



Annotated Checklist of Marine Mammals and Sea Turtles, Lehua Islet, Ni'ihau, Hawai'i

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Lehua Islet is a secondary tuff crater (Palmer 1937) 1.2 kilometers off the northern point of Ni'ihau, Hawai'i (Fig. 1). Recent publications on Lehua's avifauna (VanderWerf *et al.* 2007), Coleoptera (Ramsdale and Samuelson 2006), land snails (Cowie and Wood 2008), and flora (Wood and LeGrande 2006) have demonstrated the biological importance of this 1.1 km² islet. Conservation efforts for Lehua include recent rabbit removal (Keitt *et al.* 2006), vegetation monitoring (Eijzenga 2006), and strategic planning for rodent control (OIRC 2008). A native plant restoration project is underway, being spearheaded by the National Tropical Botanical Garden (NTBG) with assistance from members of the Offshore Islet Restoration Committee (OIRC) and under the direction of the U.S. Fish and Wildlife Service (USFWS), Honolulu, Hawai'i office.

There are several localized currents that are prevalent around Lehua most of the year. Off the northwest side the current travels due north then curves north-northwest off the western horn. There is also an easterly current that travels in the Lehua channel between Lehua and Ni'ihau. These currents, along with minimal rainfall which normally decreases visibility with excessive substrate runoff, contribute to very clear water conditions. Water depths around the islet increase rapidly with 40 m depths within 10 m of the coast, and >100 m depths within 500 m of shore on the western and eastern sides of the islet. Water visibility is rarely <15 m and frequently >30 m.

To further our understanding of species richness and abundance around the waters of Lehua we present the following annotated checklist of marine mammals and sea turtles observed within five hundred meters of the islet. Nine species are included, three of which are federally listed as Endangered, and two of which are federally listed as Threatened (Table 1).

METHODS. Sightings were made while boating in waters around Lehua and during field research on the islet between 1995 and 2007. Most visits occurred between 2000 and 2007, during which trips averaged >100 visits annually. The vessel used was a 10.4 m power catamaran with observer eye height at 4 m on an open fly-bridge helm. Most marine mammal sightings occurred at anchor or at idle speed during interpretative narrations about Lehua (for periods typically > 30 min.) and

while anchored for snorkeling (for periods of <1 hr). Sightings also were made during approach and departure from Lehua (at speeds of 35–40 kph). In this paper we include all of the species observed within 500 m of Lehua with sea states ranging from Beaufort 0–5.

Balaenopteridae

The only recorded baleen whales observed within 500 m of Lehua were humpback whales (*Megaptera novaeangliae*). Sightings of two fin whales (*Balaenoptera physalus* – mother and calf), and four minke whales (*Balaenoptera acutorostrata* – mother and calf on two different occasions) have occurred but only in the channel between Kaua'i and Ni'ihau in water depths greater than 100 m.

***Megaptera novaeangliae* Borowski Humpback Whale**

The humpback whale is found in all oceans (Clapham and Mead 1999) and is listed as federally Endangered. Males can reach lengths ca. 14 m and females ca. 15 m (Chittleborough 1965; Clapham and Mead 1999). Humpbacks migrate between high latitude summer feeding grounds and subtropical or tropical winter locations for reproductive purposes (Calambokidis *et al.* 2001). The largest known reproductive assembly in the North Pacific Ocean, >9000 individuals, winter in Hawaiian waters primarily to mate, and following a year of gestation, return to give birth and nurse newborn calves (Calambokidis *et al.* 2001, Calambokidis *et al.* 2008). Humpback whales have been increasing in abundance since the cessation of commercial whaling. The primary threat to this species in Hawaiian waters is vessel strikes.

Around Lehua, humpback whales have been observed between mid November and late May and are especially common around the western and southern coast from January to late March. With water depths >60 m within 50 m of Lehua, there are few constraints to how close humpbacks can approach, with some sightings as close as 20 m to shore. Observed behavior includes nursing of newborns, resting, and what appears to be mating.

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Similar species: Only the fin whale could be confused with humpbacks at close range here in Hawai'i, although the size of adults of the former species (up to 24 m) and the difference in dorsal fin shape makes misidentification unlikely.

Delphinidae

In the Delphinidae family four species have been found within 500 m of Lehua, namely melon-headed whale (*Peponocephala electra*), false killer whale (*Pseudorca crassidens*), spinner dolphin (*Stenella longirostris*), and common bottlenose dolphin (*Tursiops truncatus*). While near-shore species like bottlenose and spinner dolphins are very common, the water depth and nutrient rich currents around Lehua attract offshore species. Below are confirmed sightings, yet it is suspected that pygmy killer whales (*Feresa attenuata*) are likely to be recorded within 500 m of Lehua in the future, given a sighting of this species off Ni'ihau and their use of near-shore waters elsewhere in Hawai'i (McSweeney *et al.* 2009).

Peponocephala electra Gray Melon-headed Whale

Melon-headed whales are distributed widely throughout tropical and warm temperate waters. They are relatively small (with recorded lengths of ca. 2–3 m) and are slightly sexually dimorphic, with males larger than females and with relatively larger appendages (Perryman 2009). Melon-headed whales move in large herds and are often curious about boats. In Hawai'i they feed primarily at night on small squid and fish; during the day they primarily rest and socialize (Aschettino 2010). They are known to be susceptible to impacts from anthropogenic sounds such as high-intensity military sonars (Southall *et al.* 2006; Brownell *et al.* 2009).

On one occasion >50 individuals of varying ages were observed off Lehua's northeastern shore in rough winter conditions (January 2003) with a heavy northeast current. These animals were unafraid, and played vigorously all around the vessel.

Similar species: Pygmy killer whales can be differentiated from melon-headed whales by a more strongly demarcated dorsal cape and more frequent white paired scars, a more

rounded head, and smaller group size. False killer whales also are black, though adults are much larger and have a much smaller dorsal fin in proportion to body size. They also lack the white mouth and the acutely pointed flipper tips of the melon-headed whale. False killer whales have flipper tips acutely rounded with humps, and pygmy killer whales have bluntly rounded tips (Jefferson and Barros 1997).

Pseudorca crassidens Owen False Killer Whale

False killer whales have been reported from all tropical, subtropical, and warm temperate seas and males reach lengths of up to 6 m and females around 5 m (Tomilin 1957; Perrin and Reilly 1984; Stacey *et al.* 1994). False killer whales in Hawai'i feed during the day on large game fish such as mahi mahi, yellowfin tuna, skipjack tuna, albacore tuna, and ono (Baird *et al.* 2008).

Small groups of <15 individuals are observed annually 2–4 times throughout the year off the eastern side of Lehua. There are two genetically-isolated populations of this species recognized in Hawai'i, an insular and an offshore population (Chivers *et al.* 2007, Baird *et al.* 2008); the former occupies the waters around Lehua. The best estimate of population size for the insular population is only 123 individuals (Baird *et al.* 2005), with individuals ranging at least from Kaua'i to the island of Hawai'i (Baird *et al.* 2010). The rarity of this species and its presence around Lehua and surrounding waters indicate the importance of this area as either a feeding zone or as a "route" to feeding areas. There is evidence of injury and possibly death from the offshore long-line fishing fleet (Baird and Gorgone 2005), and individuals have high levels of persistent organic pollutants (Ylitalo *et al.* 2009). There is evidence that the insular population has declined over the last 20 years (Reeves *et al.* 2009) and it is currently being considered for listing under the Endangered Species Act.

Similar species: Melon-headed whales and pygmy killer whales can be distinguished from adult false killer whales by their smaller size, and by relatively larger dorsal fins. Short-finned pilot whales (*Globicephala macrorhynchus*) can be

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distinguished by the large dorsal fin situated forward of the mid-point on the body, and in adult males by the large bulbous melon. False killer whales tend to engage in more aerial behavior than any of these other three species.

***Stenella longirostris longirostris* Gray**
Spinner Dolphin

Spinner dolphins are classified into four subspecies (Norris *et al.* 1994). The subspecies found in Hawai'i is distributed in tropical and sub-tropical waters world-wide. Spinner dolphins are the smallest species of dolphin in Hawai'i (ca. 1.3–2.3 m long). They are primarily found in coastal waters during the day and move further offshore to feed at night on mesopelagic squid and fish. Spinner dolphins are gregarious, forming large social groups between 15–100 individuals.

Spinner dolphins around Lehua move in groups of 15–40 individuals and are very curious, approaching passing vessels and occasionally visiting charter boat snorkel areas. While very approachable by boat they will usually keep their distance from swimmers. They are seen on almost every visit with the exception of when they may be resting at another site. The most noticeable behavior is their acrobatics which includes spinning in the air on their axis. In the morning hours they are often seen near shore, often inside the northern inner crescent crater if the current is light and the northwest swell is small. In the afternoon/evening they are often seen traveling offshore to feed with neighboring groups. They have a very long rostrum that is much longer than any other dolphin species in Hawai'i. Coloration is a dark grey dorsal cape, light grey on the sides and white belly which will turn pink (flush) when excited or while exerting energy. When the current picks up in the Lehua channel they will often be seen riding the waves and playing in the rough waters. Without exception they are seen with young of various ages. Most notable threats are from sharks, both near shore and pelagic; most notable injuries are from cookie cutter sharks (*Isistius brasiliensis*). Being that spinner dolphins in Hawai'i stay closer to shore than many other spinner dolphin populations, they have not been appreciably affected by the offshore fishing fleet.

Similar species: Pantropical spotted dolphin (*Stenella attenuata*), striped dolphin (*Stenella coeruleoalba*), and rough-toothed dolphin (*Steno bredanensis*), all of which can be ruled out based on size of adults and color.

Photographs showing primary identification features of odontocetes documented at Lehua. Melon-headed whales can be distinguished by the dark facial mask, the lack of a clear demarcation between the dorsal saddle and the lighter grey lateral pigmentation, the relatively large dorsal fin and the pointed head lacking a distinct beak. False killer whales can be distinguished by the relatively small dorsal fin, uniform dark grey coloration and rounded head lacking a beak. Bottlenose dolphins can be distinguished by their relatively large dorsal fin, light grey pigmentation, and the short, robust clearly demarcated beak or rostrum. Spinner dolphins can be distinguished by the clear demarcation between the darker dorsal pigmentation and lighter lateral pigmentation and the long, slim clearly demarcated rostrum with a black tip.

Photos by Robin W. Baird.



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***Tursiops truncatus* Montagu**
Common Bottlenose Dolphin

Common bottlenose dolphins have a world-wide distribution in tropical and temperate waters. Their body length ranges from ca. 2–4 m, with males being slightly larger than females.

Around Lehua they can be seen year round in small groups of <20, usually off the western side of Lehua and occasionally off the eastern side. Although they are rarely observed in the channel between Kaua'i and Lehua individuals move between Ni'ihau to Kaua'i (Baird *et al.* 2009). They tend to be uninterested in bow riding off Lehua's western side where they appear to be feeding. They are more prone to ride bows when sighted off the island's eastern side when they appear to be transiting. They have been observed feeding during the day on small tuna (skipjack and Kawakawa), Mahi-mahi, and reef fish. In Hawai'i this species occasionally is hooked in fishing gear and has been reportedly shot at by fishermen to deter them from taking fish off lines (Nitta and Henderson 1993)

Similar species: Rough-toothed dolphins are the species most likely to be confused with bottlenose dolphins in Hawai'i, and can primarily be differentiated by their sloping rostrum, with no sharp demarcation between the head and the rostrum. Risso's dolphin (*Grampus griseus*) has larger dorsal fins and lack a distinct beak.

Phocidae

***Monachus schauinslandi* Matschie**
Hawaiian Monk Seal

The Hawaiian monk seal is federally Endangered and endemic to the Hawaiian archipelago; most breeding occurring in the Northwestern Hawaiian Islands (NWHI). Population estimates range between 1,200 and 1,300 individuals. Sharks are a serious threat to their survival and can be especially injurious to pups and juveniles (Bertilsson-Friedman 2006). Other threats include entanglement in fishing gear, loss of habitat, and vessel traffic. For those seals found around the main Hawaiian Islands, there are risks associated with human activity, especially exposure to infectious diseases and pollution from runoff (Littnan *et al.* 2007).

The clean, clear waters off Lehua make it an important feeding and resting site for monk seals. Six seals are observed around the southern and western marine benches regularly throughout the year. They are cautiously curious during most of the year and mostly oblivious of our presence from June till early August when they tend to be preoccupied with mating. We frequently see them foraging on the reef, mainly eating

octopus and lobster, although they are known to head offshore to feed on squid and other small fish. They are most notable for their onshore behavior of resting while they digest their meals. We see 1–2 newborn pups every year around Lehua and its surrounding waters. At such young ages they have little or no markings, making them nearly impossible to differentiate by sight.

Similar species: None, although documented sightings of female *Mirounga leonina* (Northern Elephant Seal) have occurred in Hawai'i, they can be distinguished easily by the differences in the snout openings, being forward facing vs. upward as in the Monk Seal.

Cheloniidae

Sea turtles are long-lived and spend almost their entire lives at sea (Sasso and Epperly 2007). They are one of the largest vertebrates in shallow marine environments and many species are known to migrate over vast distances between nesting beaches and foraging areas. Sea turtles graze on sea grass meadows, coral reefs, algae and invertebrates, and some species, like the hawksbill, consume sponges (Allen 2007). They are found in temperate and tropical waters around the world. Five species, *Chelonia mydas* (Green), *Eretmochelys imbricata* (Hawksbill), *Lepidochelys olivacea* (Olive Ridley), *Caretta caretta* (Loggerhead), and *Dermochelys coriacea* (Leatherback) occur in the central Pacific. Sea turtles have numerous threats, especially marine pollution and loss of feeding and nesting habitat. Pelagic longline fishing and commercial shrimp trawling are known to unintentionally capture large numbers. Harvesting of sea turtles and their eggs for food, and their shells for jewelry and other decorative ornaments has greatly reduced populations.

***Chelonia mydas* L.**
Green Sea Turtle

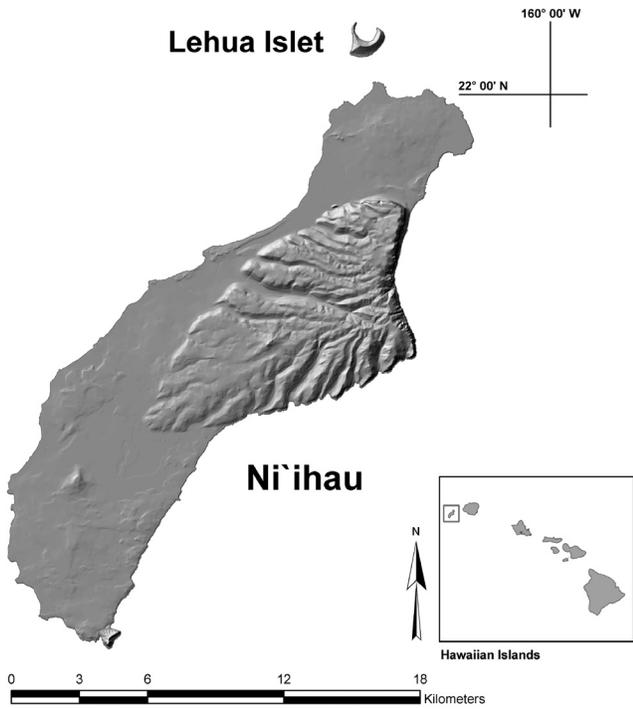
Green sea turtles are federally listed as Threatened in the central Pacific. They are mainly herbivores, eating mostly sea weed and algae and are named for the green color of fat under their carapace (top shell). They do not reach sexual maturity until after 20 years or more. Their carapace can reach lengths of up to 130 cm. Green sea turtles are only seen on occasion around the southern and western coasts of Lehua. They will usually flee when approached by swimmers.

Similar species: The hawksbill has a longer, more pointed beak. Its carapace is elliptical, while the green turtles is more

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TABLE 1. Checklist of Marine Mammals and Turtles Observed within 500 m of Lehua, Ni'ihau

<i>Family</i>	<i>Species</i>	<i>Common Name</i>	<i>Federal Status</i>
Balaenopteridae	<i>Megaptera novaeangliae</i>	Humpback Whale	Endangered
Delphinidae	<i>Peponocephala electra</i>	Melon-headed Whale	none
Delphinidae	<i>Pseudorca crassidens</i>	False Killer Whale	Strategic
Delphinidae	<i>Stenella longirostris</i>	Spinner Dolphin	none
Delphinidae	<i>Tursiops truncatus</i>	Common Bottlenose Dolphin	none
Phocidae	<i>Monachus schauinslandi</i>	Hawaiian Monk Seal	Endangered
Cheloniidae	<i>Caretta caretta</i>	Loggerhead sea turtle	Threatened
Cheloniidae	<i>Chelonia mydas</i>	Green Sea Turtle	Threatened
Cheloniidae	<i>Eretmochelys imbricate</i>	Hawksbill Sea Turtle	Endangered



Map 1. Lehua Islet, just off the northern point of Ni'ihau, Hawai'i.

rounded and high domed. The loggerhead has a somewhat heart shaped carapace, a thick neck and bigger head, making these local species easy to distinguish from each other.

Eretmochelys imbricata L.
Hawksbill Sea Turtle

Hawksbill are named for their beak-like mouth. They are omnivores, eating molluscs, crustaceans, sponges, soft corals, and algae. They are relatively small, with carapace lengths of ca. 90 cm. Several sightings of a small hawksbill were made during the summer and autumn of 1995 frequenting the area along the southern and southwestern corner of Lehua. They tend to be very wary of boats and humans in the water. Hawksbill are federally listed as Endangered.

Caretta caretta L.
Loggerhead Sea Turtle

Loggerheads are named for their exceptionally large head. They are carnivorous, eating molluscs, crabs, jellyfish, sea cucumbers, sea urchins, and fish. Carapace length is usually 80–100 cm, with record lengths of ca. 125 cm. Although loggerheads frequent Hawaiian waters, they are usually found north of the islands in deep waters and nesting of the North Pacific stock is in Japan. During the early spring and fall of

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2000–2005 a 1 m long loggerhead was observed around Lehua. They are federally listed as Threatened, although the International Union for Conservation has listed them as Endangered.

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HAWAII AUDUBON SOCIETY ANNUAL AWARDS BANQUET

Monday, October 18TH 2010

TREETOPS RESTURANT
Paradise Park, Manoa

6:00 PM - 9:00 PM

Come and join us for a wonderful evening.
We are pleased to present our featured speaker:

GREG BUTCHER, Director of Bird Conservation
for the National Audubon Society

“The National and Global Context of Hawaiian Bird Conservation.”

Join us for this educational lecture as well as our silent auction
This year's items are great, so please come and support the
HAWAII AUDUBON SOCIETY AND OUR FREEMAN SEABIRD PRESERVE

Tickets are \$30 per person.

Please contact HAWAII AUDUBON SOCIETY
by phone/Fax: 528-1432; e-mail: hiausoc@pixi.com
or visit our website at www.hawaii-audubon.com

We look forward to seeing you there!



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Calendar of Events

Annual Awards Banquet

Monday October 18th 6-9 pm
Paradise Park, Manoa
Tickets \$30 in advance

Field trip

James Campbell Wildlife Refuge
Kahuku
Please call or email for more information

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