



ANNUAL CENSUS OF HUMPBACK WHALES AROUND O`AHU, HAWAI`I, KAUA`I AND KAHO`OLawe 2004

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October 2004

Report prepared under Contract AB133C-04-SE-0444 from the
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BACKGROUND

For the ninth consecutive year (since 1996), the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) sponsored the Sanctuary Ocean Count, an educational event involving volunteers throughout the Hawaiian Islands in the census of humpback whales (*Megaptera novaeangliae*) from shore sites on O'ahu, Hawai'i, Kaua'i and Kaho'olawe. The island of Kaho'olawe was also included in the census thanks to volunteers from the Kaho'olawe Island Reserve Commission (KIRC). In addition to learning about humpback whales and getting hands on experience in observing them in their natural habitat, volunteers that participate in the Sanctuary Ocean Count contribute important information about humpback whale abundance, distribution, and activity patterns near-shore. The format of the Sanctuary Ocean Count has been evolving significantly from its inception in 1996 and the data collection procedures have been formatted to both be easily understandable by non-scientists and useful to the HIHWNMS staff in providing reasonable estimates of whale abundance and distribution at the selected count sites.

INTRODUCTION

Humpback whales visit Hawaiian waters from approximately January to April although individual whales can be seen as early as September and as late as June (Craig *et al.* 2001). During their stay in Hawaiian waters, female humpback whales give birth to their calves, and, subsequently, mate. Pregnant females are the first to arrive in Hawai'i followed by sexually mature males. Some whales may remain on the feeding grounds all winter or not make a complete migration (Craig and Herman, 1997). Abundance trends for the endangered humpback whale population have been monitored since the introduction of the Marine Mammal Protection Act in 1972. Currently, the humpback whale population in the Hawaiian wintering grounds is estimated at 5,000 whales. Such estimates suggest a steady recovery of the Hawaiian humpback whale stock, which is increasing at a rate of approximately 7% per year (Mobley *et al.*, 1999; Mobley *et al.*, 2001).

While whales are distributed throughout the main Hawaiian Islands Archipelago in the winter, higher concentrations have been identified in the shallow waters between Maui, Lana'i, and Moloka'i; near Penguin Banks, a shallow water embankment between Moloka'i and O'ahu; and around the Island of Hawai'i (Mobley *et al.*, 1999; Mobley *et al.*, 2001, Maldini 2003). However, trends in habitat use over time have been studied only for some locations where research effort has been more intense.

The annual Sanctuary Ocean Count is designed to fill important gaps in the documentation of yearly abundance trends around the Hawaiian Islands and provides support data to current research efforts.

METHODOLOGY

Census Dates And Times

The Sanctuary Ocean Count was conducted during the recognized humpback whale breeding season (Jan-Apr) and included three censuses during the last week of January, February and March respectively. Dates were: January 31, February 28, March 27.

The census procedures were consistent with those used in previous years and were standardized by providing volunteer training during the week prior to the count. In addition to this census, separate groups of volunteers monitored whale behavior throughout the morning, and mapped

whale positions on a detailed site map between 1030 and 1100.

VOLUNTEER TRAINING

HIHWNMS staff identified two types of volunteers: Site Leaders, and Regular Volunteers. Site Leaders were people willing to participate in training sessions to become able to coordinate, manage and train Regular Volunteers at the shore-based sites assigned to them. Regular Volunteers did not have to undertake any formal training (except on Kauai where both Site Leaders and Regular Volunteers were trained by Sanctuary staff) and, after pre-registering, could show up at their chosen shore-based site on the day of the count to assist in data collection and whale observation.

The 2004 Site Leader training was conducted by Sanctuary staff on 4 January at Jack's Diving Locker, in Kailua-Kona, and at Mokupāpapa Discovery Center, in Hilo, on the Island of Hawai'i; on 10 January, training was held at the Hanauma Bay Education Center on O'ahu; and on 17 January at King Kaumuali'i Elementary School on Kaua'i. All Site Leaders were provided with an updated Site Leader Handbook describing their duties and the data collection procedures.

Trained Site Leaders were instructed to meet Regular Volunteers before 0800 hrs at their shore-based site on the day of the count and to conduct a brief training session on how to collect behavioral information. Site Leaders were instructed to report the preliminary results of the census immediately after the official closing of the event, at 1215 hrs, by calling the HIHWNMS staff at the appropriate office. Sanctuary staff remained available throughout the day to field questions and tally incoming census results. Site Leaders generally stayed the same for all count dates (Jan-Mar) on all islands. Volunteers that were not Site Leaders, however, generally changed for each date on all islands.

CENSUS SITES

The 2004 Sanctuary Ocean Count was conducted at 25 sites around the Island of O'ahu (Figure 1), 20 sites around Hawai'i (Figure 2), 16 sites on Kaua'i (Figure 3) and one site on Kaho'olawe. Each of these sites was manned by at least one Site Leader. Site location has been kept consistent over the years to provide comparative data across years. A complete description of each census site (including landmarks, elevation and facilities available) is found in the manual provided to Site leaders and volunteers during training (call Sanctuary office on O'ahu for a copy of the publication).

TYPES OF DATA COLLECTED

Three types of data were collected: census data, which were reported on a Census Sheet (Figure 4); exact whale location data which were reported on a Map Sheet (Figure 5); and behavioral data, which was reported on a Behavior Sheet (Figure 6).

CENSUS PROCEDURES

The purpose of the census data was to obtain an estimate of the average number of whales present in coastal waters adjacent to count sites between 0800 and 1215 at three times during the breeding season (January, February, and March). By keeping the methodology consistent, these

data will be comparable over the years and will give an indication of the trends in population size over long periods of time.

The census was completed by Site Leaders only, to limit the number of datasheets submitted per site to one (Figure 4), and to ensure that only specially trained personnel participated in this portion of the Sanctuary Ocean Count. Nine times, for a 15-minute period (0800-0815, 0830-0845, 0900-0915, 0930-0945, 1000-1015, 1030-1045, 1100-1115, 1130-1145, and 1200-1215), the waters visible from land-based sites were scanned for the presence of humpback whales. When a whale was sighted, it was tallied on the data sheet and not re-counted during the same 15-minute period. Calves and adult whales were tallied in separate columns, if a distinction could be made. Only whales seen at the surface during the 15-minute period were counted. Site Leaders were asked not to record whales that surfaced before the start of the count or immediately after the 15-minute period even if they were aware of the whale's presence.

If other species of marine mammals were sighted during this 15-minute period their estimated number was also tallied without making a distinction between adults and calves, given the difficulty of this task at a distance and with untrained observers. Species likely to be sighted from land were spinner, spotted and bottlenose dolphins.

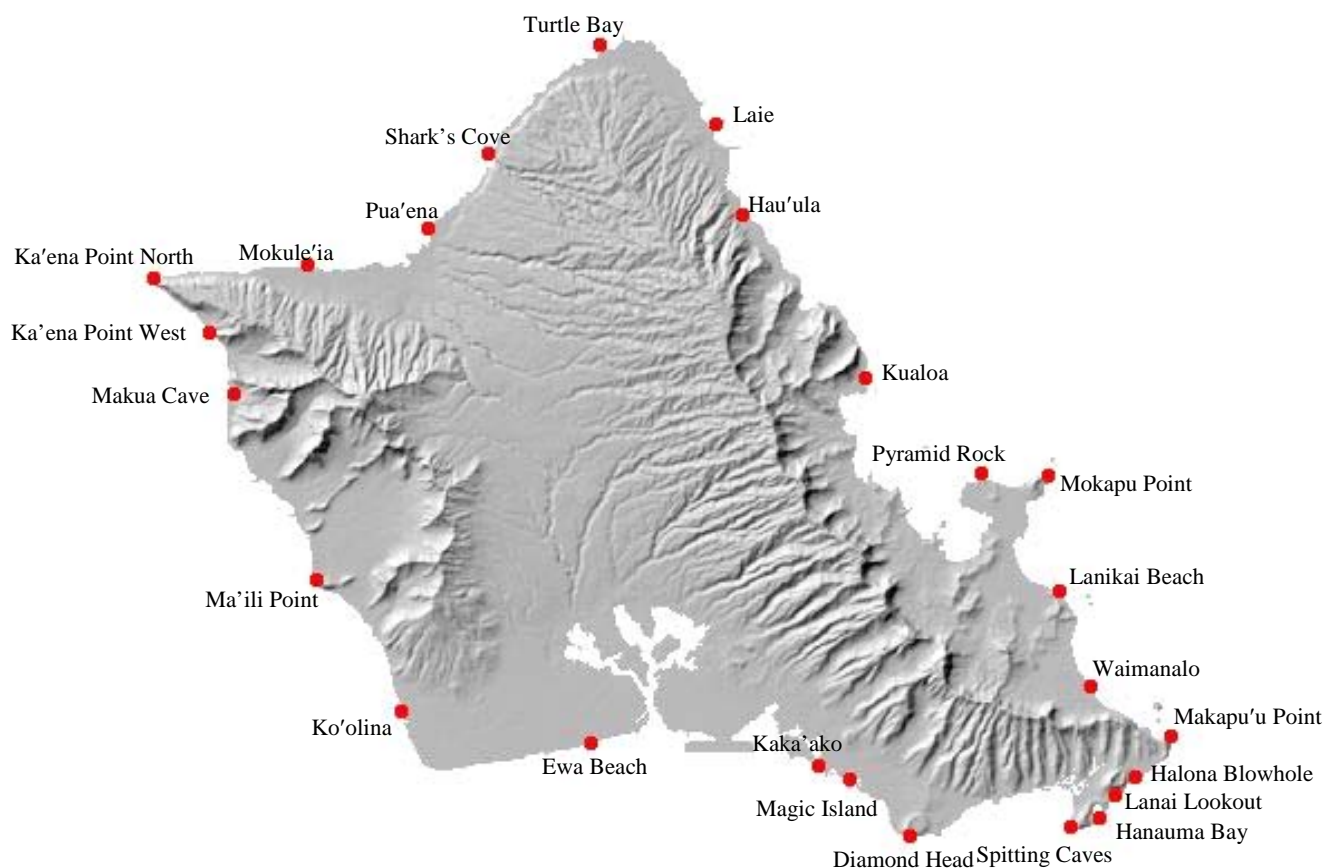


Figure 1 – Sites used on O'ahu

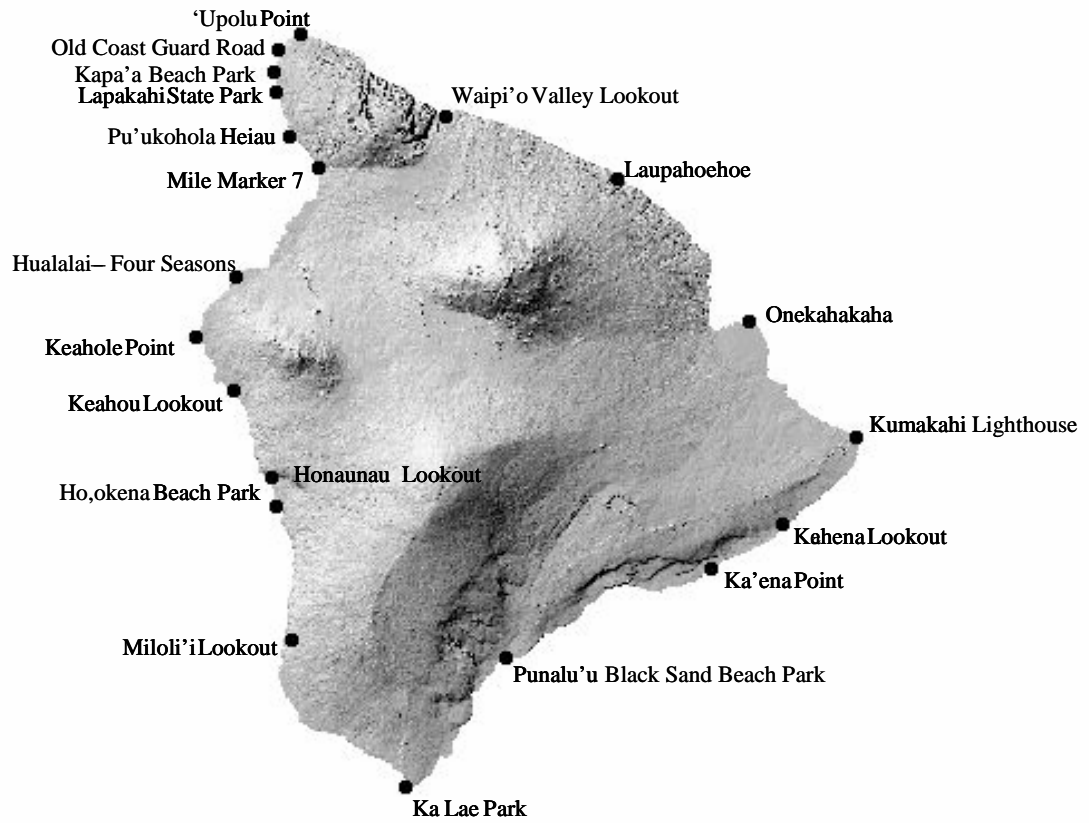


Figure 2 – Sites used on Hawai'i

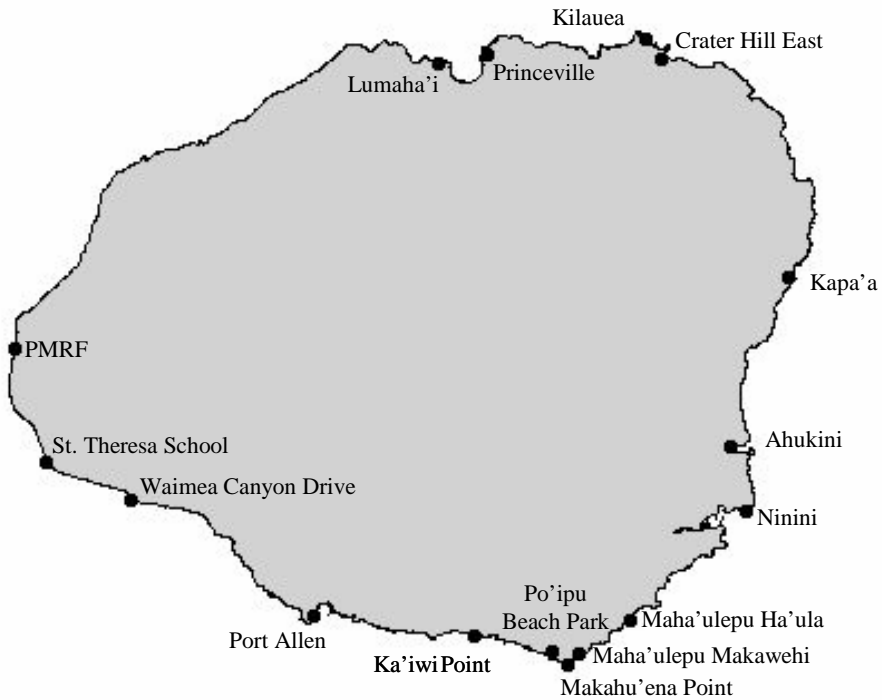


Figure 3 – Sites used on Kaua'i

CENSUS SHEET

Date: _____ Site #: _____ Site Name: _____ Site Elevation: _____

Site Leader: _____ Phone #: _____

Observe area for 15 minutes then tally all observations:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0800	Humpback Whales	12	4	Whales in three pods
-	Spinner Dolphins	0	n/a	
-	Other Species	0	n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0830	Humpback Whales	8	2	Whales in two pods
-	Spinner Dolphins	0	n/a	
-	Other Species	0	n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0900	Humpback Whales	12	4	Whales in three pods
-	Spinner Dolphins	15	n/a	
-	Other Species	5	n/a	Specify species: Bottlenose dolphins
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
0930	Humpback Whales	3	0	May have missed a whale
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

TIME	SPECIES	ADULTS	CALVES	COMMENTS
1000	Humpback Whales	11	2	One calf was bigger and could have been misidentified
-	Spinner Dolphins		n/a	
-	Other Species		n/a	Specify species:
-	Other Species		n/a	Specify species:

Figure 4 – Sample Census Sheet used during the 2004 Sanctuary Ocean Count

SITE MAP

This data collection procedure was designed to record the exact position of all whales observed between 1030-1100 (Figure 5), with each position, represented by a circle, containing information about the number of whales observed at that location and about pod composition (i.e., M/C for mother calf or M/C/E for mother calf escort). Volunteers were asked to calculate distance to a sighting using a reference table and were trained in its use by the Site Leader.

Site map data were collected as a comparison and validation of the census data. Distribution of sighting distances will be useful to evaluate whether the different elevation of each observation site is a significant bias in determining abundance and distribution and abundance estimates could be corrected to include only whales seen within a certain distance from shore to standardize sighting information and provide better comparability between sites.

When a few years of this type of data will be available, data could be spatially analyzed to identify preferred near shore humpback whale habitats and could be included in a more comprehensive Geographic Information System (GIS) database. Additional data regarding the spatial and habitat characteristics of each site could be integrated with this information to provide a more complete assessment of humpback whale habitat requirements in Hawaiian waters.

SITE MAP

Date: _____ Island: _____

Site # / Name / Elevation: _____ / _____ / _____

Volunteer Name(s): _____

Visibility: Fog Y N Heavy Medium Light Rain Y N Heavy Medium Light Haze Y N Heavy Medium Light Wind Y N Strong Medium Light
 Foam Y N Lots Some None Swell Y N High Medium Small/None
 Visibility Code _____
 (do not write in here – code will be decided by data analyst)

Observation Time: 1030 a.m. – 1100 a.m.

Draw a map of your site and specify your observation spot

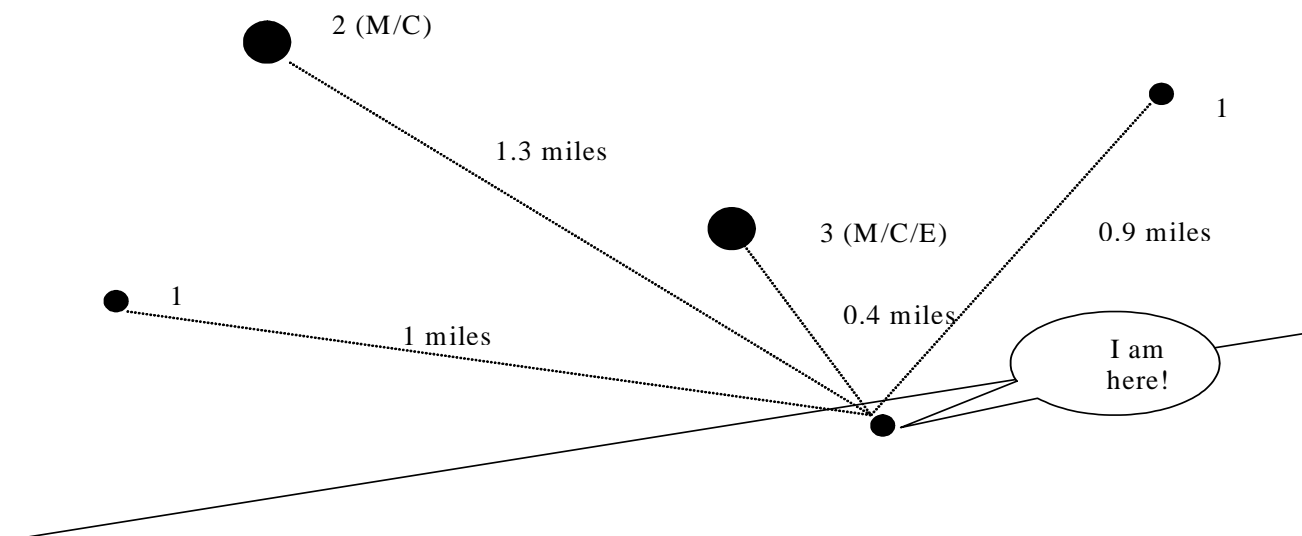


Figure 5 – Site Map datasheet used during the 2004 Sanctuary Ocean Count

BEHAVIORAL OBSERVATION PROCEDURES

The general trends in whale behavior at each site may provide an insight on the use patterns of a particular area, when looked at over a period of several years. The hypothesis is that a site where mothers spend a lot of time socializing or interacting with their calf will have a higher frequency of aerial and social behaviors than an area where whales just pass through. This hypothesis has not been previously tested. Trends over years of observation using a consistent methodology may provide a gauge of the importance of a particular site to humpback whales. To achieve this goal, behavioral information was collected in a simplified manner to improve consistency among volunteers with different levels of experience (Figure 6). All volunteers at the site other than Site Leaders paired up to share the task of collecting behavioral observations, generating one data sheet per

pair of volunteers. While one of the volunteers monitored the waters to observe whale behavior, the other filled out the sheet. Behavioral observations started at 0800 and continued uninterrupted until 1200. Volunteers monitored all whales visible from their post and tallied any occurrence of specific behaviors as follows:

BREACH – the act of jumping out of the water by the whale. A breach may show the full body of the whale or only a portion depending on the speed of exit from the water.

SLAP – the forceful beating of the water surface by the whale with any part of the body such as the flukes, the pectoral fins, or the rostrum.

BLOW – the breath of the whale characterized by the opening and closing of the blowhole at the surface. This behavior generates a plume of vapor visible at a distance.

FLUKE UP DIVE – the arching of the tailstock until the flukes are completely out of the water before the dive.

The tally of behavioral events was broken up into half-hour time slots (0800-0830, 0831-0900, 0901-0930, 0931-1000, 1001-1030, 1031-1100, 1101-1130, 1131-1200). The number of adults and calves present was estimated for each time slot so that number of behavioral events could be standardized against number of whales present at that site to get a relative index of behavioral activity.

Name: _____ Island: _____
 Address: _____ Site # / Name: _____ / _____
 _____ Date: _____
 Phone: _____ Start Time: _____
 E-Mail: _____ End Time: _____

Observe humpback whale activity at your site:

Time	Number of Adults	Number of Calves	Breach	Slap (Pectoral fin, Fluke, Head)	Blow	Fluke Up Dive
0800-0830	2	1	7	2	0	1
0831-0900	2	1	0	5	0	1
0901-0930	3	1	0	10	0	2
0931-1000	3	1	15	3	0	3
1001-1030	2	0	2	1	0	5
1031-1100	4	2	3	0	1	2
1101-1130	10	2	0	0	2	8
1131-1200	1	0	1	7	0	3

Describe the behavior if none of the above is occurring (Are the whales moving out of the area? Are they diving for long periods of time?):

0942 – The 3 whales are a mother/calf/escort type of pod and the calf is performing most of the breaching. Mother is recalling the calf with tail slaps.

1022 – The previous group left the area and two whales arrived in separate pods. The main activity is prolonged dives. Not much time is spent at the surface.

1048 – Mother/calf/escort pod (3) plus mother/calf pod two miles apart. All whales are moving through the area.

1115 – Lots of whale activity. Most whales appear to be moving through. Long dives.

Figure 6 – Behavior Sheet used during the 2004 Sanctuary Ocean Count

RESULTS

VOLUNTEER PARTICIPATION (Figure 7)

Seven hundred and twenty volunteers participated to the 2004 Sanctuary Ocean Count on the Island of O’ahu (Table 1). This year, bad weather caused the cancellation of counts at five of the sites in February and one in March (Table 1). The reported number of participants reflects these cancellations. However, enrollment of volunteers prior to the census dates was similar to previous years.

Three hundred and twenty-four volunteers participated on the Island of Hawai’i (Table 2). Sixteen sites had to be abandoned because of bad weather during the month of February and four during March (Table 2). Volunteer participation on Hawai’i also reflected these cancellations. Otherwise, participation was similar to previous years.

On Kaua’i, 368 volunteers participated to the event during the three months (Table 3). Weather was not much of a factor on Kaua’i although some sites experienced intermittent or light rain. On Kaua’i, participation in 2004 was greater than in the last three years.

Kaho’olawe participated in January with three volunteers and one site. The February and March censuses had to be cancelled because of bad weather. At this site participation is restricted, since access to the Island is by permission only. Overall, volunteers at this site are better equipped and more experienced than the average volunteer because of their biology background.



Figure 7— Volunteers observe whales at one of the shore-sites on O'ahu

Table 1 – Number of participants for O’ahu’s sites in January, February, March 2004. Some sites were abandoned because of bad weather (-).

Site No.	Site Name	Jan	Feb	Mar
1	Ewa Beach	5	4	3
2	Ko' Olina	10	3	16
3	Maili Point	16	7	9
4	Makua Cave	8	9	6
5	Ka' ena Point (West Shore)	2	-	7
6	Ka' ena Point (North Shore)	1	-	-
7	Mokuleia	2	3	2
8	Pua ena Point	7	-	3
9	Shark's Cove	15	8	5
10	Turtle Bay	14	8	10
11	Laie Pt.	11	3	8
12	Hau'ula	2	2	2
13	Kualoa	13	8	4
14	Pyramid Rock	11	10	4
15	Mokapu Point	6	12	12
16	Lanikai	10	5	10
17	Waimanalo	8	9	8
18	Makapu'u Point	12	10	2
19	Halona Blowhole	25	28	17
20	Lanai Lookout	20	20	23
21	Hanauma Bay	26	-	19
22	Spitting Caves	16	11	11
23	Diamond Head	18	18	20
24	Magic Island	16	16	8
25	Kaka'ako	26	-	17
Total		300	194	226

Table 2 – Number of participants for Hawai'i's sites in January, February, March 2004. Some sites were abandoned because of bad weather (-).

Site No.	Site Name	Jan	Feb	Mar
1	Punalu'u Black Sand Beach Park	10	-	-
2	Ka Lae Park	10	-	8
3	Miloli'i Lookout	1	-	2
4	Ho'okena Beach Park	5	-	2
5	Honaunau Lookout	7	3	3
6	Keauhou	5	-	6
7	Keahole OTEC	17	-	2
8	Hualalai 4-seasons	14	-	14
9	Mile Marker 7	5	1	2
10	Pu'ukohola Heiau	6	-	3
11	Lapakahi State Park	14	-	6
12	Kapa'a Beach Park	5	10	8
13	Old Coast Guard Road	2	-	2
14	Upolu Point	3	-	-
15	Waipio Valley Lookout	4	-	-
16	Laupahoehoe Scenic Lookout	1	-	2
17	Onekahakaha Beach Park	14	13	14
18	Kumakahi Lighthouse	13	-	25
19	Kehena Lookout	2	-	2
20	Ka'ena Point	4	-	3
21	Pauka'a Point	-	-	-
22	O'okala	28	12	11
Total		170	39	115

Table 3 - Number of participants for Kaua'i's sites in January, February, March 2004.

Site No.	Site Name	Jan	Feb	Mar
1	Lumahai Lookout	6	6	4
2	Princeville	7	15	10
3	Kilauea Lighthouse	13	13	11
4	Crater Hill East	7	5	5
5	Kapaa Lookout	9	8	15
6	Ahukini Landing	14	11	5
7	Ninini Lighthouse	11	7	7
8	Mahaulepu Haula	10	11	5
9	Mahaulepu Makawehi	7	9	8
10	Makahuena	12	13	7
11	Poipu Beach Park	11	10	12
12	Kaiwa Point	9	7	8
13	Port Allen Cemetery	8	11	6
14	Waimea Canyon Drive	3	2	2
15	St. Theresa School	0	0	0
16	PMRF	4	1	3
Total		131	129	108

CENSUS DATA

O'AHU

Around O'ahu, there was an average of two whales present per site in January (mean=2.07; S.E.=0.20), and February (mean=1.92; S.E.=0.16). March (mean=2.52; S.E.=0.17) averaged three whales per site. Maili Point, Pyramid Rock, and Laie Point had the greatest averages in January (Table 4). In February, results were greatly affected by bad weather conditions and census at many sites was canceled. Among the sites that reported information, Makapu'u Point, Lanai Lookout and Laie Point had the greatest average number of whales per site (Table 5). In March, the greatest averages were reported at Hanauma Bay, Makapu'u Point, and Spitting Caves (Table 6). The total number of whales counted around O'ahu between 0800 and 1215 ranged from 18 to 68 in January (Table 4), 9 to 45 in February (Table 5), and 38 to 77 in March (Table 6).

Average number of whales per month per site in January, February, and March 2004 was calculated for all sites located along the same coastline around O'ahu to compare abundance patterns (Figure 8). The standardization to whales per site was done to delete the effect of the different number of sites used on each coastline. Whale numbers per site were comparable among coastlines with slightly higher averages along the windward coastline (Figure 8).

As in previous years, the area between Halona Blowhole and Spitting Caves along the South Shore accounted for most of the sightings, while sites west of Diamond Head generally registered the lowest counts in all three months.

Average (across the three months) number of whales counted per time slot (Figure 9) showed a tendency toward a decreased number of whales toward the later portion of the day, a trend that has been identified clearly in previous years. This results suggest the possibility that whales may move offshore later in the day and therefore are unlikely to be detected during the census.

Table 4 – Summary of O’ahu’s census data for January 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

Site Number	Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
1	Ewa Beach	0	0	0	0	0	0	0	1	0
2	Ko' Olina	0	3	2	7	3	3	0	0	0
3	Maili Point	15	15	20	8	6	6	7	10	4
4	Makua Beach	4	3	3	3	2	2	9	7	-
5	Ka' ena Point-West	0	2	0	0	0	0	0	3	0
6	Ka' ena Point-North	3	4	6	4	6	3	3	2	2
7	Mokuleia	1	4	2	6	3	2	1	0	0
8	Pua ena Point	0	0	0	0	4	2	1	3	0
9	Shark's Cove	3	2	5	1	1	4	0	6	0
10	Turtle Bay	2	0	1	1	0	0	3	1	0
11	Laie	1	5	1	3	5	7	7	6	3
12	Hau'ula	0	-	-	-	-	-	-	-	-
13	Kualoa Ranch	0	0	0	2	3	2	2	0	3
14	Pyramid Rock	15	5	3	9	6	8	3	1	0
15	Mokapu Point	0	0	0	0	3	3	4	0	3
16	Lanikai Beach	2	1	0	0	0	0	0	0	0
17	Waimanalo	0	1	0	0	0	1	0	0	0
18	Makapu'u Point	2	2	3	5	3	1	2	3	1
19	Halona Blowhole	3	2	4	2	2	5	2	2	0
20	Lanai Lookout	2	1	4	1	1	1	1	2	2
21	Hanauma Bay	5	4	6	2	0	2	1	2	-
22	Spitting Caves	0	0	0	0	0	1	3	1	-
23	Diamond Head	0	0	0	0	0	0	0	0	0
24	Magic Island	0	0	0	0	0	0	0	0	0
25	Kaka' ako	0	0	0	0	0	0	0	0	0
	Averages	2.23	2.36	2.72	2.68	2.52	2.72	2.00	2.00	0.82
	Totals	58	59	68	67	63	68	50	50	18

Table 5 – Summary of O’ahu’s census data for February 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

Site Number	Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
1	Ewa Beach	0	0	0	0	0	0	0	0	0
2	Ko' Olina	0	0	0	0	0	0	0	0	0
3	Maili Point	0	0	0	0	0	0	0	-	-
4	Makua Beach	0	0	0	0	2	0	-	-	-
5	Ka' ena Point-West					CANCELED				
6	Ka' ena Point-North					CANCELED				
7	Mokuleia	0	0	0	1	0	0	0	1	0
8	Pua ena Point					CANCELED				
9	Shark's Cove	0	0	0	0	0	0	5	2	1
10	Turtle Bay	--	2	0	0	0	0	0	1	0
11	Laie	3	4	5	1	6	2	11	2	4
12	Hau'ula	0	0	0	0	0	0	-	-	-
13	Kualoa Ranch	6	9	4	2	0	3	0	0	-
14	Pyramid Rock	2	3	7	10	0	3	3	-	-
15	Mokapu Point	2	0	3	3	3	2	0	0	-
16	Lanikai Beach	0	0	1	2	0	0	0	0	0
17	Waimanalo	0	0	0	1	0	0	0	0	0
18	Makapu'u Point	7	9	10	9	8	9	6	8	2
19	Halona Blowhole	2	4	4	5	1	2	6	4	-
20	Lanai Lookout	5	5	8	5	4	8	4	3	2
21	Hanauma Bay					CANCELED				
22	Spitting Caves	4	4	2	3	5	6	6	3	-
23	Diamond Head	0	0	0	3	2	6	1	4	0
24	Magic Island	0	0	0	0	0	0	-	-	-
25	Kaka' ako					CANCELED				
	Averages	1.55	1.95	2.10	2.14	1.48	1.95	2.33	1.75	0.75
	Totals	31	41	44	45	31	41	42	28	9

Table 6 – Summary of O’ahu’s census data for March 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

Site Number	Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
1	Ewa Beach	0	0	0	0	0	0	0	0	0
2	Ko' Olina	0	0	0	0	0	4	3	0	0
3	Maiili Point	0	0	1	5	2	2	0	0	0
4	Makua Beach	4	4	2	2	0	0	0	0	0
5	Ka' ena Point-West	6	3	2	4	2	0	0	0	0
6	Ka' ena Point-North	DATA NOT RECEIVED								
7	Mokuleia	0	0	2	0	3	2	2	2	2
8	Pua ena Point	0	0	0	4	0	0	1	0	1
9	Shark's Cove	4	4	3	5	5	7	8	7	7
10	Turtle Bay	1	3	1	2	4	7	2	1	0
11	Laie	0	2	7	6	2	5	10	5	3
12	Hau'ula	0	0	0	2	0	0	0	0	0
13	Kualoa Ranch	2	1	0	1	0	2	6	6	1
14	Pyramid Rock	1	2	2	1	0	0	0	0	0
15	Mokapu Point	0	3	6	1	3	0	3	0	0
16	Lanikai Beach	0	1	1	0	0	0	0	2	0
17	Waimanalo	0	0	0	0	0	0	2	2	0
18	Makapu'u Point	10	8	5	5	11	5	10	5	6
19	Halona Blowhole	7	3	6	3	10	4	8	6	5
20	Lanai Lookout	8	7	11	11	3	7	2	2	1
21	Hanauma Bay	10	10	6	10	13	7	9	2	--
22	Spitting Caves	1	7	9	12	10	7	11	1	3
23	Diamond Head	0	0	0	0	0	0	0	0	9
24	Magic Island	0	0	0	0	0	0	0	0	0
25	Kaka'ako	0	0	0	0	0	4	0	2	0
Averages		2.25	2.42	2.67	3.08	2.83	2.63	3.21	1.79	1.73
Totals		0	0	0	0	0	0	0	0	0

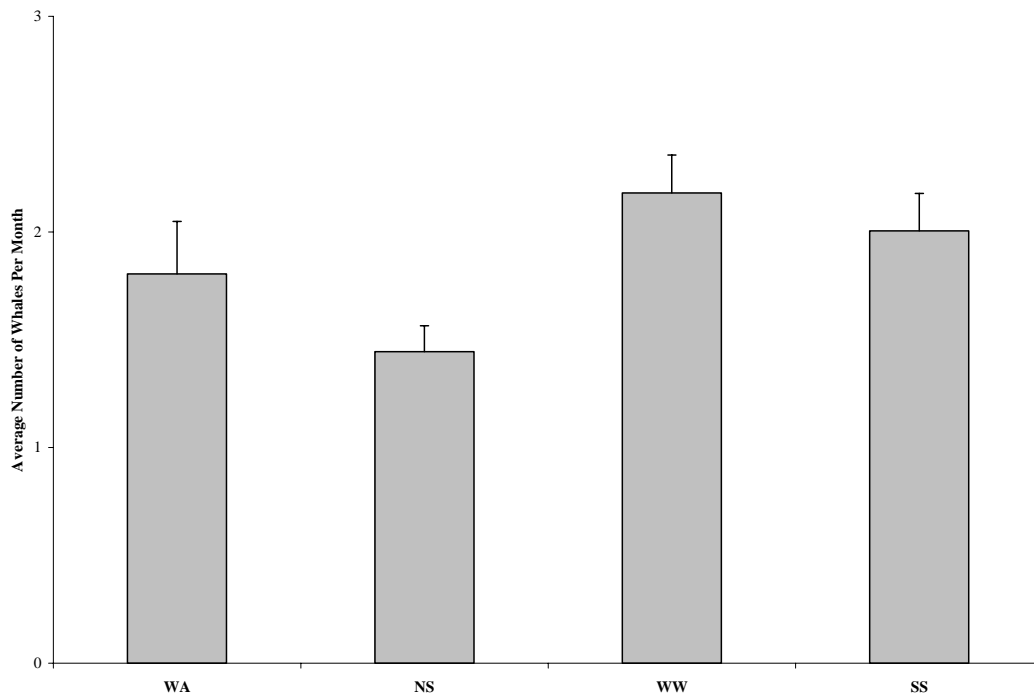


Figure 8 – Average number of whales per month per site counted during January, February and March 2004 along the four main coastlines of the Island of O’ahu. WA=Waianae coast, NS=north shore, WW=windward coast, SS=south shore.

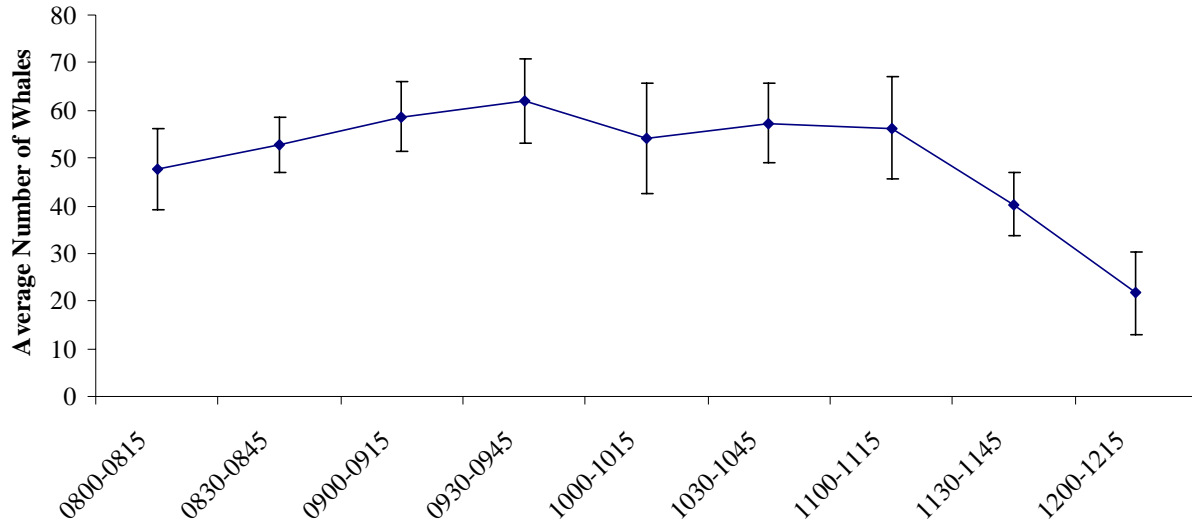


Figure 9 – Average number of whales counted during each 15-minute slot on O’ahu for January, February and March 2004.

HAWAI’I

Three main coastlines, enjoying different exposure to the trades were identified on the Island of Hawai’i: (1) south coast between Kumakahi and South Point, (2) Kona/Kohala coast between South Point and Upolu Point, and (3) Hilo coast between Upolu Point and Kumakahi Point. Coverage along these coastlines was not uniform and long stretches where no effort occurred were located along all coastlines. Adequate comparisons are therefore harder to make than for O’ahu where coverage is more uniform. Similarly to O’ahu, sites on Hawai’i were located at different altitudes and therefore covered varying size areas of water.

Number of whales counted was between 49-98 in January with one site not sampled (Table 7), 1-11 in February with 16 sites canceled and one not sampled (Table 8) and 9-25 in March, with two sites canceled and one not sampled (Table 9). Number of whales sighted was comparable with numbers registered on O’ahu with an average of three whales per site in January (mean=3.16; S.E.=0.34), two whales per site in February (mean=1.89; S.E.=0.16), and one whale per site in March (mean=0.97; S.E.=0.12). Results in February and March are unreliable because the weather conditions affected visibility at sites where the count was performed and prevented the census from occurring at other sites. In March, the census was completed at most sites. The lower number of whales counted in March (much lower than in previous years) is probably a biased estimate. The largest concentrations of whales in January this year were at Keahole OTEC, Pu’ukohola, and Mile Marker 7. The February census could not be evaluated for differences given the large number of canceled censuses; no particular site stood out in the March count.

Average number of whales per month per site in January, February, and March 2004 was calculated for all sites located along the same coastline around Hawai’i to compare abundance patterns. The standardization to whales per site was done to delete the effect of the different number of sites used on each coastline. Most whales were sighted along the Kona/Kohala coast, an area of known concentration around the island (Figure 10).

Table 7 – Summary of Hawai'i's census results for January 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

#	Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
1	Punalu'u Black Sand Beach Park	0	0	0	0	0	0	0	0	0
2	Ka Lae Park	1	4	3	1	2	2	0	0	2
3	Miloli'i Lookout	3	3	0	3	0	0	0	0	0
4	Hookena Beach Park	0	0	0	0	0	0	0	5	2
5	Honaunau Lookout	0	0	0	0	0	0	0	2	0
6	Keauhou	0	0	2	1	0	1	2	3	2
7	Keahole OTEC	21	32	11	11	10	4	5	2	4
8	Hualalai 4-seasons	3	2	10	7	3	1	4	4	7
9	Mile Marker 7	4	10	9	9	13	11	9	9	8
10	Pu'uukohola Heiau	12	15	5	11	10	10	17	9	8
11	Lapakahi State Park	14	11	9	6	9	7	9	9	4
12	Kapa'a Beach Park	5	6	5	4	5	3	5	4	3
13	Old Coast Guard Road	16	12	7	8	8	7	5	4	6
14	Upolu Point	0	0	0	0	0	0	0	1	0
15	Waipio Valley Lookout	1	2	1	1	0	0	0	0	0
16	Laupahoehoe Scenic Lookout	0	0	0	0	1	0	0	0	0
17	Onekahakaha Beach Park	1	0	4	2	0	3	2	1	0
18	Kumukahi Lighthouse	0	0	0	0	0	0	0	0	0
19	Kehena Lookout	0	0	0	0	0	0	0	0	0
20	Ka'ena Point	0	0	0	0	0	0	0	0	0
21	Pauka'a Point									
22	O'okala	3	1	2	1	2	2	4	4	1
	AVERAGES	4.00	4.67	3.24	3.10	3.00	2.43	2.95	2.71	2.33
	TOTALS	84	98	68	65	63	51	62	57	49

Table 8 - Summary of Hawai'i's census results for February 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

#	Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
1	Punalu'u Black Sand Beach Park					CANCELED				
2	Ka Lae Park					CANCELED				
3	Miloli'i Lookout					CANCELED				
4	Hookena Beach Park					CANCELED				
5	Honaunau Lookout		0	0	0	0	0	1	0	0
6	Keauhou					CANCELED				
7	Keahole OTEC					CANCELED				
8	Hualalai 4-seasons					CANCELED				
9	Mile Marker 7	4	5	5	4	3	-	-	-	-
10	Pu'uukohola Heiau					CANCELED				
11	Lapakahi State Park					CANCELED				
12	Kapa'a Beach Park	0	3	3	4	8	5	4	2	1
13	Old Coast Guard Road					CANCELED				
14	Upolu Point					CANCELED				
15	Waipio Valley Lookout					CANCELED				
16	Laupahoehoe Scenic Lookout					CANCELED				
17	Onekahakaha Beach Park	0	0	0	0	0	1	-	-	-
18	Kumukahi Lighthouse					CANCELED				
19	Kehena Lookout					CANCELED				
20	Ka'ena Point					CANCELED				
21	Pauka'a Point									
22	O'okala	-	-	-	-	-	2	-	-	-
	AVERAGES	1.33	2.00	2.00	2.00	2.75	2.00	2.50	1.00	0.50
	TOTALS	4	8	8	8	11	8	5	2	1

Table 9 - Summary of Hawai'i's census results for March 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

#	Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
1	Punalu'u Black Sand Beach Park	CANCELED								
2	Ka Lae Park	0	0	0	0	0	0	1	0	0
3	Miloli'i Lookout	0	0	0	0	0	0	0	0	0
4	Hookena Beach Park	0	0	0	0	0	0	0	0	0
5	Honaunau Lookout	0	2	0	2	0	0	0	0	0
6	Keauhou	0	0	0	0	1	1	4	4	0
7	Keahole OTEC	0	0	0	0	0	0	0	0	0
8	Hualalai 4-seasons	0	0	0	5	0	0	0	0	5
9	Mile Marker 7	1	2	0	1	3	0	0	0	3
10	Pu'ukohola Heiau	2	3	5	5	5	2	3	2	2
11	Lapakahi State Park	5	4	6	5	3	0	1	1	2
12	Kapa'a Beach Park	2	4	4	4	5	3	0	0	1
13	Old Coast Guard Road	0	5	2	0	7	8	3	0	2
14	Upolu Point	CANCELED								
15	Waipio Valley Lookout	CANCELED								
16	Laupahoehoe Scenic Lookout	-	0	0	2	0	0	0	0	0
17	Onekahakaha Beach Park	0	0	0	0	0	0	0	0	0
18	Kumukahi Lighthouse	0	2	1	1	0	0	0	0	0
19	Kehena Lookout	0	0	0	0	0	0	0	0	0
20	Ka'ena Point	0	0	0	0	0	0	0	0	0
21	Pauka'a Point	DID NOT PARTICIPATE								
22	O'okala	2	1	2	0	0	1	0	2	1
	AVERAGES	0.71	1.28	1.11	1.39	1.33	0.83	0.67	0.50	0.89
	TOTALS	12	23	20	25	24	15	12	9	16

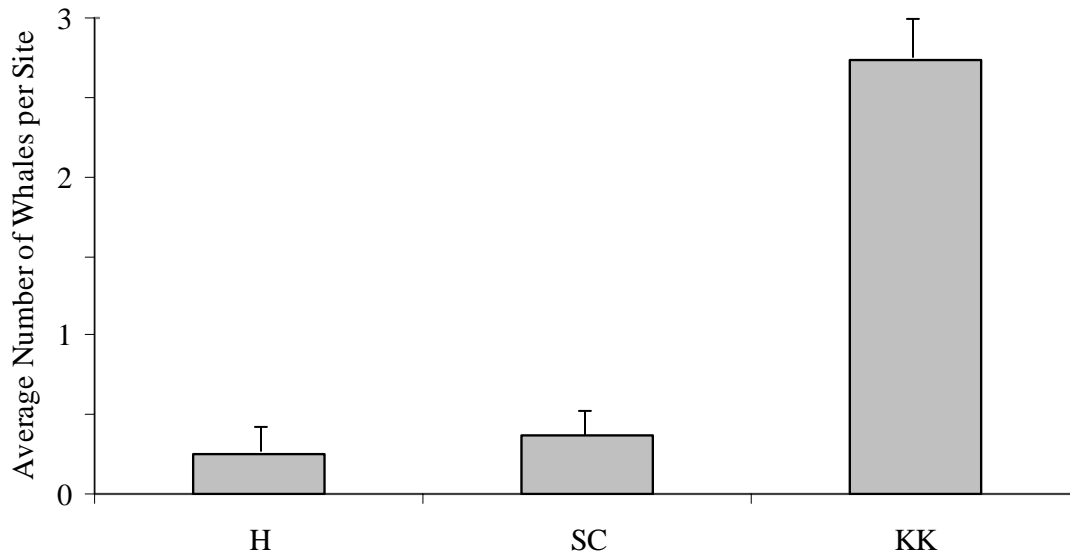


Figure 10 – Average number of whales counted per site during January, February and March 2004 along the three main coastlines of the Island of Hawai'i. H=Hilo coast , SC=south coast, KK=Kona/Kohala coast.

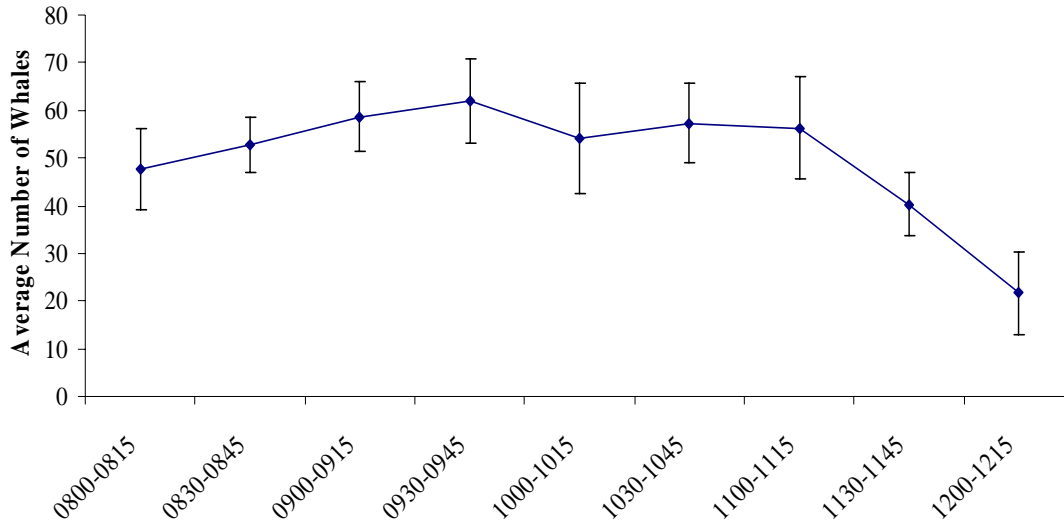


Figure 11 - Average number of whales counted during each 15-minute slot on Hawai'i for January, February and March 2004.

The average number of whales counted on the Island of Hawai'i for each 15-min time slot (Figure 11) showed that the number of whales counted tended to diminish later in the day, the same general trend shown for O'ahu and for previous years.

KAUA'I : CENSUS RESULTS

On Kaua'i, number of sightings varied from 46-89 in January (Table 10), 40-80 in February (Table 11), and 22-41 in March (Table 12). Average number of whales sighted was higher than O'ahu and Hawai'i, with five whales per site in January (mean=4.90; S.E.=0.03), four whales per site in February (mean=4.31; S.E.=0.03) and two whales per site in March (mean=2.32; S.E.=0.02). As for O'ahu and Hawai'i, sites on Kaua'i were located at different altitudes and therefore cover different areas of water.

Coverage on Kaua'i excluded a large portion of the north-western shoreline, which is not easily accessible and steep. For this reason, whale activity around the island is always underestimated by the census.

Whale abundance by coastline was calculated only for the eastern shore, Kapa'a Lookout to Maha'ulepu Makawehi and the south-western shore, Makahu'ena to Pacific Missile Range Facility (PMRF). Average number of whales per site was almost double along the eastern shores of the island than along the southwestern shores (Figure 12). Maha'ulepu Haula registered the highest counts of all four islands censused both in January and February (Tables 10-12).

The average number of whales counted on the island for each 15-minutes time slot (Figure 13) confirmed the pattern seen on O'ahu and Hawai'i of lower number of whales around noon.

KAHO'OLAWE: CENSUS RESULTS

Volunteers from the Kaho'olawe Island Reserve Commission (KIRC) counted whales at a single site located at Kalialua. Because only marine biologists or trained professionals participated at this site, additional information was provided such as theodolite mapped positions of all whales seen at the site, and tracking of individual pods. These data were collected for the internal planning and management at the KIRC, but such information will be useful for long-term interpretation of the patterns occurring at this site.

Because of bad weather only the January count could be performed, starting at 0900 (one hour later than all other islands). The number of whales counted ranged from 5 to 9. Because only one site and only one month were available other trends in the data could not be analyzed.

Table 10 - Summary of Kaua'i's census results for January 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
Lumahai Lookout	3	2	2	0	2	2	2	3	4
Princeville	7	4	6	3	6	7	5	4	-
Kilauea Lighthouse	9	4	-	2	5	4	-	-	-
Crater Hill	5	5	1	2	6	3	0	2	5
Kapaa Lookout	6	5	4	6	5	3	0	2	2
Ahukini Landing	0	1	1	1	4	2	2	2	2
Ninini Point	3	4	5	1	2	1	0	2	11
Mahaulepu Haula	14	14	25	28	10	8	4	15	5
Mahaulepu Makawehi	8	3	6	4	6	5	10	6	9
Makahuena	3	4	8	8	8	10	1	3	4
Poipu Beach Park	5	8	8	6	3	10	0	6	3
Kaiwa Point	4	6	5	3	6	5	7	5	5
Port Allen Cemetery	8	6	6	5	1	3	4	2	0
Waimea Canyon Drive	1	4	5	4	3	6	3	3	1
St. Theresa School	-	-	-	-	-	-	-	-	-
Pacific Missile Range Facility	1	10	7	3	10	8	8	7	2
AVERAGES	5.13	5.33	6.36	5.07	5.13	5.13	3.29	4.43	4.08
TOTALS	77	80	89	76	77	77	46	62	53

Table 11- Summary of Kaua'i's census results for February 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
Lumahai Lookout	3	2	2	2	0	1	5	5	1
Princeville	3	4	3	3	1	1	3	4	-
Kilauea Lighthouse	2	3	2	7	11	4	3	6	4
Crater Hill	4	3	4	3	3	4	3	8	2
Kapaa Lookout	6	7	6	5	4	3	4	5	3
Ahukini Landing	3	1	1	6	5	5	0	7	2
Ninini Point	-	14	9	8	13	15	3	4	2
Mahaulepu Haula	13	20	16	22	18	15	15	11	14
Mahaulepu Makawehi	0	4	6	9	6	7	12	4	4
Makahuena	1	2	4	4	3	5	3	3	4
Poipu Beach Park	1	2	0	0	4	9	2	2	4
Kaiwa Point	1	1	2	5	3	0	0	2	2
Port Allen Cemetery	3	1	1	0	0	0	0	0	1
Waimea Canyon Drive	-	3	3	3	-	-	3	4	2
St. Theresa School	-	-	-	-	-	-	-	-	-
Pacific Missile Range Facility	0	0	0	3	1	5	2	0	0
AVERAGES	3.08	4.47	3.93	5.33	5.14	5.29	3.87	4.33	3.21
TOTALS	40	67	59	80	72	74	58	65	45

Table 12 - Summary of Kaua'i's census results for March 2004. Averages reflect the average number of whales counted per site, while totals reflect the total number of whales counted around the island for each time slot.

Site Name	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
Lumahai Lookout	5	3	2	1	0	4	3	3	4
Princeville	5	9	5	2	2	2	2	4	4
Kilauea Lighthouse	3	4	1	1	9	6	2	4	4
Crater Hill	1	1	0	2	2	3	2	4	0
Kapaa Lookout	0	3	7	6	7	8	8	2	1
Ahukini Landing	0	0	0	0	0	0	1	0	0
Ninini Point	1	1	0	0	0	0	0	0	0
Mahaulepu Haula	4	0	1	0	4	4	0	5	10
Mahaulepu Makawehi	0	0	0	0	1	3	1	4	-
Makahuena	0	0	0	2	6	3	2	6	7
Poipu Beach Park	2	3	1	2	5	4	3	4	0
Kaiwa Point	0	1	1	0	3	1	0	2	0
Port Allen Cemetery	0	0	0	0	0	0	0	0	0
Waimea Canyon Drive	0	0	0	0	0	1	1	2	0
St. Theresa School	-	-	-	-	-	-	-	-	-
Pacific Missile Range Facility	2	4	4	0	1	2	1	1	0
AVERAGES	1.53	1.93	1.47	1.07	2.67	2.73	1.73	2.73	2.14
TOTALS	23	29	22	16	40	41	26	41	30

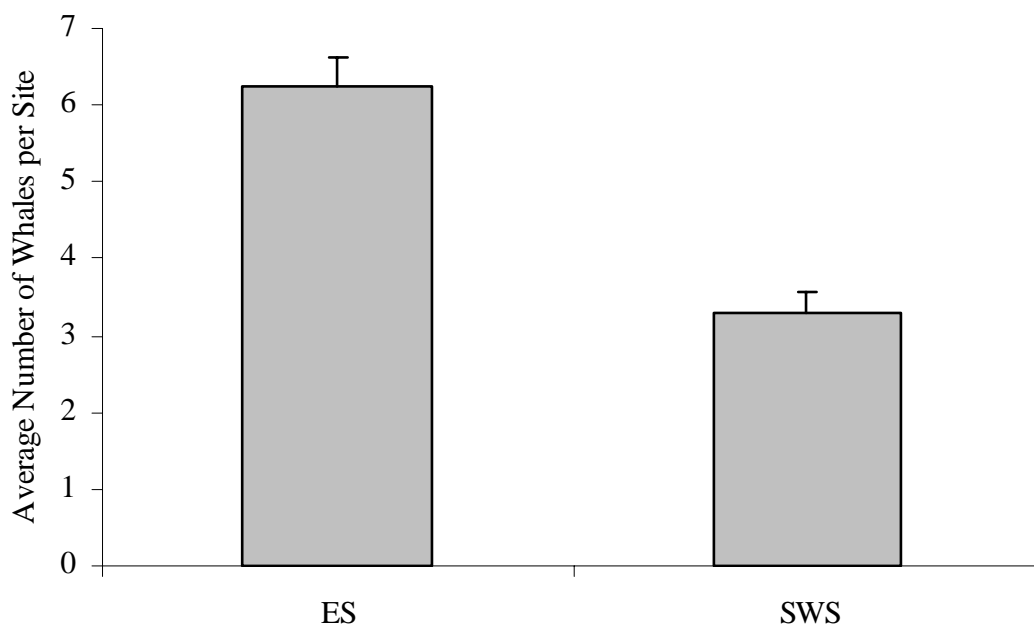


Figure 12 – Average number of whales counted per site during January, February and March 2004 along two coastlines of the Island of Kaua'i. ES=east shore, SWS=south-west shore.

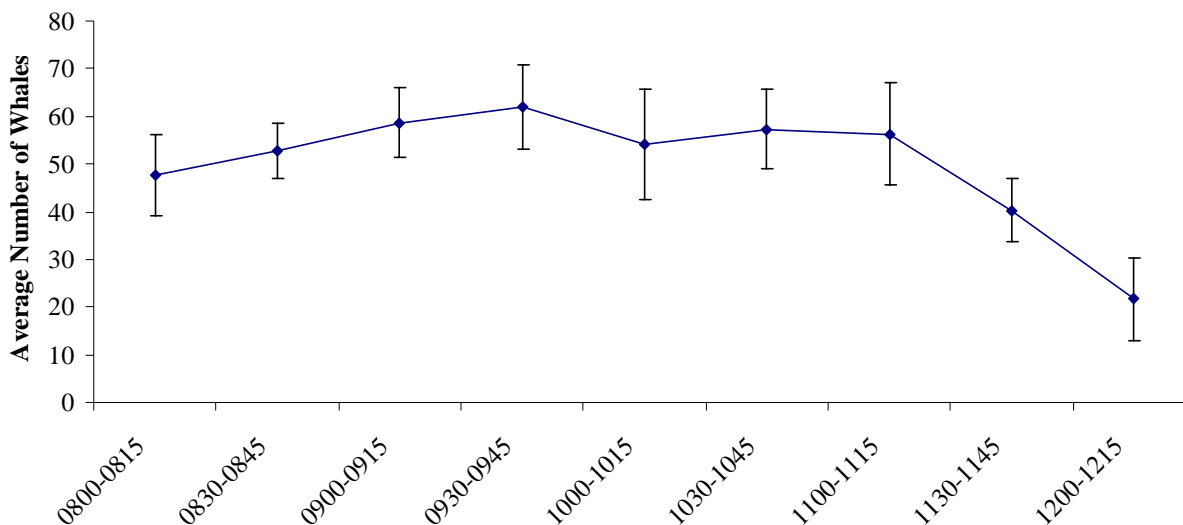


Figure 13 - Average number of whales counted during each 15-minute slot on Kauai'i for January, February and March 2004.

Table 13 - Summary of Kaho'olawe census results for January 2004. The February and March counts were cancelled because of bad weather.

Month	0800-0815	0830-0845	0900-0915	0930-0945	1000-1015	1030-1045	1100-1115	1130-1145	1200-1215
Jan	-	-	6	7	9	6	9	8	5

SITE MAP DATA

Mapped counts obtained between 1030 and 1100 (reported in the Site Map sheet) were compared to census counts between 1030-1045 (reported in the Census Sheet); (Tables 14-16). This provided a gauge for consistency between counts.

At 57% of the sites (all islands combined), number of whales counted was comparable (± 1) between the two methods. At 35% of the sites, mappers reported more whales than volunteers doing the regular census, and only at 9% of the sites mappers reported less whales (Tables 13-15).

In general, it appears that the two methods are comparable. However, the site map method tends to report more whales than the 15-min count. This may be because whales are counted for a half-hour period during the compilation of the Site Map sheet and only for fifteen minutes during the actual census. A half-hour could be long enough for whales on a long dive to come to the surface and be detected. There are some instances in the map data where volunteers appear to have been plotting the number of blows as separate whales with the angle to the whale changing as the animal moved position. This may have inflated the number of whales present.

Table 14 – Comparison between site map data and census data for the Island of O’ahu. Site elevation was measured in feet. “c”=cancelled; “-” = not collected.

Elevation	Site Name	January		February		March	
		Map Data	Census	Map Data	Census	Map Data	Census
10	Ewa Beach	0	0	0	0	0	0
20	Ko' Olina	0	3	0	0	12	4
100	Maili Point	14	6	0	0	2	2
20	Makua Beach	5	2	0	0	0	0
20	Ka' ena Point-West	0	0	c	c	0	0
20	Ka' ena Point-North	2	3	c	c	c	c
20	Mokuleia	3	2	0	0	2	2
20	Pua ena Point	2	2	c	c	0	0
30	Shark's Cove	3	4	2	0	8	7
20	Turtle Bay	0	0	0	0	5	7
40	Laie	7	7	6	2	3	5
4	Hau'ula	-	-	1	0	0	0
150	Kualoa Ranch	7	2	6	3	3	2
20	Pyramid Rock	12	8	-	3	0	0
120	Mokapu Point	4	3	6	2	4	0
30	Lanikai Beach	0	0	0	0	-	0
0	Waimanalo	1	1	0	0	0	0
400	Makapu'u Point	1	1	9	9	7	5
70	Halona Blowhole	8	5	1	2	10	4
80	Lanai Lookout	1	1	9	8	11	7
40	Hanauma Bay	9	2	c	c	10	7
80	Spitting Caves	4	1	8	6	8	7
100	Diamond Head	0	0	7	6	0	0
10	Magic Island	0	0	0	0	0	0
10	Kaka`ako	0	0	c	c	0	4
Total		83	53	55	41	85	63

Table 15 – Comparison between site map data and census data for the Island of Hawai'i. Site elevation was measured in feet. "c"=cancelled; "-" = not collected.

Elevation	Site Name	January		February		March	
		Map Data	Census	Map Data	Census	Map Data	Census
20	Punalu'u Black Sand Beach Park	0	0	c	c	c	c
20	Ka Lae Park	-	2	c	c	0	0
800	Miloli'i Lookout	0	0	c	c	0	0
20	Hookena Beach Park	0	0	c	c	0	0
200	Honaunau Lookout	0	0	0	0	0	0
450	Keauhou	2	1	c	c	1	1
20	Keahole OTEC	3	4	c	c	-	0
20	Hualalai 4-seasons	-	1	c	c	0	0
180	Mile Marker 7	13	11	c	c	0	0
124	Pu'ukohola Heiau	19	10	-	-	6	2
40	Lapakahi State Park	8	7	c	c	0	0
20	Kapa'a Beach Park	10	3	7	5	3	3
20	Old Coast Guard Road	8	7	c	c	8	8
40	Upolu Point	-	0	c	c	c	c
880	Waipio Valley Lookout	-	0	c	c	c	c
400	Laupahoehoe Scenic Lookout	0	0	c	c	3	0
0	Onekahakaha Beach Park	6	3	1	1	0	0
30	Kumukahi Lighthouse	-	0	c	c	-	0
60	Kehena Lookout	0	0	c	c	0	0
35	Ka'ena Point	0	0	c	c	0	0
-	Pauka'a Point	-	-	c	c	c	c
265	O'okala	0	2	0	2	3	1
Total		69	51	8	8	24	15

Table 16 – Comparison between site map data and census data for the Island of Kaua'i. Site elevation was measured in feet. "c"=cancelled; "-" = not collected.

Elevation	Site Name	January		February		March	
		Map Data	Census	Map Data	Census	Map Data	Census
10	Lumahai Lookout	4	2	1	1	-	4
20	Princeville	9	7	5	1	3	2
100	Kilauea Lighthouse	6	4	5	4	14	6
20	Crater Hill	3	3	6	4	-	3
20	Kapaa Lookout	8	3	6	3	10	8
20	Ahukini Landing	8	2	5	5	1	0
20	Ninini Point	0	1	16	15	18	0
25	Mahaulepu Haula	10	8	19	15	3	4
30	Mahaulepu Makawehi	14	5	7	7	-	3
20	Makahuena	13	10	11	5	10	3
40	Poipu Beach Park	12	10	7	9	-	4
4	Kaiwa Point	8	5	2	0	1	1
150	Port Allen Cemetery	7	3	0	0	-	0
60	Waimea Canyon Drive	10	6	11	-	1	1
120	St. Theresa School	-	-	-	-	-	-
30	Pacific Missile Range Facility	9	8	2	5	1	2
Total		121	77	103	74	62	41

Table 17 – Comparison between site map data and census data for the Island of Kaho'olawe. Site elevation was measured in feet. "c"=cancelled.

Elevation	Site Name	January		February		March	
		Map Data	Census	Map Data	Census	Map Data	Census
246 m	Kealialuna	15	6	c	c	c	c

BEHAVIORS

Humpback whales exhibit a wide range of behaviors, few of which are visible at the surface. The behavioral patterns chosen for monitoring were deemed representative of general activity states. Breaches and slaps are generally indicative of a high energy, socially active behavior. Fluke up dives are indicative of deeper diving patterns and are used during travel.

Behavioral data are intended to be collected over a long period of time, to determine the general use patterns of a particular site. Data over one single year may or may not be representative of the long-term use of a site. Behavioral data for 2003 were listed for each site in Appendix 1.

Data are expressed as number of events per whale (number of times the behavioral event occurred divided by the number of whales present), and averaged across months where repeated samples of the same location are available. More sophisticated analysis will be possible when a long-term database of behavioral activities will be available for each site. Therefore, the current analysis was not extensively interpreted.

Although each site submitted one or more behavioral datasheets, depending on the number of volunteers available, only one datasheet per site was used to calculate behavioral indexes. Data was only used if it was clear, collected according to procedure, and complete (no breaks in data collection). However, considerable variability in the number of whales spotted and in the number of behaviors tallied was evident at certain sites. If data collected were of comparable quality a datasheet was selected at random the same way a card is chosen from a deck.

SUMMARY OF 2004 FINDINGS

- In general all islands had similar trends in the data as previous years, except that the largest number of whales this year was counted around Kaua'i instead of Hawai'i. Data around Hawai'i were biased by the bad weather which occurred in February and to some extent in March. Lower counts around Hawai'i could have resulted as a consequence of bad visibility at the sites that did not cancel the census.
- In previous years, whales were more abundant in February for all islands. Because of all the cancellations which occurred in February differences among the months could not be evaluated.
- There was a trend toward lower counts later in the day (limited to morning observations) for O'ahu, Hawai'i and Kaua'i. This trend could not be fully evaluated on Kaho'olawe because only one count at one site was completed.
- Coastline orientation appeared to be a factor in the differences in number of whales counted, with more whales counted along the windward coast around O'ahu, the Kona/Kohala coast on Hawai'i and the East Shore around Kaua'i. Kaho'olawe could not be evaluated for this parameter.
- Variability of counts may also be due to changing weather conditions among and within sites. This variability was not taken into account at this time.

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APPENDIX 1: SUMMARY OF BEHAVIORAL SAMPLING RESULTS PER SITE

Behavior was expressed as average number of behavioral events per whale present.

KO'OLINA (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
0.10	0.48	-	0.00	2002
-	-	-	-	2003
0.00	0.31	7.63	0.88	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.41	0.42	-	0.12	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales sighted

March

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	0.25	5.00	0.50	2004

MAILI POINT (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.07	0.28	8.07	0.56	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.14	1.46	-	1.32	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales sighted and volunteers left early because of incoming storm.

March

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.11	0.11	4.22	0.89	2004

MAKUA CAVE (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
0.00	0.29	5.14	0.21	2003
0.04	0.22	5.27	0.64	2004

February

Breach	Slap	Blow	Fluke Up	Year
1.03	1.06	-	0.51	2002
0.19	0.38	0.75	0.31	2003
-	-	-	-	2004

2004 – No whales sighted and volunteers left early because of incoming storm.

March

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.14	0.00	2.86	0.86	2004

KA'ENA POINT WEST SIDE (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
0.00	0.15	2.58	1.24	2003
0.00	0.00	0.00	2.50	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.70	0.80	-	0.49	2002
0.00	0.31	2.00	0.23	2003
-	-	-	-	2004

2004 – Census canceled because of storm.

March

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.13	0.00	1.67	0.60	2004

KA'ENA POINT NORTH SHORE (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
0.23	0.79	-	0.04	2002
0.09	0.00	1.64	0.12	2003
0.94	0.00	5.81	0.00	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.47	0.46	-	0.08	2002
0.67	0.00	0.50	0.00	2003
-	-	-	-	2004

2004 – Census canceled because of storm

March

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
0.46	0.54	4.16	0.03	2003
-	-	-	-	2004

2004 – Did not receive data from Site Leader for March

MOKULE'IA (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
1.09	0.30	-	0.65	2002
-	-	-	-	2003
0.62	2.19	1.38	0.19	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.86	0.01	-	0.00	2002
0.64	0.00	4.27	0.09	2003
1.50	2.00	2.00	1.50	2004

March

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
0.69	0.46	0.62	0.00	2003
0.46	0.08	2.31	0.54	2004

PUA'ENA POINT (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
0.19	0.71	-	0.04	2002
-	-	-	-	2003
0.82	3.88	0.64	0.27	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.63	0.60	-	0.20	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Census canceled because of storm.

March

Breach	Slap	Blow	Fluke Up	Year
2.14	0.71	-	0.14	2002
-	-	-	-	2003
-	-	-	-	2004

SHARK'S COVE (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
0.31	0.78	-	0.17	2002
-	-	-	-	2003
1.09	1.56	2.78	0.09	2004

2004 –No data collected between 1031 and 1200.

February

Breach	Slap	Blow	Fluke Up	Year
0.00	0.12	-	0.68	2002
0.69	0.10	1.82	0.13	2003
0.00	0.75	3.25	0.25	2004

March

Breach	Slap	Blow	Fluke Up	Year
0.13	0.29	-	0.02	2002
0.74	0.46	2.08	0.05	2003
0.11	0.49	3.02	0.91	2004

TURTLE BAY (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
1.57	0.68	-	0.00	2002
-	-	-	-	2003
0.00	1.30	0.90	0.00	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.50	0.28	-	0.26	2002
0.00	1.14	2.57	0.14	2003
0.17	0.17	0.67	0.00	2004

2004 – Data obtained from a different elevation than the census site and unclear.

March

Breach	Slap	Blow	Fluke Up	Year
0.57	0.29	-	0.00	2002
-	-	-	-	2003
0.50	0.29	0.29	0.07	2004

LA'IE POINT (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
0.00	0.05	-	0.00	2002
0.13	1.17	0.83	0.65	2003
0.29	0.24	3.88	0.06	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.10	0.73	-	0.02	2002
0.07	0.28	1.07	0.05	2003
0.08	0.00	2.00	0.35	2004

March

Breach	Slap	Blow	Fluke Up	Year
0.45	0.43	-	0.06	2002
-	-	-	-	2003
0.38	1.61	0.97	0.46	2004

HAU'ULA (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
0.33	0.67	0.83	0.00	2003
-	-	-	-	2004

2004 – Site was left at 09:00 because of rain

February

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales sighted.

March

Breach	Slap	Blow	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	3.50	1.50	0.00	2004

KUALOA RANCH (O'ahu)

January

Breach	Slap	Blow	Fluke Up	Year
0.38	0.15	-	0.00	2002
0.00	0.67	0.56	0.11	2003
0.32	0.00	0.68	0.00	2004

February

Breach	Slap	Blow	Fluke Up	Year
0.93	1.11	-	-	2002
-	-	-	-	2003
0.82	0.18	0.82	0.00	2004

March

Breach	Slap	Blow	Fluke Up	Year
0.00	0.18	-	-	2002
-	-	-	-	2003
0.08	5.67	7.00	0.17	2004

PYRAMID ROCK (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
<i>0.20</i>	<i>0.13</i>	-	<i>0.20</i>	2002
-	-	-	-	2003
<i>0.17</i>	<i>0.13</i>	<i>0.72</i>	<i>0.00</i>	2004

February

Breach	Slap	Blows	Blows	Year
<i>0.26</i>	<i>0.13</i>	-	<i>0.16</i>	2002
<i>0.00</i>	<i>0.59</i>	<i>0.86</i>	<i>0.00</i>	2003
0.34	0.47	2.88	0.66	2004

March

Breach	Slap	Blows	Blows	Year
<i>0.02</i>	<i>0.26</i>	-	<i>0.03</i>	2002
<i>0.00</i>	<i>0.08</i>	<i>1.03</i>	<i>0.00</i>	2003
-	-	-	-	2004

2004 – Not enough information to accurately calculate behavioral budget

MOKAPU POINT (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
<i>0.00</i>	<i>0.00</i>	<i>2.38</i>	<i>0.06</i>	2003
-	-	-	-	2004

2004 – Behavioral data did not contain information on number of whales present so that averages could not be calculated.

February

Breach	Slap	Blows	Blows	Year
<i>0.45</i>	<i>0.33</i>	-	<i>0.08</i>	2002
<i>0.19</i>	<i>1.02</i>	<i>5.90</i>	<i>0.00</i>	2003
-	-	-	-	2004

2004 – Behavioral data did not contain information on number of whales present so that averages could not be calculated.

March

Breach	Slap	Blows	Blows	Year
<i>2.22</i>	<i>2.59</i>	-	<i>0.00</i>	2002
<i>0.15</i>	<i>0.15</i>	<i>3.85</i>	<i>0.08</i>	2003
0.05	1.40	1.80	0.00	2004

LANIKAI BEACH (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	0.00	1.00	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.33	0.78	6.83	0.11	2003
0.20	0.00	1.40	0.20	2004

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.11	0.22	2.67	0.00	2003
0.00	0.00	1.00	0.00	2004

WAIMANALO (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
1.00	1.00	1.00	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	0.00	1.00	0.00	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.29	0.09	-	0.04	2002
-	-	-	-	2003
0.25	0.50	0.75	0.00	2004

HALONA BLOWHOLE (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
0.10	0.40	-	0.15	2002
0.23	0.77	2.13	0.23	2003
0.42	1.73	4.00	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.34	0.13	-	0.09	2002
-	-	-	-	2003
0.06	0.32	1.48	0.00	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.17	0.11	-	0.12	2002
0.23	1.75	2.23	0.00	2003
0.09	0.59	8.76	0.34	2004

MAKAPU'U POINT (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.13	0.48	2.41	0.22	2003
0.45	0.86	2.91	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.12	0.23	-	0.10	2002
1.72	0.44	3.03	0.00	2003
0.59	1.43	4.75	0.26	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.21	0.50	-	0.36	2002
0.48	0.93	4.16	0.13	2003
0.14	0.13	3.65	0.07	2004

LANAI LOOKOUT (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
0.53	0.67	-	0.20	2002
0.77	0.27	1.82	0.32	2003
0.20	0.00	2.93	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.38	0.31	-	0.57	2002
0.42	0.05	3.79	0.47	2003
0.31	0.74	3.66	0.14	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.17	0.17	-	0.30	2002
1.52	1.26	2.71	0.13	2003
0.43	1.04	14.86	1.08	2004

HANAUMA BAY (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
0.20	0.67	-	0.13	2002
0.15	0.08	2.00	0.08	2003
0.45	0.00	2.27	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.05	0.13	1.49	0.06	2003
-	-	-	-	2004

2004 Canceled due to inclement weather

March

Breach	Slap	Blows	Fluke Up	Year
0.18	0.09	-	0.14	2002
0.51	0.85	1.95	0.08	2003
0.09	0.82	8.68	1.03	2004

SPITTING CAVES (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.07	0.07	1.17	0.30	2003
0.25	0.00	0.88	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.26	0.16	-	0.41	2002
0.06	0.14	3.86	0.66	2003
0.31	0.77	1.69	0.38	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.00	0.26	-	0.13	2002
0.16	1.26	3.39	0.35	2003
0.15	0.75	2.62	0.10	2004

DIAMOND HEAD (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.00	0.00	1.33	0.00	2003
-	-	-	-	2004

2004 – No whales seen

February

Breach	Slap	Blows	Fluke Up	Year
0.49	0.48	-	0.02	2002
-	-	-	-	2003
0.00	0.33	1.72	0.00	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.13	0.00	-	0.13	2002
-	-	-	-	2003
0.00	0.65	0.71	0.00	2004

MAGIC ISLAND (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
1.19	2.12	4.12	0.08	2003
-	-	-	-	2004

2004 – No whales seen

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

KAKAHAKO BEACH PARK (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.32	1.84	2.16	0.63	2003
-	-	-	-	2004

2004 – Canceled due to bad weather.

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.55	0.55	0.00	0.00	2004

EWA BEACH (O'ahu)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
<i>0.00</i>	<i>0.00</i>	<i>1.00</i>	<i>0.00</i>	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
<i>0.40</i>	<i>0.40</i>	<i>0.20</i>	<i>0.00</i>	2004

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
<i>0.00</i>	<i>0.00</i>	<i>2.00</i>	<i>0.00</i>	2004

PUNALU'U BLACK SAND BEACH PARK (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

KA LAE BEACH PARK (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.05	0.01	-	0.05	2002
0.08	0.99	2.99	0.00	2003
0.83	1.28	0.83	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.06	0.37	-	0.04	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
0.04	0.50	-	0.00	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

MILOLI'I LOOKOUT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.12	0.27	5.08	1.04	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

HO'OKENA BEACH PARK (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.50	1.00	6.50	0.00	2003
0.00	0.00	4.33	0.17	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.12	0.27	5.08	1.04	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

HONAUNAU LOOKOUT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

February

Breach	Slap	Blows	Fluke Up	Year
0.05	0.35	-	0.30	2002
0.00	0.08	3.58	0.50	2003
-	-	-	-	2004

2004 – No whales seen

March

Breach	Slap	Blows	Fluke Up	Year
0.00	0.25	-	0.00	2002
-	-	-	-	2003
0.00	1.00	0.00	0.00	2004

KEA'U HOU (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
1.41	0.67	-	0.21	2002
0.08	0.99	2.99	0.00	2003
0.32	0.00	0.82	0.09	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.07	0.66	-	0.00	2002
0.23	0.10	3.70	0.53	2003
-	-	-	-	2004

2004 – Bad visibility and rain. No whales seen.

March

Breach	Slap	Blows	Fluke Up	Year
0.00	0.25	-	0.00	2002
0.17	0.50	2.83	0.17	2003
0.00	0.00	2.10	0.50	2004

KEAHOLE OTEC (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.40	0.00	-	0.75	2002
0.05	0.31	4.15	0.25	2003
0.11	1.74	10.58	1.26	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.22	0.36	-	0.87	2002
0.94	0.66	4.69	0.06	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
0.40	0.19	-	0.35	2002
1.00	0.80	5.00	0.00	2003
-	-	-	-	2004

2004 – Data not available

HUALALAI (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.26	0.27	-	0.66	2002
0.16	0.25	1.46	0.40	2003
0.41	0.38	2.06	0.76	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.44	0.48	-	1.62	2002
0.44	0.21	1.12	0.35	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
0.15	0.50	-	0.42	2002
-	-	-	-	2003
0.15	0.23	2.00	0.54	2004

MILE 7 MARKER (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.22	0.36	-	0.38	2002
0.20	0.03	1.99	0.25	2003
-	-	-	-	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.29	0.21	-	0.29	2002
0.21	0.24	0.54	0.30	2003
0.23	0.27	3.80	0.60	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.04	0.17	-	0.38	2002
0.14	0.48	3.05	0.57	2003
0.17	1.00	2.25	0.08	2004

PU'UKOHOLA HEIAU (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.14	0.76	-	0.30	2002
0.36	0.14	0.91	0.10	2003
0.20	0.50	0.99	0.31	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.13	0.15	0.93	0.00	2003
-	-	-	-	2004

2004 – Cancelled due to weather

March

Breach	Slap	Blows	Fluke Up	Year
0.07	0.52	-	0.02	2002
-	-	-	-	2003
0.44	0.81	0.51	0.49	2004

LAPAKAHI STATE PARK (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.11	0.45	-	0.25	2002
0.02	0.11	2.31	0.44	2003
0.03	0.49	2.09	0.24	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.09	0.46	-	0.21	2002
0.69	1.51	3.62	0.13	2003
-	-	-	-	2004

2004 – Cancelled due to weather

March

Breach	Slap	Blows	Fluke Up	Year
0.15	0.72	-	0.47	2002
0.06	0.37	3.51	1.29	2003
0.06	1.65	4.05	0.44	2004

KAPA'A BEACH PARK (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
1.83	0.90	-	0.43	2002
0.09	0.49	10.70	1.00	2003
1.72	0.52	6.85	0.65	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.32	0.27	-	0.46	2002
1.19	2.57	6.39	0.29	2003
0.55	0.05	4.08	0.23	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.37	0.56	-	0.59	2002
0.08	0.03	3.00	0.37	2003
0.10	0.28	4.08	0.35	2004

OLD COAST GUARD ROAD (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Averages could not be calculated because number of whales present during behavioral sampling was not reported

February

Breach	Slap	Blows	Fluke Up	Year
0.99	0.87	-	0.07	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Datasheet incomplete and unclear.

UPOLU POINT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.59	0.51	-	0.09	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Datasheets were not received

February

Breach	Slap	Blows	Fluke Up	Year
1.42	2.27	-	1.27	2002
4.39	1.30	6.13	0.04	2003
-	-	-	-	2004

2004 – Datasheets were not received

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Datasheets were not received

WAIPIO VALLEY LOOKOUT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.00	0.11	-	0.00	2002
-	-	-	-	2003
0.50	0.17	0.50	0.17	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
1.29	0.71	1.43	0.00	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
1.20	0.00	0.20	0.00	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

LAUPAHOEHOE SCENIC LOOKOUT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	0.00	3.00	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.55	0.27	4.06	0.03	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
0.67	0.00	-	0.33	2002
0.86	0.86	2.36	0.00	2003
0.33	0.33	0.67	0.00	2004

ONEKAHAKAHA BEACH PARK (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
1.14	0.14	-	0.03	2002
-	-	-	-	2003
0.48	0.08	1.12	0.12	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.46	0.14	1.21	0.04	2003
0.56	1.78	1.22	0.00	2004

2004 – Stopped early because of weather conditions

March

Breach	Slap	Blows	Fluke Up	Year
0.66	0.15	-	0.02	2002
0.35	0.57	2.48	0.09	2003
0.67	0.00	0.33	0.00	2004

KUMUKAHI LIGHTHOUSE (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
0.25	0.00	-	2.63	2002
0.00	0.00	7.38	1.34	2003
-	-	-	-	2004

2004 – Datasheets were never received

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
0.18	0.71	-	0.76	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Datasheets were not received

KAHENA LOOKOUT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen

February

Breach	Slap	Blows	Fluke Up	Year
0.50	0.00	-	0.25	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.25	0.00	0.63	0.13	2003
-	-	-	-	2004

2004 – No whales seen

KA'ENA POINT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled due to bad weather

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – No whales seen possibly because of bad visibility (rain)

PAUKA'A POINT (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
<i>0.94</i>	<i>5.20</i>	-	<i>0.30</i>	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Cancelled

March

Breach	Slap	Blows	Fluke Up	Year
<i>0.50</i>	<i>5.20</i>	-	<i>0.30</i>	2002
-	-	-	-	2003
-	-	-	-	2004

2004 - Cancelled

O'OKALA (Big Island)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	0.00	3.00	0.00	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.10	0.37	-	0.00	2002
0.46	0.14	1.21	0.04	2003
-	-	-	-	2004

2004 – Visibility poor. Data unreliable

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.14	0.14	1.14	0.00	2004

LUMAHAI LOOKOUT (Kauai)

January

Breach	Slap	Blows	Fluke Up	Year
2.70	0.10	-	0.00	2002
-	-	-	-	2003
0.11	0.19	2.30	0.04	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.99	0.65	-	0.17	2002
3.46	0.92	4.54	0.00	2003
0.13	0.10	1.71	0.00	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.33	1.00	-	0.00	2002
-	-	-	-	2003
0.45	0.79	2.47	0.03	2004

PRINCEVILLE (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.75	2.08	-	0.33	2002
0.13	0.25	2.63	0.00	2003
0.69	0.83	3.79	0.27	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.44	1.15	-	0.23	2002
1.15	0.48	1.70	0.00	2003
0.16	0.52	1.79	0.00	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.46	0.85	-	0.00	2002
0.20	0.80	1.90	0.20	2003
0.44	1.21	5.42	0.00	2004

KILAUEA LIGHTHOUSE (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.63	0.39	-	0.09	2002
0.00	0.75	2.00	0.00	2003
0.80	0.80	0.09	0.71	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.16	0.21	-	0.16	2002
0.19	0.27	3.50	0.00	2003
0.05	0.33	3.50	0.40	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.02	2.31	-	0.46	2002
0.17	0.25	1.58	0.00	2003
0.13	0.77	2.49	0.13	2004

CRATER HILL EAST (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
<i>0.20</i>	<i>0.25</i>	-	<i>0.00</i>	2002
<i>0.54</i>	<i>0.38</i>	<i>2.92</i>	<i>0.15</i>	2003
0.00	1.50	5.54	0.08	2004

February

Breach	Slap	Blows	Fluke Up	Year
<i>0.13</i>	<i>0.13</i>	-	<i>0.06</i>	2002
<i>0.11</i>	<i>0.26</i>	<i>4.53</i>	<i>0.08</i>	2003
0.00	0.80	4.00	0.14	2004

March

Breach	Slap	Blows	Fluke Up	Year
<i>0.13</i>	<i>0.00</i>	-	<i>0.19</i>	2002
<i>0.25</i>	<i>2.05</i>	<i>4.70</i>	<i>0.10</i>	2003
-	-	-	-	2004

2004 – Missing datasheets

KAPA'A LOOKOUT (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
<i>0.60</i>	<i>0.10</i>	-	<i>0.00</i>	2002
<i>0.07</i>	<i>0.40</i>	<i>4.35</i>	<i>0.00</i>	2003
0.18	1.15	6.65	0.05	2004

February

Breach	Slap	Blows	Fluke Up	Year
<i>0.07</i>	<i>0.19</i>	-	<i>0.05</i>	2002
<i>0.35</i>	<i>0.82</i>	<i>2.93</i>	<i>0.03</i>	2003
0.08	0.06	3.83	0.21	2004

March

Breach	Slap	Blows	Fluke Up	Year
<i>0.17</i>	<i>0.57</i>	-	<i>0.22</i>	2002
<i>0.14</i>	<i>0.79</i>	<i>1.36</i>	<i>0.00</i>	2003
0.29	0.27	2.31	0.33	2004

AHUKINI LANDING (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.20	0.40	6.03	0.53	2003
0.80	0.20	6.40	0.20	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.54	0.57	-	0.57	2002
0.13	0.04	2.26	0.02	2003
0.17	0.17	1.07	0.07	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.17	0.57	-	0.22	2002
0.04	1.96	2.38	0.77	2003
3.00	0.00	1.00	0.00	2004

NININI POINT (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.26	0.21	-	0.11	2002
0.00	0.07	1.67	0.29	2003
0.80	0.80	0.09	0.71	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.09	0.68	-	0.23	2002
0.37	1.42	6.97	0.03	2003
0.05	0.07	2.60	0.20	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.00	0.16	-	0.65	2002
0.06	2.50	7.09	0.25	2003
0.00	0.50	7.50	3.00	2004

MAHAULEPU HAULA (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.71	0.20	-	0.03	2002
-	-	-	-	2003
0.27	0.72	3.67	0.07	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.13	0.19	-	0.14	2002
-	-	-	-	2003
0.09	0.86	5.04	0.06	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.02	0.55	-	0.43	2002
-	-	-	-	2003
0.24	1.14	3.62	0.00	2004

MAHAULEPU MAKAWAHI (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.50	0.02	-	0.00	2002
0.00	0.00	1.57	0.23	2003
0.60	2.34	6.69	0.29	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.13	0.02	-	0.16	2002
0.59	0.62	5.95	0.00	2003
0.17	0.43	6.03	0.05	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.66	4.45	-	0.43	2002
0.00	0.00	1.46	0.46	2003
-	-	-	-	2004

2004 – Datasheets not received

MAKAHU'ENA (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.59	0.41	-	0.37	2002
0.08	1.27	6.23	0.11	2003
0.62	1.02	5.69	0.19	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.15	0.08	-	0.45	2002
0.22	0.22	2.32	0.13	2003
0.30	0.71	5.45	0.16	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.64	1.09	-	0.42	2002
-	-	-	-	2003
0.00	0.94	4.03	0.39	2004

PO'IPU BEACH PARK (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.45	0.88	-	0.16	2002
0.12	0.61	3.58	0.67	2003
0.30	0.35	1.13	0.02	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.05	0.05	-	0.23	2002
0.13	0.73	0.80	0.00	2003
0.00	0.13	1.17	0.17	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.64	1.09	-	0.42	2002
0.00	0.57	1.71	0.00	2003
-	-	-	-	2004

2004 – Datasheets not received

KA'IWA POINT (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.13	0.36	-	0.11	2002
0.05	1.38	1.73	0.34	2003
0.54	1.26	10.69	0.03	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.06	0.03	-	0.09	2002
0.00	0.00	2.33	0.42	2003
0.44	0.21	6.00	2.25	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.03	0.23	-	0.10	2002
-	-	-	-	2003
0.31	1.00	2.38	0.23	2004

PORT ALLEN CEMETERY (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
0.13	0.36	-	0.11	2002
0.21	1.24	4.98	0.60	2003
0.23	0.47	8.47	0.21	2004

February

Breach	Slap	Blows	Fluke Up	Year
0.06	0.03	-	0.09	2002
-	-	-	-	2003
0.00	0.09	2.35	0.00	2004

March

Breach	Slap	Blows	Fluke Up	Year
0.03	0.23	-	0.10	2002
0.00	0.97	1.73	0.00	2003
-	-	-	-	2004

2004 – Datasheets not received

WA'IMEA CANYON DRIVE (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
0.00	0.50	1.00	0.00	2003
0.00	1.41	3.41	0.45	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	0.13	2.25	0.38	2004

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.00	0.00	0.38	0.25	2004

KEKAHA (Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

Pacific Missile Range Facility (PMRF- Kaua'i)

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.22	1.08	7.51	0.84	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
-	-	-	-	2004

2004 – Behaviors not monitored

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
-	-	-	-	2003
0.19	0.71	4.00	0.62	2004

KAHO'OLAWE

January

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
<i>0.06</i>	<i>0.42</i>	<i>3.06</i>	<i>0.72</i>	2003
0.73	0.39	2.77	0.13	2004

February

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
<i>1.32</i>	<i>2.55</i>	<i>5.99</i>	<i>0.11</i>	2003
-	-	-	-	2004

March

Breach	Slap	Blows	Fluke Up	Year
-	-	-	-	2002
<i>1.20</i>	<i>2.15</i>	<i>3.09</i>	<i>0.70</i>	2003
-	-	-	-	2004