GLACIER BAY & ICY STRAIT HUMPBACK WHALE FACT SHEET

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Individual identification of Glacier Bay & Icy Strait's humpback whales was begun by Charles Jurasz (of Juneau) in 1973.

Many of the same whales Jurasz identified still return annually to the area today. From 1985 through 2017, the park's whale monitoring program has documented 740 different individuals in Glacier Bay/Icy Strait (GB/IS).

The birth year of 311 (42%) of these whales is known based on sightings of them as a calf in SE Alaska. The oldest known-age animal in GB/IS is male #516 ("Garfunkle"), born in 1974. He was last documented in 2016 near Juneau at age 42.

Male #441 has the longest documented humpback whale sighting history in the world: 1972-2016 = 45 years! Sadly, whale #441 was found dead just outside Glacier Bay in June 2016. A necropsy was conducted and the results will continue to inform our understanding of the biology of humpback whales. Most humpback whales live into their sixties, and the oldest known humpback was 96 years old, determined from ear plugs collected during historic commercial whaling. Whale #441 was at least 66 years old at the time of his death according to the growth layers in his ear plug.

When whales breach, we collect sloughed skin with a small net and send it to a lab where DNA analysis reveals the whale's sex and other genetic data. From 1996 through 2017, we collected 332 sloughed skin samples. The other ways we are able to determine a whale's sex are if the whale returns to the study area with a calf (then we assume it is female) or in the infrequent event that we obtain photographs of the whale's urogenital area.

Each year 1985-2017, the NPS whale monitoring program has identified 41 to 240 individual whales.

Annual numbers of whales in GB/IS vary widely, although survey effort has been fairly consistent each year in June, July and August. From 1985-2014, the population increased at an average rate of 5.1% per year. However, since 2013, the population has declined >40%.

Linking whale numbers with vessel traffic has been difficult, although short term changes in behavior due to vessel disturbance have been shown in GB/IS and numerous other studies.

Most humpback whale sightings in Glacier Bay are within ½ mile of shore. Vessel operating restrictions in whale waters are intended to minimize disturbance to feeding whales and lower the risk of whale/vessel collisions.

In 2009, the population in Glacier Bay and Icy Strait was estimated to be 181 whales. The most recent population estimate for SE Alaska was 1,585 individuals in 2008; however this is considered a minimum estimate because no data were collected in southern SE Alaska. In 2004-05, the population in all of SE Alaska plus northern British Columbia was estimated to be ~6,000 humpback whales.

Most mature female humpback whales in Glacier Bay & Icy Strait have a 3-year calving interval.

A mature female humpback is either pregnant or lactating almost all the time. In the Glacier Bay area, female #535 has the longest reproductive span encompassing 30 years from 1981-2010.

Five GB/IS females have given birth in successive years, but it is rare. One of these females (#581) calved 3 years in a row two times. She is also the most prolific female documented in GB/IS with a total of 13 calves from 1984 through 2010, and in 2012, she became a known great grandmother. Several Hawaii females have also been observed to give birth in successive years, but the question is whether these calves survive their first migration.

A collaborative study by many North Pacific whale researchers determined the calf survival rate in the first year of life is approximately 80%. Another biologically important question is the average age at which females first give birth. The average age at first calving for female humpback whales in southeastern Alaska is 12.1 years, which is twice the average found in the North Atlantic (5.9 years).

There are several known, living grandmothers in the GB/IS population. These are females who have had at least one female offspring who we later observed with a calf. There have been several cases where both a grandmother and her daughter returned to the study area with new calves in the same year.

Humpback whales are very acoustically oriented.

Mature males sing long songs (~15 minutes) in their tropical breeding grounds as a display related to mating. In quiet acoustic conditions, humpback song can be heard approximately 50 miles away from the singer.

Although male humpback whales were once thought to sing only on their breeding grounds, a number of researchers have recorded humpbacks singing on their feeding grounds, often around the onset of migration. Since 2000, we have frequently recorded humpback whale song using a hydrophone anchored in Bartlett Cove.

On the feeding grounds, humpbacks produce a variety of vocalizations in many social contexts, including a specialized 'feeding call' which probably either coordinates the whales during group feeding or helps to manipulate the fish.

Humpbacks seem to have very good hearing, but sometimes don't seem to pay much attention to their surroundings when they're feeding. This implies that while they may not always be disturbed by motor boats in their immediate area, the whales run the risk of colliding with them, if they've 'tuned out' the sound. Whales probably don't detect silent boats (kayaks, sailboats and drifting motorboats, for example) until they are very close or within visual range.

Structure of the North Pacific humpback whale population

The most recent population estimate for the entire North Pacific was 21,063 humpback whales in 2004-06, with a current rate of increase of 8% per year.

Feeding areas are north of 30 degrees latitude, along the rim of the Pacific Ocean basin from California to Russia. Feeding areas are distinct & individuals tend not to move between feeding areas, although some movement has been documented.

Feeding area cohesiveness is maintained by calves returning to areas where their mother took them in their first year of life. The increasing number of whales in the Glacier Bay area is due to the faithful return of whales whose mother first brought them to the area as a calf.

All whales from a given feeding area do not go to the same wintering area, although trends exist. Most humpback whales in SE Alaska (~94%) are part of the Hawaii Distinct Population Segment (DPS), which was removed from the Endangered Species List in 2016. Approximately 6% are from the Mexico DPS, which is listed as threatened. However, exceptions have been documented; for instance, two whales from British Columbia were identified off Ogasawara, Japan!

The fastest documented migration between SE Alaska and Hawaii is 36 days (distance ~2,500 miles). Wintering areas tend to be at around 20 degrees latitude. Hawaii, Mexico, Japan, Taiwan, the Philippines and Central America are the primary documented North Pacific wintering areas.

Humpback whale use of southeastern Alaska

Humpback whales are present in SE Alaska in all months of the year. Researcher Jan Straley (UAS) has documented at least 10 individuals over-wintering near Sitka, and NOAA researchers have documented one whale that over-wintered near Juneau. It is unknown how common over-wintering behavior is in most areas because there is minimal or no photographic identification effort in the winter in most parts of SE Alaska.

Late fall and winter whale habitat in SE Alaska appears to correlate with areas that have over-wintering herring (lower Lynn Canal, Tenakee Inlet, Whale Bay, Ketchikan, Sitka Sound).

In GB/IS, the longest sighting interval recorded was of female whale #1304, who was sighted over a span of 219 days, between April 17 and November 21, 2002, when she was 10 years old.

Whale numbers peak in late summer. Some individuals return to very specific areas of GB/IS year after year.

Some whales have preferred feeding partners within and between years. Associations among some individuals in SE Alaska have persisted for decades. These associations are not based on familial ties like is common in many toothed whales.

Humpback whales move within southeastern Alaska

Collaborative research enables documentation of whale movement between researchers' study areas. Work by Jan Straley, Scott Baker and Glacier Bay National Park documented whales moving within SE Alaska. In addition, we have documented frequent movement of whales between SE Alaska and northern British Columbia.

Whales frequently move between Glacier Bay and Icy Strait, treating the area as a single contiguous habitat.

Current threats include warming oceans, habitat degradation, vessel disturbance & strikes, and interactions with fishing gear.

Two humpback whales have been found dead in Glacier Bay after being hit by vessels: a pregnant female in July 2001 and a male calf in August 2004. In a world-wide study of whale/vessel collisions, David Laist and colleagues found that most lethal strikes involve vessels >80 meters (262 ft) in length traveling 14 knots or faster. The cause of death in another pregnant female found dead in upper Glacier Bay in May 2010 is unknown.

According to a 2003-04 study examining entanglement scars on the tailstocks of humpback whales, at least 71% of the humpbacks in northern SE Alaska have been entangled in fishing gear and/or marine debris.