



# The Unknown Cetacean

In search of Hawai'i's elusive false killer whales

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**I**t's 7:41; the morning sun finally cuts through the clouds above Mauna Kea, and the squall that dumped on us as we motored out of Honokōhau Harbor has passed. For the last two hours we've seen nothing but the usual wedge-tailed shearwaters and panicky flying fish leaping away from the boat. About ten miles off the Kona Coast, someone finally breaks the monotony: "Three o'clock, 100 yards!" A pod of rough-toothed dolphins appears, their dorsal fins breaking the smooth surface. Dan McSweeney takes photos from the deck of his nonprofit's twenty-seven-foot Boston whaler, his thick gray mustache flattened against his camera. Biologist Robin Baird positions the boat to avoid the blinding reflection of sunlight off the cetaceans' backs. Then the dolphins disappear as suddenly as they arrived.

Six more hours and the only other boat-stopper is a four-foot-long jellyfish with a purple head and tentacles as fat as carrots. Interesting, but that's not why we're here. By 2:30 p.m. Baird calls it a day.

On our way back Baird says, "Hey, at least we didn't get skunked this time." Six

months earlier I'd tagged along on another trip off O'ahu. We saw zip, zilch, nada—which isn't unusual when you're on a quest to find the elusive *Pseudorca*, or false killer whale, the rarest cetacean in Hawai'i waters. There are only 150 left in the main Hawaiian Islands, and on a typical two-week trip, these researchers will see false killer whales just once—maybe.

False killer whales are actually dolphins, so named because they have a skull similar to that of an orca, or killer whale. They're widespread in warm oceans throughout the world, but Hawai'i's population is unique and genetically distinct from open-ocean *Pseudorca*. Hawai'i's false killer whales cruise among the main Islands but remain within seventy miles of shore. They're the only false killer whale population in the world known to call an island chain home. In other words, they're as kama'āina as kama'āina gets.

With such a small numbers of false killer whales, you'd think that researchers would be fighting for the chance to study them. But they're not; opportunities to study Island *Pseudorca* are few and far

between in contrast to, say, spinner dolphins or humpback whales, which are much easier to find.

But for Baird and McSweeney, brief opportunities are enough. Before their pioneering research, which they each started independently of the other, no one was looking at Hawai'i's *Pseudorcas*. Today, largely because of their determination, we know more about this Hawai'i population than about any other false killer whales in the world.

**Dan McSweeney** is humble for a man with so much life under his belt. At 12 he became a certified diver. At 18 he became the youngest scuba instructor certified by the National Association of Underwater Instructors. "At the time Jacques-Yves Cousteau had invented the Aqualung, and the show *Sea Hunt* was on television," says McSweeney. "I just grew up with a desire to be in the water."

When he was 21 he left San Rafael, California, to operate a dive shop on the Kona Coast. Four years later he landed a volunteer job taking photos of killer whales

It wasn't until the 1970s that researchers even knew false killer whales existed in Hawai'i. But pioneering work by photographer Dan McSweeney and biologist Robin Baird has revealed that not only do *Pseudorca crassidens* reside in Hawaiian waters but the Islands' small population—an estimated 150 animals—is unique, genetically distinct from other false killer whales around the world.



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Dolphin v. dolphinfish: False killer whales prey on fast, hard to catch fish like mahimahi (pictured) and 'ahi (yellowfin tuna), which they'll pass around to other members of the pod before consuming. This food-sharing behavior is believed to be unique among cetaceans, one that may strengthen social bonds within the group.



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off the San Juan Islands in Washington state. “I didn’t have a formal background in photography,” he says. “I bought a small camera when I was a kid, but I didn’t know that you could study animals just by taking pictures of them.” (He’s referring to the method of photo identification, which looks for an animal’s unique characteristics, such as the marks on its dorsal fin, to distinguish it from others.) When he returned to Hawai‘i he started photographing humpbacks and contributed his work to research projects.

In 1977 John Denver hired McSweeney to take underwater images of humpback whales which the singer intended to use for his concerts. They worked together for over a month and remained friends. “When the project was over John said, ‘If you want this stuff, I’m more than happy to just give it all to you,’” McSweeney recalls. “This stuff” included a twenty-foot Zodiac.

“Had it not been for that gift,” he says, “I probably wouldn’t have been able to do a lot of the things that I did.”

Over the next ten years McSweeney shipped the boat between Hawai‘i and Alaska to shoot. He took photos of humpbacks but also many other whales, including melon-headed, sperm, beaked, pygmy killer and false killer whales. While it might not seem that significant today, consider that “back in the ’70s, people didn’t know that these other whale species existed in Hawaiian waters,” he explains. “I had a strong feeling that the images would be of value, but I didn’t how or when.”

In the mid-1980s, McSweeney had a rare encounter that piqued his interest in false killer whales. “I saw these big splashes just off the Kona airport, so I took the Zodiac out,” he says. He grabbed a tank, dropped over the side and descended

100 feet. “At the edge of visibility, this pair of *Pseudorca* appeared, blasting air out of their blowholes and zipping by. I turned around to see what else was coming, and there was this solitary *Pseudorca* holding half of a 150-pound ‘ahi in its mouth. I expected it to go by, but it came charging, broke about four feet from my head, opened its mouth and released the fish,” he says. “It was sharing.” McSweeney grabbed the fish; the whale swam under his legs, released air from its blowhole, spun around and stopped a few feet from McSweeney. “Clearly he wanted his fish back, so I shoved it; he grabbed it, chewed on it for a bit and took off,” he says. “The experience probably lasted eight seconds, but it seemed like a lifetime.”

Food-sharing is one of several behaviors that make *Pseudorcas* unusual among cetaceans. When they catch a fish they pass it around—without taking a bite—and return it to the original whale. “I think they do this as a way of showing trust,” says Baird, who doesn’t know of any other cetacean with this behavior. “They are cooperative hunters, going after fish that are difficult to catch. This gesture is a way of reaffirming their social bonds. Like, ‘I share with you. You share with me. We’re all in this together.’”

Some years later, when it became more widely known that humpbacks and other whale species existed off Kona, McSweeney started a whale-watching business, which he runs today. Some of the revenue goes to his nonprofit, Wild Whale Research Foundation, which supports research projects in Hawai‘i, including his work with Baird.

The two met in 1998 after Baird had finished his PhD on killer whales and moved from Nova Scotia to Maui. He’d read McSweeney’s 1990 paper on photo identification of pilot whales. “I knew that there were more than a dozen whale species in Hawai‘i,” says Baird. “I was astounded that with the exception of Dan’s work on the Big Island, no one was working on any of the lesser-known species.”

Baird flew to the Big Island to meet McSweeney. Over dinner he learned that McSweeney had been taking photos of not only pilot whales but also other cetaceans since the late 1970s. “When Robin expressed interest, I thought, ‘Finally! Someone else is interested in these poorly understood species,’” says McSweeney.

In 2004 Baird sent an intern to the Big Island to digitize tens of thousands of McSweeney’s images. That job took nine

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One important difference between Island *Pseudorca* and their open-ocean cousins is that Hawai'i's whales spend more time in certain areas than others, a discovery that could help create critical habitat to protect this dwindling population.

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months, but it was worth it, says Baird. “As soon as we digitized the photos and started matching them, we expanded our research on false killer whales from a couple of years to almost twenty.” It was as if someone handed over the first ten chapters of an eleven-chapter novel, and what those chapters revealed was a surprise: Because the same individuals kept showing up in the photos, it was clear that these whales were residents, not part of the open ocean population.

### Baird is a false killer whale’s

best ally—detailed, tenacious, articulate. He works with all of Hawai'i's eighteen species of toothed whales and dolphins, but he says that *Pseudorca* are “the most interesting behaviorally.”

For example: Females, which can live into their 60s, go through menopause, a phenomenon experienced by less than 1 percent of animals. (From hagfish to horses, most animals continue breeding until they die.) A theory dubbed the “grandmother hypothesis” explains why this occurs. “The older females are likely passing on important cultural knowledge,” he says. “It’s the same as when you think of elders in a community. These individuals

have experienced a lot; they know where the good fishing areas are and when there are oscillations in oceanographic conditions such as El Niño and La Niña, which might mean they need to do something different.”

Baird and his team have recently discovered that there are three different social subgroups among the Hawai'i population. “It’s not that they’re always together, but it’s that they’re together more often than they are with anyone else,” he says. Although the groups overlap because they hunt throughout the main Islands, each has its stomping grounds. For one group, it’s northern Maui to northern Moloka'i; for another, it’s the north end of Big Island to the southwest of Lāna'i. The last group has yet to be tracked with satellite tags; where they dwell is a mystery, as is why each group hangs out in these areas. Whatever the reason, the findings are important in terms of protecting critical habitat for Hawai'i's *Pseudorca*.

In just twenty years the Hawai'i population has dropped from 470 individuals to 150. There’s no single factor. *Pseudorca* eat the same fish we eat—yellowfin, albacore and skipjack tuna, swordfish, ono, mahimahi and others. Overfishing, not just

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in Hawai'i waters but also internationally, has caused a decline both in the number and size of fish. (Roughly sixty years ago, yellowfin tuna averaged 120 pounds; today they average about sixty.) Additionally, pollutants like pesticides and flame retardants, which are found in the fish as well as in the ocean and atmosphere, get stored in their blubber. This doesn't necessarily kill them directly, but it can weaken their immune system.

False killer whales are also the most frequent cetacean bycatch in Hawai'i's longline fishery. They're known to take hooked fish off lines, which causes roughly eight individuals per year to become seriously injured or die. To reduce bycatch and to comply with law, the National Marine Fisheries Service (NMFS) assembled a team of fishermen, conservationists and scientists (including Baird) in 2010. The group, known as the "Take Reduction Team," made a number of recommendations. One suggests switching from "J" hooks to circle hooks, which could decrease the likelihood of a false killer whale getting snagged. The plan is expected to be finalized in 2012.

The NMFS has also proposed listing the population under the Endangered Species Act. If Hawai'i's false killer whales are granted protection—which will be decided in November 2011—NMFS must designate critical habitat. In this, Baird's work will be essential.

**Ask Baird** about the research he's most proud of. "It's not one finding," he says. "It's the outcome: All of our results have fallen together and pointed in one direction that says this population is declining and is facing a number of threats. The research has been critical in their protection."

For McSweeney, despite the uncertain future of the animals he's spent nearly a lifetime photographing, the work has been rewarding. "Shedding light on creatures that have had no light on them has given me a huge amount of satisfaction. It reaffirms what I thought forty years ago: that collecting these images would matter—someday."

As for me, I still haven't seen a false killer whale. But I keep looking, hoping the next disturbance at the surface is caused by something other than the wind. **HH**

*If you've taken a photograph of a false killer whale in Hawai'i, Robin Baird encourages you to send it to him at [RWBaird@cascadiaresearch.org](mailto:RWBaird@cascadiaresearch.org).*