They are occasionally seen on the weather side of the island. Fishermen also said that dolphins are "easiest to find" in April and May.

Bottlenose Dolphin, *Tursiops truncatus*

This dolphin is called "cowfish" or "cow porpoise," but some fishermen also call it "angerine." It was taken in the fishery in lesser numbers than the spotted dolphin. Several skulls of this species are in the British Museum.

We observed this dolphin at least twice. On May 5, we saw several large dark dolphins with high falcate dorsal fins in the school of spotted dolphins. The fishermen called these cowfish; but we did not get a good

look at them. On June 2, we encountered and photographed a small school (10 to 15) of bottlenose dolphins at 0830 hours. As we approached, the animals evaded us by diving for several minutes and coming up about 200 m away. We identified them by their size, coloration, size and shape of dorsal fin, and shape of the head (a short beak sharply demarcated from the melon). On June 5 at 1420 hours, as we left the island, several bottlenose dolphins joined the ship 5 to 7 km offshore and rode the bow and stern wakes for about 10 minutes.

Fishermen told us that cowfish sometimes frequent James Bay at night, feeding on flying fish attracted to lights on the waterfront.

An officer on the R.M.S. *Centaur* showed us a videotape of several bottlenose dolphins riding the bow of the ship just off Ascension Island, about 700 nm northwest of St. Helena, on March 12, 1983.

Other Species

Only two species other than spotted and bottlenose dolphins can be said with certitude to occur (or have occurred) at or near St. Helena: the humpback whale and the spinner dolphin, *Stenella longirostris*. Inclusion of the spinner dolphin is based on a skull in the Cleveland Museum of Natural History (No. 2413) labeled as collected at St. Helena by the Blossom South Atlantic Expedition on October 10, 1926. Fishermen to whom we talked did not recognize photographs of spinner dolphins nor did they remember having seen its distinctive spinning behavior. The inclusion of the humpback in the fauna is based on 19th-century newspaper and whaling accounts.

Fishermen told us of a seasonal occurrence or past strandings of several kinds of large whales which they called "humpback," "sperm," "blue," or "right whales," but these reports are not confirmed by specimens or photographs. They also reported occasional or seasonal occurrence of "whale killers," "blackfish," "whitebelly porpoise," and "black porpoise" with blunt heads.

While some of the fishermen use angerine (or "angeline") when referring to the bottlenose dolphin, most use this term to refer to a quite different animal. Our most reliable and conservative informant, a retired fisherman, described the angerine as a little larger than a cow porpoise (which he has measured up to 8 ft long), dark above and cream-colored below, with a few (four to five) white spots on each side and a short beak. He said the animal occurs in groups of a dozen or so, never in the company of other dolphins. Others described the angerine as larger than the cowfish and with a few spots (pink or white and about an inch in diameter) and a white or pinkish belly. Murphy (1947) reported that whalemen used the term "algerine" (possibly derived from "Algerian") for small beaked whales of the genus *Mesoplodon*, but it is very unlikely that this is

the usage at St. Helena. The descriptions are most consistent with characteristics of the rough-toothed dolphin, *Steno bredanensis;* however, this is a highly tentative conclusion. The angerine was only rarely harpooned by the islanders and is said to fight harder than other porpoise.

The inclusion by Melliss of the right whale dolphin *(Lissodelphis peronii)* in the fauna of St. Helena seems questionable, as it is a cool-temperate species and the waters around St. Helena are tropical, albeit seasonally verging on warm-temperate.

Dolphin Fishery

A fuller account of the dolphin fishery will be submitted to the Scientific Committee of the International Whaling Commission.

The dolphin fishery likely had its origins in 19th-century whaling; the whalemen harpooned dolphins for practice and for consumption by the crew. This thesis is supported by the islanders' use of Yankee whaling terms such as porpoise, cowfish, algerine, blackfish, and "iron" (for harpoon), and by the implements used in the fishery, which until the 1960s were modeled on sperm-whaling gear.

The pursuit of dolphins has always been an adjunct to other fishing activities. Typically, a dolphin or two was harpooned on the way home from the tuna-fishing grounds after a day of low tuna catch. Before World War II, sails were used. In the 1950s and 1960s the boats converted to small diesel engines, which made catching dolphins easier. A very few bottlenose dolphins were harpooned in the harbor at night. Average annual catches before 1979, when the taking of dolphins was banned, were on the order of 100 to 200 spotted dolphins and 5 to 15 bottlenose dolphins a year, perhaps peaking in the 1950s. Records of landed dolphins sold to the Fisheries Corporation were only kept for 1978, when 37 dolphins were logged (some landed dolphins were not sold to the Corporation). As recalled by the fishermen, the usual daily take by a boat was one or two dolphins. Dolphin meat was highly esteemed, and, when available, brought about the same price as tuna. Despite the ban, a few dolphins (perhaps 5 to 10 annually) are still taken for consumption by boat crews or family use; but dolphin meat no longer appears in the market.

Acknowledgments

We received abundant help, encouragement, and hospitality from the following people in St. Helena (in roughly the order that we met them): Brian and Katherine Sellwood, Basil George, Patrick Joshua, Laurie and Joan Baker, David Harrison, Joan Buckley, John and Silvia Clifford, Miriam Henry, Phillip Dale, Graham Sim, William Lawrence,

Maxwell Joshua, Arthur and Molly Mawson, Donald and Joyce Thorpe, David and Sara Young, Terrence and Julia Green, Michael and Fabienne Holland, Terence Richards, Charles Wade, Fred Thomas, Humphrey and Violet Benjamin, Fred Ward, Charles Francis, John Hopkins, Charles George, John Musk, Barry Dillon, Hopewell Joshua, Nicolas and Gail Thorpe, Douglas Hudson, Trevor Benjamin, George Stevens, John Crowie, Charles Henry, Joan Scipio, Dot Leo, Brian Thomas, Mervyn Crowie, Hugh and Joyce Gibbs, Leonard Peters, Fred Young, George Benjamin, and Kenneth Maggot. Governor John Massingham was off the island while we were there but gave us considerable help and encouragement in the planning stages of our undertaking.

REFERENCES

MELLIS, J. C.
1875. St. Helena: A physical, historical, and topographical description of the island, including its geology, fauna, flora, and meteorology, 426 pp. L. Reeve and Co., Ashford, Kent.

MURPHY, R. C.
1947. Logbook for *Grace*, 290 pp. MacMillan, New York.

WILLIAM F. PERRIN
MARILYN J. PERRIN