

SANCTUARY OCEAN COUNT



NATIONAL MARINE
SANCTUARIES

HAWAIIAN ISLANDS
HUMPBACK WHALE

<http://hawaiihumpbackwhale.noaa.gov>

PROJECT GUIDE

SANCTUARY OCEAN COUNT

CONTACT SHEET

HAWAII

For questions, please contact the O`ahu Sanctuary office at:

1-888-55WHALE ext. 253

(1-888-559-4253)

KAUA`I SANCTUARY OFFICE

4370 Kukui Grove, Suite 206

Lihu`e, Hawai`i 96766

Phone: (808) 246-2860

Fax: (808) 246-2862

O`AHU SANCTUARY OFFICE

6600 Kalaniana`ole Highway, Suite 301

Honolulu, Hawai`i 96825

Phone: (808) 397-2651 ext. 253 or Toll Free 1-888-55WHALE ext. 253

Fax: (808) 397-2650

WEBSITE

<http://hawaiihumpbackwhale.noaa.gov>

<http://sanctuaryoceancount.org>

E-MAIL

oceancount@noaa.gov



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SANCTUARY OCEAN COUNT

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SANCTUARY OCEAN COUNT

PROJECT BACKGROUND & BASICS

Each winter, from approximately December to May, a portion of the endangered North Pacific humpback whale population migrates from their feeding grounds in Alaska to the warm waters of Hawai'i to engage in breeding activities.

Hawai'i's pristine marine environment is considered to be one of the most important breeding, calving and nursing grounds for humpback whales in the North Pacific. For that reason, the Hawaiian Islands Humpback Whale National Marine Sanctuary was designated to protect humpback whales and their habitat in Hawai'i. Humpback whale population numbers are still relatively unknown. In an effort to provide a relative approximation of humpback whale numbers and distribution patterns locally over the years, the Sanctuary sponsors community events such as the Sanctuary Ocean Count.

The Sanctuary Ocean Count was initiated as a means to provide Hawai'i residents and visitors with the opportunity to observe humpback whales in their breeding grounds by conducting a yearly shore-based census during the peak breeding season. Although the census does not claim to provide scientifically accurate results, it serves as a tool to supplement scientific information gathered from other research activities. The count also provides some information on how whales use inshore waters on an average peak season day. The Sanctuary Ocean Count serves to promote public awareness about humpback whales, the Sanctuary, and shore-based whale watching opportunities.

The first count was conducted in February 1996 on O'ahu, with approximately 150 volunteers. In 1999, the Big Island was added to the effort. Kaua'i began participating in 2000 and Kaho'olawe began participating in 2002. To date, the Sanctuary Ocean Count covers 60 sites on four islands, with an enlistment of over 2000 volunteers. In the future, the Sanctuary hopes to expand this project to other islands.

Safety Guidelines:

Safety is a primary concern for all of our volunteers. If weather or environmental conditions become dangerous during the ocean count, stop the effort and vacate the area to ensure the safety of yourself and others. We recommend that you take all necessary precautions while whale watching, as weather and environmental conditions at some of these shore sites can be unpredictable. We advise all volunteers to wear proper clothing and footwear at all times. Never turn your back to the ocean or walk along steep cliffs along the ocean.

In the Field:

Wear appropriate clothing based on the morning's anticipated weather conditions. Essential items include hats, sunglasses, sunscreen, water, watches, something to write on (e.g., clipboard), and pens or pencils. A pair of binoculars or a spotting scope is very helpful but not required. Optional items include beach chairs or mats, rain jackets or umbrellas and cellular telephones for emergencies.

Site Information:

Please review the site descriptions online at <http://hawaiihumpbackwhale.noaa.gov> in order to prepare for the Sanctuary Ocean Count. Facilities and restrictions vary for each location. Please note some sites have specific restrictions (e.g., no pets, no food in area, permit must be obtained). Site descriptions are updated annually based on comments from volunteers. After the count, feel free to provide additional information about your site to the count coordinators so that the information can be kept up-to-date.

SANCTUARY OCEAN COUNT

SITE LEADER RESPONSIBILITIES

Mandatory Site Leader Training:

- Site leaders are selected for each Ocean Count Site prior to the training session.
- Site leaders will learn the methods to be used in conducting the count.
- They will also learn more about the roles of a site leader.

Following Site Leader Training (Contact Site Leader Only):

- Access online database to download information on the volunteers at your site.
- Be prepared to receive calls and E-mails from volunteer participants at your site.
- Select an area and time for everyone to meet on the day of the count. Volunteers should meet at the site at least one half-hour prior to the count (7:30 a.m.) to go over instructions and get settled. Some sites may need to meet earlier depending on the location (see site descriptions online). Consideration should be given to safety, comfort, and the level of impact to the site.
- Provide meeting time and location to participants.
- Remind participants to bring essential items.
- Find out if any participants require special needs and inform count coordinators of any problems.

On the Day of the Event:

- Provide a brief background on the sanctuary and humpback whales and then provide guidance on how to sight whales and how the data collection will be done.
- Have participants review the Notice of Caution document and complete information on participant sign-in sheet.
- Designate two volunteers to complete the Site Map form.
- Have all volunteers complete the Behavior Sheets.
- Fill out the Census Sheets (site leaders collaborate to complete one sheet per count date).
- Announce start of each time period to all volunteers.
- Keep a copy of the whale behavior information sheet available for reference.
- Distribute other handouts as appropriate.
- Collect data sheets from volunteers. Be sure that all fields have been completed and information is legible.
- Place a star on the top right corner of the two most accurate behavior sheets.
- Call the appropriate sanctuary office within one hour of the count to report census data and the number of volunteer participants (including site leaders) for media purposes.
- Mail or deliver all completed data sheets and forms to the appropriate office.

Throughout Whale Season:

- Complete a Site Leader Time Sheet and submit to the appropriate office at the end of whale season. Be sure to record all volunteer hours worked on the Sanctuary Ocean Count project (and other projects if applicable), including your travel time to and from events.

SANCTUARY OCEAN COUNT

DATA COLLECTION INSTRUCTIONS

Each site will have 3 types of datasheets:

- Census Sheet to be completed by site leaders.
- Behavior Sheet to be completed by each volunteer.
- Site Map Sheet to be completed by a selected team of 2 volunteers.

CENSUS SHEET INSTRUCTIONS

Site leaders work together to complete one Census Sheet per count date.

1. Position yourself at the site.
2. Start counting precisely at the times specified on the sheet (0800, 0830, 0900, 0930, 1000, 1030, 1100, 1130, 1200).
3. Slowly scan your site from left to right, spending an equal amount of time in each area of water.
4. Each time you see a whale, tally it on the sheet using a bar (in the space for Adults if it is an adult and in the space for Calves if it is a calf).
5. Do not recount whales within a 15 minute period.
6. Finish counting exactly 15 minutes after you started (0815, 0845, 0915, 0945, 1015, 1045, 1115, 1145, 1215).
7. Only count whales that are at the surface during the 15 minutes of the count.
8. Tally your bars and put the total in a circle next to the bars. This will help the data analysts who might otherwise have to interpret II as either "eleven" or "two".
9. Complete the visibility chart on the third page of the Census Sheet for each indicated time period.
10. Make sure you have included the site's elevation on your census sheet (available online or from count coordinators).

If you see something other than a humpback whale during the count:

1. Establish what it is (spinner dolphin, or simply some kind of dolphin, or other animal) and record on data sheet.
2. Turtles and seals can also be counted on the census sheet. Please report all monk seal sightings to NOAA Fisheries at 1-888-256-9840.
3. Do not try to establish if there are calves, count all animals as adults.
4. Write the total number of animals in the appropriate space.

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BEHAVIOR SHEET INSTRUCTIONS

The Behavior Sheet is to be completed by ALL general volunteers.

It is advisable that volunteers work in pairs, one monitoring whales and calling behaviors, the other writing them down. Volunteers can exchange tasks. This activity will be conducted in half-hour increments continuously from 0800 - 1200.

1. Start and stop observations precisely at the specified times on the data sheet.
2. Monitor all the whales that can be seen from your position.
3. The data sheet identifies various humpback whale behaviors. Each time a behavior is witnessed, mark the appropriate column on the data sheet with a bar. You may also describe what is happening in the comments section. Use additional sheets if necessary. Record the time before the description. At the end of each 30-minute period, total the bars under each behavior and circle that number. If you take a break please note your absence rather than recording a "0" count.
4. Complete the visibility chart on the back of the Behavior Sheet for each time period.

How to fill in columns on the data sheet:

- **NUMBER OF ADULTS** - Write in the total number of animals that appear to be adults. The only way to estimate this is by noting animal size, which is usually apparent by the size of the blow.
- **NUMBER OF CALVES** - This is often difficult to estimate. If you are not able to establish the number of calves, indicate if calves were present (P) or absent (A).
- **BREACH** - Record the number of times this behavior occurs. A breach occurs when the whale breaks clear of the water with its full body and returns to the water with a large splash.
- **SLAP** - Record the number of times this behavior occurs. Here, a whale slaps its tail, head, pectoral fin or peduncle on the water creating small splashes, but the main body of the animal remains underwater.
- **BLOW** - Record the number of times this behavior occurs. A blow occurs when you see a spout (the whale is taking a breath). Sometimes you may not see a blow, but the whale surfaces and then dives again.
- **DIVE** - Record the number of times this behavior occurs. In this behavior, the whale arches its back upward out of the water. The tail may or may not be seen. After the dive, the whale will not be seen for some time.

Some general terms to use in the comment section:

- **TRAVELING** - A continuous directional movement with frequent surface intervals.
- **SURFACE ACTIVE** - Whale is breaching, tail or fluke slapping, spy-hopping.
- **NURSING** - Calf's rostrum is next to the mother's body. Typically the mother is motionless.
- **MILLING/LOGGING** - Whales remain at the surface for an extended period of time - like a log floating on the surface.

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TYPICAL HUMPBACK WHALE BEHAVIORS

Blow



On average, adult humpbacks surface to breathe every 10-15 minutes, but can remain submerged for as long as 45 minutes. Calves must rise to the surface every 3-5 minutes.

Head Rise or Spy Hop



A whale rises vertically toward the surface, with its head out of the water. Some believe this behavior allows the whale to look at activity going on above the surface.

Tail Slap



A humpback raises its tail flukes out of the water and slaps them forcefully on the surface of the water. This behavior is often repetitive and may serve as a warning.

Pec Slap



Humpbacks will slap the water's surface with one or both fins simultaneously. The slapping of fins may serve as a communication signal to other whales.

Head Slap



A competitive display in which the humpback whale lunges forward with its head raised above the water.

Peduncle Slap



An energetic display where the whale throws its tail out of the water and in the process, slaps its peduncle on the surface.

Dive



A humpback arches its back upward out of the water. The tail may or may not be seen. The whale will not be seen for some time.

Breach



An acrobatic display where the humpback uses its tail to launch itself out of the water then lands back on the surface with a splash.

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SITE MAP INSTRUCTIONS

Prior to 10:30 a.m., the site leader should assign 2 volunteers to complete this task. This activity will be conducted from 10:30 a.m. to 11:00 a.m.

1. Prior to 10:30 a.m., draw a map of your site, with special care given to the geographic layout of the area. Note which direction is north, south, east and west.
2. Record the elevation of the site in the space provided. This information is available in the site description section of the handbook.
3. Complete the visibility section on the Site Map based on conditions between 10:30 a.m. and 11:00 a.m.
4. Mark your position at 10:30 a.m. and do not change this position until you have finished mapping all the whales present. Scan the water from 10:30 a.m. to 11:00 a.m.
5. Draw a circle for the position of each of the whales you spot. If you are recording a single whale, draw a small circle. Draw a larger circle for groups of more than one whale. Indicate how many whales each circle represents either next to, or inside of each circle.
6. If the circle represents a mother/calf pair, indicate this with "M/C." For a mother/calf/escort write "M/C/E."
7. Estimate your distance from the whales using the distance estimation table (explained below). It will be necessary to know the approximate elevation of your site (available online).
8. Draw lines from your location on the map to the whale and write the distance along the line.

How to measure the distance of a whale from the observer:

The distance between the observed whale and the observer will be calculated using a ruler and a distance table (see next page).

Using the Ruler:

1. The ruler is to be held vertically in one hand outstretched to the target whale's location. The 0 inch mark on the ruler is to be lined up with the horizon.
2. When the target is spotted, slide the encircling index card up or down the ruler so that the black line on the index card lines up with the whale.
3. Use your thumb to hold the index card in place and note the measurement on the ruler (in sixteenths of an inch).

Using the Table:

1. Determine your observation elevation by adding the elevation of your ocean count site (in feet above sea level) plus an additional 5 feet (to account for height of the observer's outstretched arm above the ground). Find the nearest observation elevation on the table. This is the second row of numbers starting at 10 feet.
2. Once you have found your nearest observation elevation, search down the column for the measurement you have taken from the ruler (in sixteenths of an inch).
3. Look over to the corresponding number (along the same row) in column one. This is the distance in miles between the observer and the whale. This number can be expressed as a range (example: .78 to .95 miles)
4. Note this distance on your observation form.

For additional help see the example on the back of the Map Sheet.

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This is a distance-estimating cross-reference table for selected values of distance and elevation.

The distance (in miles) to an object of interest is listed in the left column.
 The observation elevation above sea level (in feet) is listed along the top row. The distance to the horizon is listed above each elevation value for reference.
 -The calculated value for the "apparent space" (between "the horizon line" and an object of interest) is listed at the intersection of each row and column combination.
 Note: The calculated value for the "apparent space" is rounded to the nearest 1/16th of an inch.

The use of the table requires the following steps:
 1). The "apparent space", between the horizon line and the line of sight to the object of interest, is measured with a ruler held 24 inches from the observer's eyes.
 2). In the column labeled with the value nearest to that of the observer's elevation above sea level, locate the value nearest to that of the "apparent space" measured.
 3). In the left-hand column, on the same row as the selected value of "apparent space", is listed the value to the object of interest (in miles).
 Note: Although accuracy may be improved with the use of interpolation, accuracy will be most improved by careful measurement of the "apparent space".
 This is especially true when the "apparent space" is small and the distance to the object of interest is large.

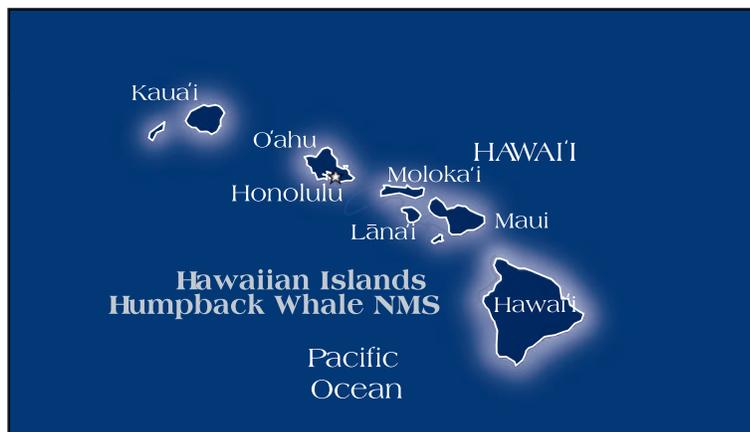
Distance in miles	4.3	6.0	7.4	8.5	9.5	10.4	11.3	12.0	12.8	13.5	15.4	16.8	18.6	20.4	21.9	24.6	26.9	30.1	33.0
0.25	3/16	6/16	8/16	11/16	14/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16	1 10/16	1 11/16	1 12/16	1 13/16	1 14/16
0.28	2/16	5/16	8/16	10/16	13/16	15/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16	1 10/16	1 11/16	1 12/16	1 13/16	1 14/16
0.30	2/16	5/16	7/16	9/16	12/16	14/16	1	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16	1 10/16	1 11/16	1 12/16
0.33	2/16	4/16	6/16	8/16	11/16	13/16	15/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16	1 10/16	1 11/16	1 12/16
0.37	2/16	4/16	6/16	8/16	10/16	12/16	13/16	14/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16	1 10/16	1 11/16
0.40	2/16	3/16	5/16	7/16	9/16	10/16	12/16	14/16	1	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16	1 10/16
0.44	1/16	3/16	5/16	6/16	8/16	9/16	11/16	13/16	14/16	1	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16
0.49	1/16	3/16	4/16	6/16	7/16	8/16	10/16	11/16	13/16	14/16	1	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16
0.54	1/16	2/16	4/16	5/16	6/16	8/16	9/16	10/16	12/16	13/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16	1 9/16
0.59	1/16	2/16	3/16	5/16	6/16	7/16	8/16	9/16	11/16	12/16	13/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16
0.65	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	10/16	11/16	12/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16
0.71	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16	1 8/16
0.78	1/16	2/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16
0.86	1/16	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16
0.95	1/16	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16	1 7/16
1.04	1/16	1/16	2/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16
1.15	0	1/16	2/16	2/16	3/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16	1 6/16
1.26	0	1/16	1/16	2/16	2/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	1 1/16	1 2/16	1 3/16	1 4/16	1 5/16
1.39	0	1/16	1/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	1 1/16	1 2/16	1 3/16	1 4/16
1.53	0	1/16	1/16	2/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	1 1/16	1 2/16	1 3/16
1.68	0	1/16	1/16	1/16	2/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	1 1/16	1 2/16
1.85	0	1/16	1/16	1/16	1/16	2/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16	1 1/16
2.04	0	0	1/16	1/16	1/16	2/16	2/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16	9/16	10/16
2.24	0	0	0	1/16	1/16	2/16	2/16	2/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16	9/16
2.46	0	0	0	0	1/16	1/16	1/16	1/16	2/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16	8/16
2.71	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16	7/16
2.98	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16	6/16
3.28	0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	4/16	5/16
3.61	0	0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16	4/16
3.97	0	0	0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16	4/16
4.36	-0	0	0	0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16	3/16
4.80	-0	0	0	0	0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16	3/16
5.28	-0	0	0	0	0	0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	1/16	2/16	2/16
5.81	-0	0	0	0	0	0	0	0	0	0	0	0	0	1/16	1/16	1/16	1/16	2/16	2/16
6.39	-0	-0	0	0	0	0	0	0	0	0	0	0	0	0	1/16	1/16	1/16	2/16	2/16
7.03	-0	-0	0	0	0	0	0	0	0	0	0	0	0	0	0	1/16	1/16	2/16	2/16

Mahalo to the late Leon Brenaman who developed this distance tool in 2001.

SANCTUARY OCEAN COUNT

SANCTUARY BACKGROUND & WHALE BASICS

The **Hawaiian Islands Humpback Whale National Marine Sanctuary** lies within the warm, shallow (less than 600 feet), waters surrounding the main Hawaiian Islands and constitutes one of the world's most important humpback whale habitats. Hawai'i is unique because it is the only place in the United States where humpback whales mate, calve, and nurse their young. For this reason, Congress designated the sanctuary to protect humpback whales and their habitat in Hawai'i. Every year, from November to May, more than half of the North Pacific humpback whale population migrates to the warm protected waters of Hawai'i. During whale season it is common to see humpback whales resting near shore or performing acrobatic displays that can be seen from miles away. The sanctuary protects Hawai'i's ocean wilderness through research, education, conservation and stewardship. **Find out more online at <http://hawaiihumpbackwhale.noaa.gov>.**



Hawai'i's Humpback Whales

Population - Humpback whales were once plentiful in oceans worldwide. The global population was depleted by the commercial whaling industry at the start of the 20th century. Now, 10-12,000 humpback whales, what is believed to be the largest seasonal population in the world, migrate to Hawai'i each year.

Migration - Humpback whales spend summer months feeding on zooplankton and small fish that flourish in the colder, nutrient-rich waters of temperate and sub-polar regions near Alaska and other northern areas. Their annual migration to the tropics during winter is an amazing feat that is not yet fully understood. It's believed that humpbacks follow cues of temperature, ocean currents, and the earth's magnetic field to navigate nearly 3,000 miles of open ocean. Once in warmer waters, the whales engage in mating, calving, and nursing activities.

Facts

Group	Mammalia	Type of whale	Baleen
Order	Cetacea	Hawaiian name	koholā
Sub-order	Mysticeti	Weight	45 - 50 tons
Family	Balaenopteridae	Length	45 feet
Genus	Megaptera	Life span	40 - 60 years
Scientific Name	<i>Megaptera novaeangliae</i>	Gestation	10 to 12 months

