

# Porpoise Fisheries in the Southern Caribbean — Present Utilizations and Future Potentials

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## EARLY BEGINNINGS OF WEST INDIAN WHALING

Organized commercial whaling of some kind has existed in the southern Caribbean, and especially in the southern Lesser Antilles, for about two centuries.

History records that a whaleship from New England ran into trouble with the local authorities for not dipping its foresail to the King's colors as it put into Barbados in 1763, and that arrangements were being made to use that island's port facilities (and those at St. Eustatius) for whalers as early as 1775 (Stackpole, 1953: 23, 73). At that time the primary quarry of the whalers was the sperm whale (*Physeter catodon*) and the humpback (*Megaptera novaeangliae*). In those earlier days, the whalers who came to the southern Caribbean worked out of the now famous New England ports and only stopped at the islands for supplies and recruits for their crews. The West Indian whaling grounds (see Clark, 1887a, 1887b; True, 1904; Townsend, 1935) usually were only one of several whaling areas that these ships worked on their long voyages that sometimes lasted for 4 years or more. The practice of whaling in the region and calling at West Indian ports continued well into the present century when as late as 1912 a New England based whaler filled out its crew and departed from a West Indian port (Dominica in this case, after a non-whaling passage from Barbados) for limited whaling in local waters before going on to a more extensive cruise through the North and South Atlantic to return to Barbados (Murphy, 1947, 1967). As all whalers did, the New England ships from time to time took a few porpoises<sup>1</sup> and other small whales, including blackfish, for fresh meat and oil to be utilized aboard ship (Clark, 1887c). Consequently, the scene was set for today's whaling by the local people of the southern Caribbean as they readily learned both catching techniques and food habits from these early contacts.

## LOCAL WHALING AND PRESENT UTILIZATIONS OF WEST INDIAN CETACEAN STOCKS

All of the formal whaling in the Lesser Antilles is patterned after the style of the New England whalers (Morice, 1958; Rathjen and Sullivan, 1970). The

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<sup>1</sup> Although there is a technical basis for separating them, for the general purposes of this paper we use the term "porpoise" for all of the small cetaceans, including those which more correctly are mammalian "dolphins", which do not have a special and widely used common name such as blackfish or killer whale. The latter two also are really dolphins, but for collective purposes in this discussion would also be included as porpoises. In reality, no true porpoises in the technical sense are presently known from the region here under discussion.

style of the boats used, the techniques employed, and the uses of the whales and porpoises they kill are all very similar to the ancestral fisheries. The primary differences between the old and the present day whale fisheries are that the latter is a shore-based fishery and the prime objects of the chase are the smaller cetaceans. The forebears of the present whalers learned their trade as crewmen on the New England whalerships which called in the West Indies and there was no need to change the basic fishing principles which had served the 18th and 19th century whalers so well. Those modifications that have occurred have, for the most part, been introduced in the past 2½ decades.

Two basic kinds of organized whaling are still practiced in the Lesser Antilles. The older fishery still seeks the humpback whale, or an occasional sperm whale, and is now restricted to the island of Bequia in the St. Vincent Grenadines. The West Indian based humpback fishery was first developed at Bequia during the heyday of the New England whaling (Brown, 1945) and appears to be dying there today. At one time a certain amount of whaling of this kind spread to Grenada (Isle de Caille and St. George's), St. Lucia (Pigeon Island), Barbados (Speightstown and Holetown) and Trinidad (Monos Island), but these activities ceased for the most part at least a half century ago. For a brief time in the early 1920's a Norwegian whaling company established a shore station on Grenada (Brown, 1942, 1945), but it is remembered now chiefly for its introduction of shoulder bomb guns into the fishery. This type of gear still is used sometimes in the dying Bequia humpback fishery in conjunction with the old-style hand toggle harpoons of the kind handed down from the old New England style of whaling. On the average, only two or three humpbacks are taken annually in the Bequia fishery now and there have been years recently when none at all were captured. Sperm whales are taken even less frequently. Techniques used in this fishery were adequately described by Brown (1942, 1945) and Fenger (1958).

The second style of contemporary West Indian whaling is that used to hunt the blackfish or pilot whale (*Globicephala macrorhyncha*). Like the Bequia fishery for humpbacks and sperms, the blackfish fishery is shore based, but unlike the former in which the whales sometimes are sighted from land, the blackfish catchers always set out on their own each fishing day to hunt and kill their quarry never with assistance from shore. The techniques used in this fishery in its older and purer form were described best by Brown (1945) and Hickling (1950). Since those descriptions were published, a small boat-mounted harpoon gun (actually a modified shotgun) has been introduced (in 1946, according to Jackson, 1967) and only as recently as early 1968 an inboard motor launch has been employed by one group of whalers from St. Vincent. The motor launch permits the men a much greater cruising range and a greater maneuverability when they are going onto whales, and in addition gives them more freedom from the vagaries of the wind. It seems likely that more of these launches eventually will replace those sailing boats still used by the rest of the whalers. At St. Vincent this one motor launch accounts for most of the porpoises (which generally are faster swimming than the blackfish) now taken, as well as a good percentage of the blackfish. Costs, both initial and operating, have been the primary deterrent to additional launches, but additional ones, both inboard and outboard, are planned. The first motor launch was built for use with engine power while the others planned so far are to be modified sailing boats.

Before the advent of the mounted gun, the whales were harpooned with a typical New England toggle iron (harpoon) attached to a long and heavy wooden shaft. All of this was thrown by hand either directly at the whale or, more

frequently, was skipped across the surface of the water into the side of the prey as it rose to blow. The same technique is used today with the gun except that the wooden shaft is shorter. The range and accuracy of each shot has improved to the point where the additional cost for the gun and ammunition to propel the harpoon is justified. Some harpoons are still thrown by hand, however, and as always in the past the animals on the line are killed by hand lancing over the side of the boat.

The sailing boats measure some 27 feet (8.2 meters) in length and carry a crew of six who row when necessary to increase the speed or when sailing is not practical due to unfavorable winds (Fig. 1). Of this crew of six, the harpooner is the nominal captain, another is steersman, and the remaining four do the rowing. All lend a hand when it comes time to haul in the catch and bring it over the side into the boat or secure it for towing alongside. In our experience the one launch carries a crew of only five, and the captain is a supervisor rather than the harpooner. He and his helmsman station themselves astern, while the remainder of the crew, including the harpooner, stand watch closer to the bow. This one launch is slightly longer in length and broader in beam than its companion sailing boats.

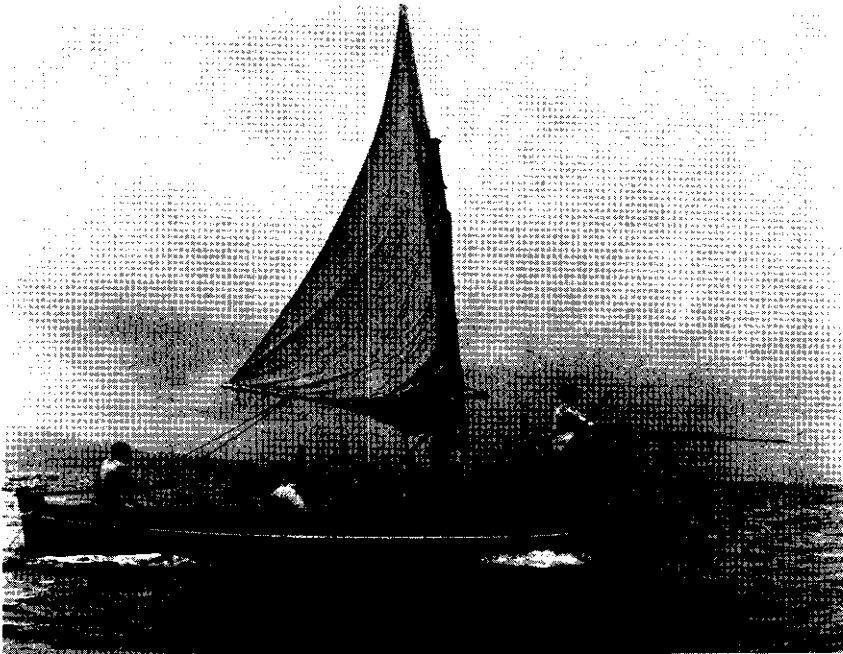


Fig. 1. Blackfish boat under sail while hunting off the leeward coast of the Lesser Antillean island of St. Vincent on 21 May 1968. (Photograph by William A. Huck)

The fishery for blackfish was started at Barrouallie, on the lee shore of St. Vincent, early in the first quarter of the present century (Morris, 1966; Jackson,

1967). An old Bequia whaling boat is said to have been bought and fitted out for the commercial capture of porpoises around St. Vincent. It is reported that on one of the earlier porpoise hunts a much larger animal resembling a porpoise was taken that proved to be a blackfish (truly a large species of porpoise). For a number of reasons, but primarily because of its larger size and supposedly preferable taste, this species soon became the primary quarry of the fishery. Before this commercial venture, a few porpoises were harpooned for personal use from existing small fishing boats (Griffith Arrindell, *pers. conversation*, 1970).



Fig. 2. Blackfish (*Globicephala macrorhyncha*) being butchered on the beach at Barrouallie, St. Vincent, on 21 May 1968. The heads are set aside for special handling to obtain the melon oil for export to the United States for use in lubrication of fine instruments. The ever-present dogs and chickens help clear the beach of unsanitary scraps from the cutting up which usually takes place the morning after the catch. (Photograph by William A. Huck).

Barrouallie is still the center of the fishery (Fig. 2) with some half dozen boats at a maximum landing an annual average of about 350 blackfish and an aggregate of perhaps as many porpoises and other assorted small to large cetaceans. If anything, this estimate for non-blackfish landings may be high. Humpback whales are seen off the lee shore of the island by men engaged in this fishery, but because of its size this species is not pursued by the Vincentians.

The men do take several small sperm whales each year (Fig. 3) and a few killer whales (*Orcinus orca*), false killer whales (*Pseudorca crassidens*), and Risso's dolphins (*Grampus griseus*). A preliminary report on these and other, smaller, species taken in the St. Vincent fishery has been prepared (Caldwell, et al., In press). In all, 12 species of cetaceans presently are known from the Barrouallie fishery and at least six more are suspected on the basis of zoogeographic rational and from descriptions provided us by the whalers.



Fig. 3. Female sperm whale (*Physeter catodon*), 7.8 m in length in a straight line from tip of snout to fluke notch, captured in the blackfish fishery off the island of St. Vincent and landed there, at Barrouallie, on 24 May 1968. (Photograph by William A. Huck)

At St. Vincent, in addition to Barrouallie some whaling has been done from the towns of Rose Bank (still active), Wallibou and Cumberland. From nearby St. Lucia, whaling boats leave from Vieux Fort and Port Castries, and from Dominica they depart from Pointe Michele. Morice (1958) inferred that blackfish are taken near Martinique, but we have no other evidence for a commercial blackfish fishery there. Blackfish are taken year-round, with peaks of production in late spring and in the fall. The Bequia humpback whaling is pretty much restricted to the months of February, March and April.

We are told by fisheries officers and other reliable observers that porpoises sometimes are taken by accident in beach seining operations for fin fish in waters around Trinidad, Tobago, and some of the Venezuelan islands (see Fig.4). Apparently if the fin fishing had not been good on the day the porpoises were taken, the latter would be utilized for food in the local markets for human

consumption. Otherwise the porpoises are either abandoned if dead (released if alive) or used for food for dogs and sometimes swine. Reports of similar accidental captures in West Indian beach seining operations for fish go back at least as far as a century or more, for Gosse (1851:357) recorded them in the harbor of Kingston, Jamaica, with the comment that there the porpoises were considered a nuisance because they were of no value as marketable food. Our own long-time experience with Jamaican fishing and fish market operations has failed to produce such records during the past 15 years, nor have we heard of any such porpoise captures there. We have, in fact, heard of no commercial porpoise-catching operations in any of the Greater Antilles or northern Lesser Antilles. In the waters of Venezuela, at least, a few porpoises are also taken for food and oil by harpoon from boats not regularly engaged in such activity. Indications of such porpoise fishing around the island of Margarita are available (Anonymous, n.d.; Caldwell, Cervigon and Caldwell, MS) but the subject needs additional study. The taste for porpoise meat seems to be limited primarily to the southern West Indies and Caribbean.



Fig. 4. Fresh-caught Atlantic bottlenosed dolphin (*Tursiops truncatus*) collected incidental to a fin-fish fishery at La Blanquilla Island off Venezuela during March, 1966. Length of carcass reportedly about 230 cm. Spotted belly suggests that the animal is an adult female. (Photograph courtesy Fernando Cervigon)

To sum up the present state of West Indian whaling then, porpoises and other small cetaceans, as well as a few individuals of the larger species of whales, are taken on a regular and organized basis in the southeastern Caribbean and West Indies. A few more, especially porpoises, are taken incidental to the fin-fish fisheries or from boats in passage engaged in such fisheries. While the annual production of West Indian whaling is small, the products of the fisheries often

form a significant part of the local economy and the meat (utilized either fresh or salted and dried) and oil are included in the diet of the local people as important sources of protein and fats (Caldwell and Erdman, 1963). In this region such things are often in short supply despite the abundance in the sea. In short, the people of this area are educated toward the full utilization of porpoises and other small (and large) whales when that resource is available to them.

## FUTURE POTENTIALS FOR WEST INDIAN WHALING

We already have noted that the humpback whaling industry is rapidly dying. The blackfish industry appears to be relatively stable in numbers of whales captured and the gradual reduction in numbers of whalers seems to be compensated for by the increased efficiency of the remaining boats, and especially so with the advent of the motor launch concept. There is a hazy potential for yet another utilization of the West Indian porpoise stocks if projected tuna seining plans and hopes materialize.

The extensive purse seine fisheries for tuna in the eastern Pacific often produce large numbers of porpoises as these mammals often travel with the tuna schools and serve the fishermen (albeit unwillingly) as natural beacons for the tuna schools. The purse seine nets are set around the porpoises in the hope of catching unseen schools of tuna below, and most of the porpoises are encircled and captured as well. While every effort by the fishermen is made to release them alive, the mortality rate on the porpoises is so high that there is a real fear among cetologists that the schools will be depleted to the point where irreversible damage will occur. Consequently, a great effort is now being made to solve the problem of release of porpoises without release of tuna so that the former will continue to serve as future surface markers for other tuna schools. The relationship between porpoises and tunas in the eastern Pacific, the subsequent problems of porpoise mortality, and efforts to reduce it, have been discussed in some detail (Perrin, 1968, 1969, 1970a, 1970b; McNeely, 1961; Miller, 1970; Anonymous, 1968, 1970a, 1970b).

From time to time there have been proposals to conduct tuna purse seining operations in the Caribbean area. Some exploratory fishing operations of this nature have been carried on (Bartlett, 1969) and while tuna were sighted, the general results of the survey were not promising (Albert C. Jones, *pers. comm.*, 1970). Nevertheless, the possibilities for the development of such a fishery still exist. Because the same kinds of porpoises (or very closely related species) occur in the southern Caribbean as occur in the eastern Pacific, it seems logical to assume that if in the future a tuna purse seine fishery is developed there that porpoises will be utilized as surface markers as they are in the eastern Pacific. While the species involved have yet to be documented fully, in recent years we have been told (by Stewart Springer and Harvey R. Bullis, for example) that porpoises are indeed sometimes seen in association with tuna schools in the tropical and temperate western Atlantic. We presume from the general similarities between the marine faunas of the western Atlantic and eastern Pacific that the species associations of porpoises and tuna are also similar in the two regions. An ongoing survey (Anonymous, 1969) of porpoise-tuna associations in the tropical eastern Atlantic, which faunistically is also similar to the southern Lesser Antilles, should shed further light on the potential porpoise-tuna relationships in the latter region.

Unlike those tuna seiners operating in the eastern Pacific hundreds and even thousands of miles from their home ports in California, the seiners that might work in the Caribbean likely would be based closer to their fishing grounds. The recent development of modern fishing port facilities at Guiria in northeastern Venezuela (Beattie, 1970) lends credence to this assumption.

Porpoises accidentally killed in the eastern Pacific tuna fishery are usually discarded because they take up valuable fish space in the freezers and because there is no market at all for them at home even if the holds were not full. If a porpoise carcass accidentally slips into the freezer hold it is returned to California, but again it is discarded on unloading unless it falls into the hands of some willing biologist waiting at dockside. We have ourselves obtained such solid-frozen carcasses in years past and found on necropsy that they were in edible condition had anyone wished to make such use of them. With a little care on board ship they could be made a very acceptable food product.

Inasmuch as Caribbean tuna seiners most likely would be working closer to home and making shorter cruises in which space in the hold might not be at such a premium, it would seem desirable that porpoises accidentally killed in the seining operations be retained and frozen. They could thus constitute a utilization of an otherwise wasted food resource already acceptable to and badly needed by many of the local people in that part of the Caribbean and West Indian region where a significant portion of such tuna seiners might be expected to land anyway.

The price of the resulting porpoise products should be high enough to pay the costs of handling and marketing these porpoises at a small profit. However, profits should not be so high that it might become more or even as profitable to catch porpoises outright than tuna. Nor should even this price be so high that the low income segment of the local population to whom the utilization of this resource would be directed would be unable to buy. It is our feeling that the utilization of this particular resource be for the benefit of the consumers, not the fishermen, but that the latter should make a small profit for their trouble and to encourage them not to waste the resource already in their hands. As in the present eastern Pacific tuna purse seine fisheries, the men in any Caribbean and West Indian fishery of this kind should be educated to the fact that the porpoise populations are subject to rapid decimation and that their loss would mean the loss of the whole fishery, or at least its curtailment in ease and success of operation.

We also want to emphasize that we do not propose an accelerated fishery directed at the porpoises, but only that it might well be practical in this *particular* geographical area to utilize an otherwise wasted resource. Each day we learn the hard way that our natural resources are not unlimited and certainly under no circumstances should they be wasted. Just because current human need and economics dictate that "secondary" resources be destroyed is no excuse for the wasting of such secondary resources. They are, in fact, secondary only to some other activity that is deemed "primary" for the moment. In reality they all are just as important in the ecological scheme and must not wantonly be destroyed. When there seems to be no other alternative to destruction, then these secondary resources should not be wasted, but instead should be utilized in some manner. This is what we suggest for any porpoises that might be killed by accident in a potential Caribbean and West Indian tuna purse seine operation. The combination of porpoises in association with the tuna, nearby landing facilities for the catch, and a local population educated to the utilization of



porpoises may make this geographical region almost unique for the potential utilization of this otherwise wasted resource.

We suggest, therefore, that in the event a further effort is made to develop a tuna purse seine fishery in the Caribbean and West Indies that the utilization of this apparently inevitable but otherwise wasted resource be considered in any planning.

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#### LITERATURE CITED

##### Anonymous

1968. Annual report of the Inter-American Tropical Tuna Commission: 1967. La Jolla, California: Inter-American Tropical Tuna Commission, 143 p.
1969. BCF conducts tuna/porpoise survey in eastern equatorial Atlantic. *Commercial Fisheries Review*, U.S. Bur. Comm. Fish., 31(8-9): 5.
- 1970a. Recipe for success with yellowfin tuna: first take a porpoise. *The Fish Boat*, 15(1): 19, 36-37.
- 1970b. Gate designed to release porpoise from purse seines. *Commercial Fisheries Review*, U.S. Bur. Comm. Fish., 32(4): 7.
- n.d. Los recursos pesqueros de la region nororiental de Venezuela. Estado de su explotacion y posibilidades futuras. Estacion de Investigaciones Marinas de Margarita, Fundacion La Salle de Ciencias Naturales, Venezuela, 25 unnumbered p. [processed]

##### Bartlett, Martin R.

1969. Exploratory fishing in the western tropical Atlantic by the tuna seiners *Normandie* and *Queen Mary*. Commonwealth of Puerto Rico, Dept. of Agriculture, Fish and Wildlife Div., San Juan, Puerto Rico, unnumbered cruise report, 4 p., with two appendices of 7 and 8 p. [processed]

- Beattie, Norman R.  
 1970. Organization and administration of the fishing port of Guiria. Caracas, Venezuela: Fisheries Res. and Devel. Project, Tech. Bull., 8: 1-70. [In English and Spanish]
- Brown, Herbert H.  
 1942. The sea fisheries of Barbados. Devel. and Welfare in the West Indies, Bull., 1: 32 p., 5 tab., 1 map.  
 1945. The fisheries of the Windward and Leeward islands. Devel. and Welfare in the West Indies, Bull., 20: 97 p., 2 maps.
- Caldwell, David K., Melba C. Caldwell, Warren F. Rathjen and John R. Sullivan  
 In press. Cetaceans from the Lesser Antillean island of St. Vincent. Fishery Bulletin, U.S. Natl. Mar. Fish. Serv.
- Caldwell, David K., Fernando Cervigon and Melba C. Caldwell  
 M.S. Cetaceans of Venezuela.
- Caldwell, David K., and Donald S. Erdman  
 1963. The pilot whale in the West Indies. *J. Mammal.*, 44(1): 113-115.
- Clark, A. Howard  
 1887a. The whale fishery; 1. History and present condition of the fishery. In G. B. Goode, editor, *The fisheries and fishery industries of the United States. V. History and methods of the fisheries.* Text. Washington: U.S. Govt. Printing Office, 5(2): 1-218.  
 1887b. [Map of the world on Mercator's projection, showing the extent and distribution of the present and abandoned whaling grounds]. In G. B. Goode, editor, *The fisheries and fishery industries of the United States. V. History and methods of the fisheries.* Plates. Washington: U.S. Govt. Printing Office, 5: pl. 183.  
 1887c. The blackfish and porpoise fisheries. In G. B. Goode, editor, *The fisheries and fishery industries of the United States. V. History and methods of the fisheries.* Text. Washington: U.S. Govt. Printing Office, 5 (2): 295-310.
- Fenger, Frederic A.  
 1958. *Alone in the Caribbean.* Belmont, Massachusetts: Wellington Books, xx + 21-353 p. [originally published in 1917 by George H. Doran, New York]
- Gosse, Philip H.  
 1851. *A naturalist's sojourn in Jamaica.* London: Longman, Brown, Green and Longmans, xxiv + 508 p.
- Hickling, C. F.  
 1950. The fisheries of the British West Indies; report on a visit in 1949. Devel. and Welfare in the West Indies, Bull., 29: 41 p.

- Jackson, Leroy R.  
1967. The blackfish industry of Barrouallie, St. Vincent. Unpublished report (file number 26), St. Vincent Teachers College, Kingstown, St. Vincent, viii + 38 p., 8 pls.
- McNeely, Richard L.  
1961. Purse seine revolution in tuna fishing. *Pacific Fisherman*, June, 1961: 27-58.
- Miller, William C.  
1970. Tuna corralled by muscle boats and porpoise. *National Fisherman*, January, 1970. [not seen, ref. copied]
- Morice, J.  
1958. Animaux marins comestibles des Antilles Francaises (Oursins, Crustaces, Mollusques, Poissons, Tortues et Cetaces). *Rev. Trav. Inst. Peches Maritimes (Institut Scientifique et Technique des Peches Maritimes, Paris)*, 22(1): 85-104.
- Morris, Elford L.  
1966. A brief history of Barrouallie from 1719 to present day (1966). Unpublished report (file number 39), St. Vincent Teachers College, Kingstown, St. Vincent, 1 + ii + 51 p., 6 pls.
- Murphy, Robert Cushman  
1947. *Logbook for Grace*. New York: The Macmillan Co., xiii + 290 p.  
1967. A dead whale or a stove boat. Boston: Houghton Mifflin Co., vi + 177 p.
- Perrin, William F.  
1968. The porpoise and the tuna. *Sea Frontiers*, 14(3): 166-174.  
1969. Using porpoise to catch tuna. *World Fishing*, 18(6): 42-45.  
1970a. Color pattern of the eastern Pacific spotted porpoise *Stenella graffmani* Lonnberg (Cetacea, Delphinidae). *Zoologica*, 54(4): 135-142, pls. 1-7.  
1970b. The problem of porpoise mortality in the U.S. tropical tuna fishery. *Proc. Sixth Annual Conf. on Biol. Sonar and Diving Mammals*, Menlo Park, California: Stanford Res. Inst., pp. 45-48.
- Rathjen, Warren F., and John R. Sullivan  
1970. West Indies whaling. *Sea Frontiers*, 16(3): 139-137.
- Stackpole, Edouard A.  
1953. *The sea-hunters*. Philadelphia: J. B. Lippincott Co., 510 p.
- Townsend, Charles H.  
1935. The distribution of certain whales as shown by logbook records of American whalships. *Zoologica*, 19(1): 1-50, 4 maps.

True, Frederick W.

1904. The whalebone whales of the western North Atlantic compared with those occurring in European waters with some observations on the species of the North Pacific. *Smithsonian Cont. Knowledge*, 33: i-vii, 1-332, pls. 1-50.