

Stock identity of a humpback whale taken in a southeastern Caribbean hunt

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ABSTRACT

North Atlantic humpback whales migrate annually between discrete high latitude feeding areas and shared low latitude breeding areas. St. Vincent and the Grenadines is a low density breeding area in the Lesser Antilles and the site of the only ongoing aboriginal humpback whale hunt in the North Atlantic. The Scientific Committee of the International Whaling Commission recently concluded that catches were likely drawn from a large, panmictic breeding population, but encouraged the collection of additional data. On 6 March 1999, two humpback whales were landed at St. Vincent and the Grenadines and we obtained images from an opportunistic source. Photographic matching identified one individual as 'Haar' (NAHWC #0694), a catalogued whale from the Gulf of Maine. This is the first stock assignment from this fishery and the most southeasterly sighting of a Gulf of Maine whale. Based on its reported length, the second animal was probably a calf and, if so, a member of the same population. This match provides further support for the hypothesis that catches at St. Vincent and the Grenadines involve a variety of high-latitude populations. Furthermore, it reinforces the scientific and management value of collecting and sharing individual identification data when hunts are performed.

KEYWORDS: HUMPBACK WHALE; GULF OF MAINE; WEST INDIES; ATLANTIC OCEAN; MIGRATION; PHOTO-ID; BREEDING GROUNDS; WHALING – ABORIGINAL

INTRODUCTION

North Atlantic humpback whales, *Megaptera novaeangliae*, migrate annually between shared low latitude breeding areas and discrete high latitude feeding areas. The principal North Atlantic breeding range lies along the Atlantic margins of the Antilles, from Cuba to northern Venezuela (Winn *et al.*, 1975; Balcomb and Nichols, 1982; Whitehead and Moore, 1982). Photo-identification research at the northern (Greater) Antilles indicates a large breeding population (Stevick *et al.*, 2003) composed of animals from all primary feeding areas (Mattila *et al.*, 1989; Katona and Beard, 1990; Stevick *et al.*, 1999b). Fidelity to a specific feeding area is strong and maternally directed, such that a calf born in low latitudes is recruited to its mother's stock during an extended period of maternal care (Martin *et al.*, 1984; Clapham and Mayo, 1987; Katona and Beard, 1990).

The eastern and southern (Lesser) Antilles were historically sites of a large humpback whale fishery (Smith and Reeves, 2003) and whale density there remains comparatively low (Swartz *et al.*, 2003). Three free-ranging humpback whales from the Lesser Antilles have been photographically matched to high latitude feeding areas. One was matched to West Greenland (Stevick *et al.*, 1999a), a feeding aggregation estimated at 360 individuals (CV=0.07, 1988-93; Larsen and Hammond, 2004). Two others were matched to Newfoundland and Norway (Stevick *et al.*, 1999a; Bérubé *et al.*, 2004), and exchange with Greater Antilles areas has also been documented (Stevick *et al.*, 1999a).

St. Vincent and the Grenadines, in the Lesser Antilles, is the site of the only ongoing humpback whale hunt in the North Atlantic. Catches have been made at a rate of 0-2 whales per winter over the past two decades (IWC, 2002). In a recent Comprehensive Assessment of the North Atlantic humpback whale population, the Scientific Committee of

the International Whaling Commission (IWC) concluded that these animals were probably drawn from the same population studied at the northern end of the breeding range (IWC, 2002). However, it strongly encouraged the collection of additional data with which to assess the high latitude origin of animals taken in this hunt. This paper reports on the stock identity of a humpback whale caught at St. Vincent and the Grenadines based on an opportunistic photograph of the event.

METHODS

Images of two humpback whales landed at Petit Nevis, St. Vincent and the Grenadines were obtained from the website of a tourist who photographed the event on 6 March 1999. One of the images depicted the ventral flukes of the larger of two humpback whales. Individual humpback whales can be identified from the unique pattern of pigmentation on the ventral side of the flukes and the shape of the trailing edge (Katona and Whitehead, 1981). Standard photo-identification techniques were used to match the image against the Gulf of Maine Humpback Whale Catalogue curated by the Provincetown Center for Coastal Studies (PCCS, Massachusetts, USA). The match was subsequently confirmed by the North Atlantic Humpback Whale Catalogue (NAHWC) curated by the College of the Atlantic (Maine, USA). Carcass length data and other hunt details were taken from information provided to the IWC by the government of St. Vincent and the Grenadines (IWC, 2000).

RESULTS AND DISCUSSION

Two humpback whales were caught on 6 March 1999: one 46-foot (14m) female and a second female that was estimated at 20-23 feet (6-7m) in length (IWC, 2000). The ventral flukes of the larger animal were photographically

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matched to a catalogued Gulf of Maine whale known as 'Haar' (NAHWC# 0694). She was first seen in July 1987 and so was at least 13 years old when she died. The PCCS catalogue contained four Gulf of Maine sightings of this animal, none of which were after 1990. The NAHWC reported no other matches to 2,542 individuals catalogued at other feeding areas through 1998.

A fluke image was not available from the second animal. However, at an estimated length of only 6-7m in the late breeding season, it was not likely to have been an independent, catalogued whale. Northern Hemisphere calves are estimated to range from 4.1-6.9m in length during their first winter (Spitz, 1999) and remain dependent until 8-9m in length (Clapham *et al.*, 1999; Doroshenko, 2000). They can be unusually large or small for the season *in utero* (Nishiwaki, 1959; Mikhalev, 1997; Doroshenko, 2000), and one Gulf of Maine yearling died in April at a length of only 7.2m (Barco *et al.*, 2002). However, based on the majority of the available length data, the small whale taken with 'Haar' was probably a calf and, if so, a member of the same stock.

Nearly nine years elapsed between the most recent Gulf of Maine sighting of 'Haar' and her death at St. Vincent and the Grenadines. Although sparse catalogue sighting histories are not unusual, it is also possible that Haar was not a consistent member of the Gulf of Maine population. Low rates of exchange have been documented between the Gulf of Maine and other western North Atlantic feeding areas, including the Canadian Scotian Shelf, the Gulf of St. Lawrence, Labrador, Newfoundland and west Greenland (Katona and Beard, 1990; Clapham *et al.*, 2003). Katona and Beard (1990) hypothesised that animals from other feeding grounds may pass through this area during their northbound migration. At present, however, there is no evidence that Haar used another feeding area. In fact, her presence in the Gulf of Maine at the peak of at least one summer reduces the likelihood that she was simply *en route* to another feeding area.

The present match represents the most southeasterly sighting of a Gulf of Maine whale. Although this population has the shortest migration to any breeding area in the western North Atlantic, the waters of St. Vincent and the Grenadines are at least 41% (975km) farther than high-density breeding aggregation sites at the Greater Antilles. It is not known if Gulf of Maine whales migrate directly, or routinely, to southeastern Caribbean waters. However, the present match suggests that this species may sometimes travel well beyond its nearest breeding area, even when that area appears to be highly attractive to conspecifics.

This is the fourth high-latitude stock identified at the Lesser Antilles, supporting the hypothesis that catches are drawn from a variety of feeding stocks. It is also the first successful match of a humpback whale from this hunt. Given the low modern abundance of humpback whales in the Lesser Antilles, catches represent an important source of information on the animals that are available to this fishery. The present match was based on photo-identification, but humpback whales can also be individually identified by molecular genetic techniques (Palsbøll *et al.*, 1997). In fact, the stock identity of one free-ranging individual from the Lesser Antilles is known only from a genetic match to a high-latitude sample (Bérubé *et al.*, 2004). The molecular genetic archive for the North Atlantic population (CetaBase, currently housed at the Department of Genetics, Microbiology and Toxicology, Stockholm University, Sweden) now includes over 6,500 skin samples drawn from all known feeding and breeding grounds (P. Palsbøll, pers.

comm.). Even if individuals are not successfully matched, a genetic approach potentially allows for matches to close maternal relatives, and thereby insight into stock identity. This is particularly important for carcasses, as those individuals have no opportunity to be added to the archive at a later date. We therefore encourage efforts to collect and share both types of individual identification data when hunts are performed.

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