

Humpback whales in the Puget Sound/Georgia Strait Region

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Introduction

The humpback whale (*Megaptera novaeangliae*) is a moderately large baleen whale that is found in all major ocean basins of the world (Clapham and Mead 1999). Humpbacks typically spend summer months feeding in productive, high-latitude waters then migrate to low-latitude breeding areas in winter, where they mate and give birth (Chittleborough 1958). In the North Pacific Ocean, there are numerous concentrations of feeding whales that range from southern California north through the Aleutian Islands and west to Russia, which migrate to four major breeding areas of Central America, Mexico, Hawaii, and Japan (Calambokidis et al. 1996).

As was the case with large whales throughout the world, humpback whale populations were severely depleted by the mid-twentieth century due to commercial whaling. The North Pacific was no exception, and whaling stations from Northern California to Southeast Alaska reported many thousands of humpback whales taken from the late 1800's until 1967 when whaling was officially banned in the region due to the collapse of the fishery (Rice 1978, Clapham et al. 1997).

Little is known of the size of whale populations prior to the advent of whaling, although inferences can be made from catch data (Gambell 1976, Rice 1978). Detailed studies of humpback populations in the North Pacific began in the mid-seventies, and from these it appears that this population is slowly recovering, although likely remains below pre-whaling numbers (Calambokidis and Barlow 2004). With this recovery humpbacks are returning to areas from which they were historically reported but have not been seen for decades. The inside waters of Washington State and Southern British Columbia are one such region, and reports of humpback whales there have increased dramatically in recent years after a long absence. Here, we review briefly the history of exploitation, the recent increase in sightings, and the identity of humpback whales in inside waters, which suggest they may be returning to this once-important habitat.

The history of whaling in Puget Sound and the Georgia Basin

Humpbacks were abundant along the coast of British Columbia and Washington State, particularly in inside waters, at the turn of the last century (Pike and MacAskie 1969). Although humpback whales were taken sporadically as early as the 1850's, detailed records of takes were not maintained until much later, making it difficult to assess how many whales were killed in the initial phase of the fishery. Recording of catch data was standardized in 1907, shortly after the advent of modern whaling in the region, and between 1908 and 1967 British Columbian whaling stations killed at least 5,638 humpbacks (Gregar et al. 2000). The station in Gray's Harbor at Bay City, Washington took at least 1,933 humpbacks from the coasts of Oregon and Washington between 1911 and 1925 (Scheffer and Slipp 1948). Over-wintering humpbacks were still common enough in the Strait of Georgia in 1907 for a whaling station to open at Page's Lagoon, near Nanaimo, in November of that year. This small, local population was apparently extirpated in three months, as by January 1908 catches ceased abruptly (Webb 1988).

Sightings of humpbacks in inside waters

Sightings of humpbacks in the Strait of Georgia and Puget Sound remained very infrequent through the late 1990's. Everitt et al. (1980) reported two sightings of humpback whales in Puget Sound in May 1976 and June 1978; it was not until June 1986 that a third sighting was made (Osborne et al. 1988). Calambokidis and Steiger (1990) reported on the movements of two individually identified juvenile humpback whales, which were observed traveling separately throughout the waters of southern Puget Sound for several weeks in June and July of 1988.

Due to their scarcity, humpbacks have not been systematically surveyed in these regions as they are in areas of known abundance; therefore there does not exist a scientific data set with which to document their return to inside waters of the Georgia Basin. However, the increasing human population and the popularity of whale watching has given rise to sighting networks where coastal residents can report marine mammal sightings locally. The Orca Network (www.orcanetwork.org) is an online forum to which people report, and it maintains an archive of all sightings received since 2001. In that initial year the sighting network consisted of 350 registered members and a total of 710 marine mammal sightings were reported; it has grown steadily to 1,055 members in 2004 reporting 1,057 sightings (Susan Berta, pers. comm.). In 2001 there were three reports of humpback whales, the number had risen to 30 reports by 2004 (Figure 1). This increase in sightings is in part due to growth of the network and the accompanying increase in local awareness, however it is worth noting that the percentage of all sighting network reports of humpbacks has grown from less than one half of a percent to almost three percent. Most reports of humpback whales were made by naturalists aboard whale watching vessels and can be considered reliable in terms of species identification. Inexperienced observers, particularly those that are shore-based, are most likely to misidentify a humpback as a gray whale, which are common in some areas during the late spring. In this case the number of humpbacks reported might actually be an underestimate.

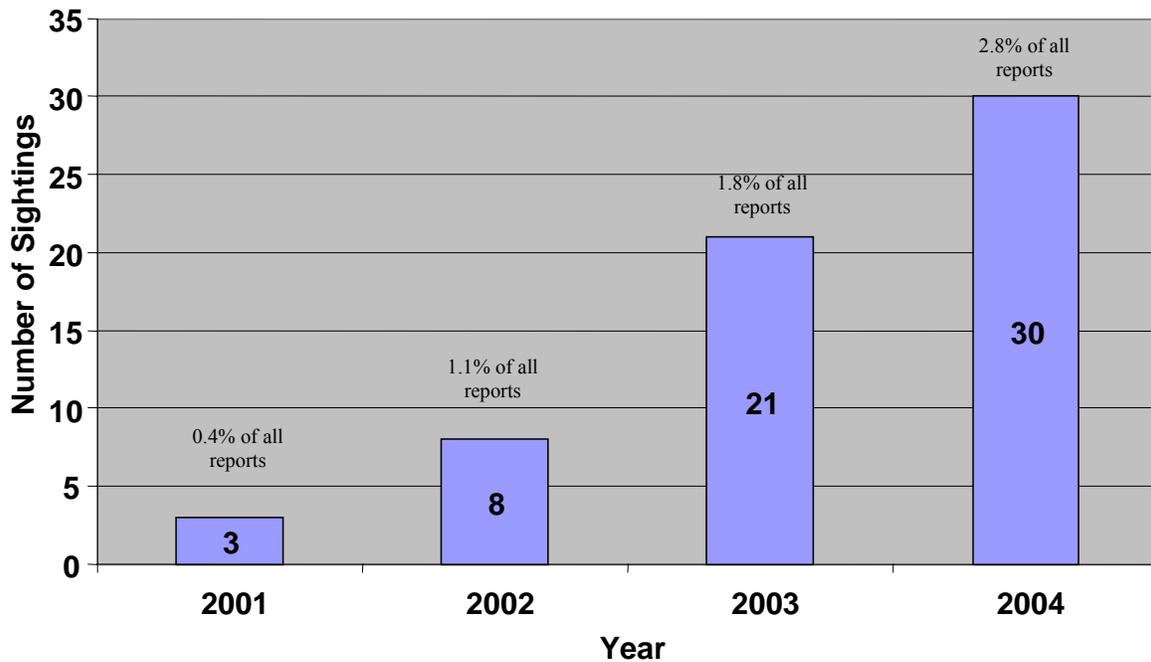


Figure 1. Annual increase in number of humpback sightings reported to Orca Network online sightings archive since 2001 (www.orcanetwork.org).

The identity of humpbacks in inside waters

Photo-identification is a technique employed to track the sightings of animals in a population that are individually identifiable by natural markings. With humpback whales, variation in the natural coloration patterns and shape of the ventral surface of the tail flukes can be used to distinguish one whale from another (Katona and Whitehead 1981). Cascadia Research Collective in Olympia, Washington has been collecting identification photographs of humpback whales from the entire U.S. west coast for more than 20 years, and maintains a catalog of over 1,400 known individuals, which includes nearly 200 whales from the outside waters of Washington and Southern British Columbia. Cascadia Research Collective responded to sighting reports of whales in the South Sound and collected photographs taken opportunistically by whale watching vessels throughout the Georgia Basin region in 2003 and 2004. These photographs were compared to each other and to the previously photographed whales from the outer coast of Washington and British Columbia. This allowed us to determine the number of individual whales entering inside waters and the relationship of these whales to the larger offshore population.

Prior to 2003 only three individuals had been identified in inside waters: the two juveniles in 1988 noted above (which were not sighted again), and a third single adult whale seen off Victoria, B.C. in October 1997. A total of 13 unique individuals were identified in 2003 and 2004, one of which was the same whale seen in October 1997. Most of the whales were identified in fall; however, two juvenile humpbacks were identified in spring of 2004, one in the San Juan Islands and the other in southern Puget Sound. The south sound whale, which was initially reported as a gray whale, was sighted frequently in the waters between Southern Vashon Island and Point Defiance in May and June of that year.

Eleven of the thirteen whales identified in inside waters had photographs of sufficient quality to be compared against the collection of whales previously identified on the outer coast. The results of this comparison are summarized in Table 1, along with the sighting history and age class of whale. Of particular interest is whale WABC03-1, which was identified in fall 2003 as a calf. It was photographed twice in 2004 as a yearling: once with its mother, and later with a second whale of unknown sex and age.

Table 1. Summary of sighting history for eleven humpback whales identified in inside waters of British Columbia or Washington State.

ID	Age Class	Outer Coast Month/Years	Straits (Juan de Fuca/Georgia) Month/Years	Puget Sound Month/Years	Count of Years	Span of Years
CRC13542	Adult	July 1996, July 1997, June 1998	Fall 2003		4	7
CRC13555	Reproductive Female	Oct 1996, Sept 2001	Oct 1999, Fall 2003, Sept 2004		4	8
CRC13576	Reproductive Female?		Oct 1997, Nov 2004		2	7
CRC13659	Adult	June 2002	Fall 2003		2	2
CRC14013	Reproductive Female	Aug 1990, July 1993, July 1996, July 2001	Fall 2003		5	13
calf of 13555	Calf		Sept 2004		2	2
WABC03-1	Yearling		Fall 2003 (as a calf), Oct 2004		1	1
WABC03-2	Unknown		Fall 2003		1	1
WABC04-1	Unknown		Oct 2004	Sept 2004	1	1
WABC04-2	Calf?		Nov 2004		1	1
WABC04-3	Juvenile			May 2004, June 2004	1	1

The future of humpbacks in the Georgia Basin

Humpbacks are common in the inside waters of Southeast Alaska today, and the increasing frequency with which humpbacks have been sighted in inside waters of Washington State and British Columbia in recent years is an encouraging sign that they may once again become among the most frequently sighted large cetaceans in the Georgia Basin region. The presence of mothers with calves is particularly important because the strong fidelity to feeding areas that is a characteristic of humpback whale populations is maternally directed (Baker *et al.* 1987, Clapham and Mayo 1987). Calves return to the feeding areas they first visited with their mother, and the frequency of juvenile sightings may support that this is indeed occurring in inside waters.

A number of factors may inhibit the recovery of humpbacks in the Georgia Basin. The photographic connection of these whales to the outer coast suggests that immigration from offshore is a likely source of new individuals, however the most recent population estimates for humpback whales from that region are only several hundred individuals, still well below the thousands of whales originally taken there (Calambokidis *et al.* 2004). Any substantial increase in the number of whales in inside waters will likely lag behind the gradual recovery of this parent population.

Historically, the primary prey source for humpback whales in inside waters was herring, and having also suffered severe over-fishing, herring populations have not completely recovered in many areas where they were once abundant (Stout *et al.* 2001). Without the concurrent return of their prey base, humpbacks may never return to inside waters in the numbers in which they once existed, even if the adjacent outer coast population continues to grow and expand its range. Furthermore, the inside waters are not as clean as when humpbacks originally inhabited them. Elevated levels in a number of persistent organic pollutants have been reported from herring stocks in the Georgia Basin (O'neil and West 2001). Despite increased regulation to reduce industrial run-off in recent years, contaminants in the food chain and will likely continue to be a presence and a threat to marine (and terrestrial) life, although their effects are difficult to assess and to quantify. Finally, with the ever-increasing human population, whales in inside waters will be at a much greater risk for vessel collisions and fisheries interactions (entanglements in particular), both of which have proven a significant danger to whales in other parts of the world.

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