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Editor's Note: Several colleagues contacted the Editor at *Aquatic Mammals* regarding the likely error in identification of *Feresa attenuata* in Castro (2004). The following note presents a correction to the original identification of this species by Castro.

Pygmy Killer Whales (*Feresa attenuata*) or False Killer Whales (*Pseudorca crassidens*)? Identification of a Group of Small Cetaceans Seen off Ecuador in 2003

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Pygmy killer whales (*Feresa attenuata*) are a very poorly known species (Donahue & Perryman, 2009; McSweeney et al., 2009), and single sightings or strandings still often warrant publication. Castro (2004) reported an encounter with a school of small cetaceans off Ecuador in 2003, identified by the author as pygmy killer whales, and described details on the behavior of the group. Features noted in the field that were used to determine the species included estimates of their small size (1 to 2.5 m), rounded tips to the flippers, a rounded head when viewed from above, and white around the mouth. The species most frequently confused with pygmy killer whales is the melon-headed whale (*Peponocephala electra*), which are similar in size but have pointed tips to the flippers and a pointed head when viewed from above. Adults of both species typically have white lips, but adult pygmy killer whales also have white extending onto the face around the mouth. However, Figure 2 in Castro (2004), a photograph from the sighting, clearly shows a false killer whale (*Pseudorca crassidens*) rather than a pygmy killer whale. The most obvious difference between these two species, apparent in the photograph, is the relative size of the dorsal fin in proportion to the back; pygmy killer whales have proportionately larger dorsal fins than false killer whales. While relative appendage size may vary with age and sex, and such variation has not been quantified for either species, there is a general rule of thumb that can be used to discriminate the two species with such a photo. Using the length of the dorsal fin base as a metric, the distance between the anterior insertion of the dorsal fin and the blowhole is about twice the length of the dorsal fin base in pygmy killer whales, while in false killer whales the distance is typically about 2.5 times the length of the dorsal fin base. Even if the blowhole is not visible, false killer whales can be distinguished from either pygmy killer whales or melon-headed whales by the greater extent of back visible relative to dorsal fin size in almost any photo of these species at sea. With reasonable lighting conditions, the clear demarcation between the darker dorsal cape and the lighter lateral pigmentation of a pygmy killer whale should also be visible (Figure 1), and it is not apparent in the photo published in Castro. False killer whales tend to appear more uniform in coloration, although they also have a darker dorsal cape that is visible in good lighting conditions (Figure 2). However, the demarcation between this darker cape and the lighter lateral coloration is diffuse in false killer whales, as is also the case in melon-headed whales.[1]

Assuming Figure 2 in Castro (2004) was taken during the aforementioned encounter off Ecuador, this suggests that either the species was misidentified or that more than one species was present. The two species have been recorded in proximity

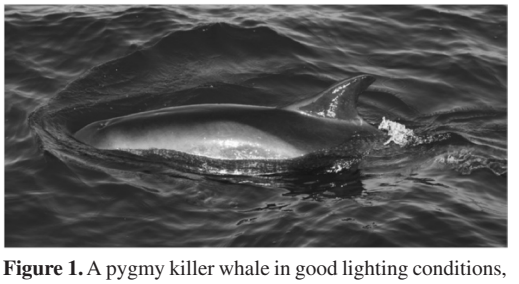

Figure 1. A pygmy killer whale in good lighting conditions, showing the clear demarcation between the dark dorsal cape and lighter lateral pigmentation; note the relative size of the dorsal fin in relation to the distance from the dorsal fin to the blowhole. (Photo by Robin W. Baird)

[1]More images of all three species under varying lighting conditions can be found at www.cascadiaresearch.org/hawaii/species.htm.

Figure 2. A false killer whale in good lighting conditions, showing the diffuse demarcation between the dorsal cape and lighter lateral pigmentation (Photo by Robin W. Baird)

on one occasion in Hawai‘i but were not seen to interact or travel together (Baird et al., 2008; McSweeney et al., 2009). Rounded tips to the flippers and a rounded head when viewed from above are characteristics that are shared by both false killer whales and pygmy killer whales, although the size estimates from the sighting (1 to 2.5 m) are difficult to reconcile with the length of false killer whales (in which adults can reach lengths of 5 to 6 m [Jefferson et al., 2008]). Length at birth for false killer whales is estimated to be about 1.75 m (Kasuya, 1986). Body length is notoriously difficult to accurately estimate at sea, however.

Several other details of the sighting and the behavior of the individuals described by Castro (2004) best fit false killer whales rather than pygmy killer whales. The speed of the group was reported at “around 30 km/h.” While it is unlikely that either species ever travels at 30 km/h for more than very short periods of time (Williams, 2009), pygmy killer whales typically appear quite lethargic at the surface, while false killer whales frequently engage in high-speed travel. While behavior is certainly more flexible than morphology, in over 70 encounters with pygmy killer whales off the island of Hawai‘i (see McSweeney et al., 2009), high-speed travel has never been observed (D. J. McSweeney, pers. comm., 18 August 2010; R. W. Baird, pers. obs.), while high-speed travel as described by Castro (2004) is a common feature of false killer whale encounters. False killer whales also frequently bowride on vessels, while pygmy killer whales do so only occasionally (Jefferson et al., 2008; R. W. Baird, pers. obs.). Both pygmy killer whales and false killer whales are primarily oceanic, but of the two species, false killer whales appear to use shallow waters more regularly.

There is no doubt that pygmy killer whales occur in waters off Ecuador; in fact, Castro (2004) discussed several other records from the general area. However, based on the photo presented in Castro and details of the behavior, the sighting described appears to have been a group of false killer whales rather than pygmy killer whales.

Acknowledgments

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Encounter with a School of Pygmy Killer Whales (*Feresa attenuata)* in Ecuador, Southeast Tropical Pacific

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Abstract

On 1 September 2003, a school of about 70 pygmy killer whale (*Feresa attenuata*) of several sizes (lengths varying form 1 to 2.5 m approximately) was sighted. The sighting was made around the La Plata Island (01º 34' S, 80º 99' W), Machalilla National Park, Ecuador, at a depth of about 47 m.

The school of dolphins was traveling at a speed of around 30 km/h. During the whole length of the observation, while the animals were traveling, they conducted running leaps and hard splash with their whole bodies outside of the water. On some occasions, their heads were outside of the water and they were bowriding in the waves produced by the boat. Individuals of about one m in length were observed; these were probably calves.

We observed the individuals staying close together in the bow area, and the sounds they produced were audible above the water. The length of the whistles was around 5 s. The species was observed at a 3 km distance from the Isla de la Plata and about 33 km from the continental coast of Ecuador.

Key Words: *Feresa attenuata*, Pygmy killer whale, behavior, Machalilla National Park, Ecuador, Southeast Tropical Pacific

Introduction

The pygmy killer whale (*Feresa attenuata*) is found in tropical and subtropical waters worldwide (Caldwell & Caldwell, 1971; Leatherwood et al., 1982; Leatherwood & Reeves, 1983; Reeves et al., 2002; Ross & Leatherwood, 1994). In the Eastern Tropical Pacific, the first record was a juvenile captured in 1967 during commercial tuna fishing operations 300 to 400 nmi off Costa Rica (Perrin & Hubbs, 1969; Van Waerebeek & Reyes, 1988).

In 1984, Van Waerebeek & Reyes (1988) discovered the mummified remains of a pygmy killer whale in Pucusana, Perú (76° 48' W, 12° 30' S). On 1 April 1989, Lyrholm et al. (1992) registered a school of 200 to 300 individuals around the Galapagos Islands (91° 56' W, 0° 11' N). In Ecuador, the first register was in 1992 when a young pygmy killer whale stranded on the beach of San Pedro (80° 44' W, 0° 50' S) in the province of Guayas (Félix et al., 1995).

Other observations were made by personnel of the National Marine Fisheries Service (NMFS) of the United States between 1971 and 2000 (Kinzey et al., 2000, 2001; Van Waerebeek & Reyes, 1988a; Wade & Gerrodette, 1993). Of the last 25 direct observations of pygmy killer whales between 1971 and 1985 in the Eastern Pacific, none were made along the Ecuadorian coast (Van Waerebeek & Reyes, 1988). Wade & Gerrodette (1993) indicate 29 sightings from 1986 until 1990 and six sighting from 1999 until 2000 (Kinzey et al., 2000, 2001). Three sightings were made near Ecuadorian waters but in oceanic waters and the last reported sighting of this species in the north of Ecuador was in 2000 with 27 animals at 80° 12' W, 01° 42' N on 9 November 2000 (Figure 1).

Little is known of the behavior, distribution, and ecology of the pygmy killer whale (Caldwell & Caldwell, 1971; Leatherwood & Reeves, 1983; Reeves et al., 2002; Ross & Leatherwood, 1994). Although this species is widely distributed, it is seldom sighted in the wild (Carwardine, 1998). Therefore, in this note, we present data on the behavior and distribution of this species in the Eastern Tropical Pacific as it was observed during the first sighting in the shallow waters on the continental coast of Ecuador.

Materials and Methods

The school of *Feresa attenuata* were encountered from a 10 m long whale watching vessel, equipped with two outboard engines of 130 hp. The observers on the boat were experienced and took detailed field notes of the encounter. Observations were made from the bow of the boat, as well as from

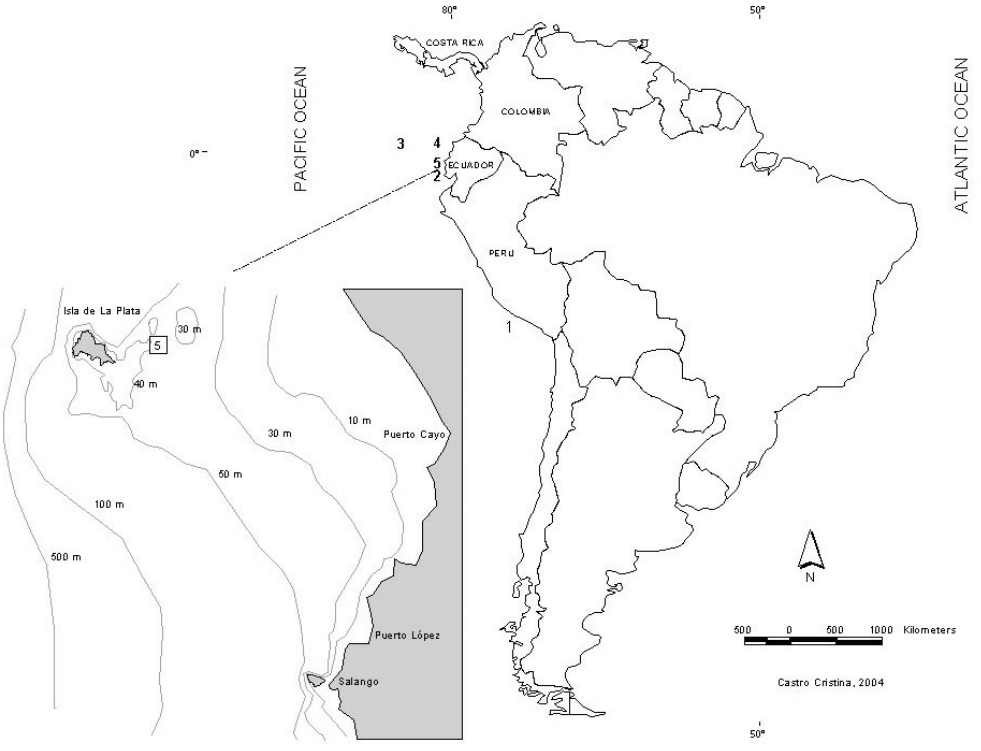

Figure 1. Records of pygmy killer whales (*Feresa attenuata*) in the Southeast Tropical Pacific:

1 – Mummified remains of a pygmy killler whale in Pucusana, Perú (Van Waerebeek & Reyes, 1988)

2 – Stranding in Guayas, Ecuador (Félix et al., 1995).

3 – School of 200 to 300 individuals around the Galápagos Island (Lyrholm et al., 1992)

4 – School of 27 individuals (Kinzey et al., 2001)

5 – School of 70 individuals around La Plata Island (Castro, in this publication)

the sides, and GPS positions (using a handheld Garmin GPS) were taken frequently during the sighting event.

Results

On 1 September 2003, a school of about 70 pygmy killer whale (*Feresa attenuata*) of several sizes (lengths varying from 1 to 2.5 m approximately) was sighted. The sighting was made around the La Plata Island (01º 34' S, 80º 99' W) at a depth of about 47 m (Figure 1). The school of dolphins was traveling at a speed of around 30 km/h[1]; the group was spread out over an area of approximately 1.5 km.

Pygmy killer whales are similar in size to many other delphinids of the ETP (Leatherwood & Reeves, 1983; Leatherwood et al., 1982; Reeves et al., 2002; Ross & Leatherwood, 1994). They are most readily confused with melon-headed whales (*Peponocephala electra*) and, to a lesser extent, because of their larger size, with false killer whales (*Pseudorca crassidens*). In the case of this sighting, identification was unambiguous and based on the close proximity of the animals and the specific characteristics of the species that were observed. It was possible to observe the form erect and falcate of the dorsal fin, the black coloration, and the white part around the mouth (Castro, pers. obs.). The pectoral fins were not pointed but with rounded tips (Soledispa, pers. obs.); furthermore, photographs were taken of the form of the head as seen from above. It had a rounded form, and small scars were seen on the body (Castro, pers. obs.) (Figure 2).

During the whole length of the observation, while the animals were traveling they were jumping with their whole body out of the water. The jumps were horizontal with high speed, and on some occasions, they entered the water with the

[1] Speed calculated in relation to the boat

Figure 2. Dorsal fin of a pygmy killer whale (*Feresa attenuata*) in Ecuadorian waters

head or with the lateral sides of the body. This aerial behavior was described as running leaps and hard splashes. Also, the heads of the individual adults and subadults were outside of the water, and they were bowriding in the waves produced by the boat.

Reproductive habits of the pygmy killer whales are not well known, although mating occurs in spring in the Gulf of Mexico (Würsig et al., 2000). In the school, individuals of about one m in length and their dorsal fins were observed; it is possible these were calves. These animals did not come close to the boat but performed running leaps in the same direction as the adults and the boat.

We were able to approach the school without problems. During the first min, some adult dolphins approached the one side and swam parallel to the boat. After about ten min, the individuals started to bow ride the waves in the front of the boat, frequently changing position between the sides of the boat and the back of the boat to again stay in the bow wave for 20 min more. We observed that the individuals (90%) were staying close together in the bow area, and the sounds they produced were audible above the water. The length of the whistles was around 5 s.

Discussion

The pygmy killer whale lives in deep and warm waters (Carwardine, 1998; Reeves et al., 2002). The school of about 70 animals was observed at a depth of about 47 m in the continental coast of Ecuador. In the Galápagos, this species is considered rare and normally seen in waters deeper than 1,800 m (Day, 1994). The last sighting of this species was made by U.S. NMFS personnel on 9 November 2000 at a depth of 200 m; the school size was 27 animals (Kinzey et al., 2001).

Van Waerebeek et al. (1988) indicated that although this species is normally oceanic, it has been seen by the Peruvian coast due to the characteristic form of the continental shelf and the dynamics of the Peruvian sea. In Ecuador, the cause for the sightings in rather shallow water could be similar to the ones described in Van Waerebeek et al. where oceanic species can occur in areas of little depth because the continental platform is very close to that of La Plata Island.

In captivity, the animals show a surprising amount of aggression which led to the idea that they feed on other mammals (Leatherwood et al., 1982; Mitchell, 1975; Northridge, 1985; K. Pryor, 1991; T. Pryor et al., 1965). K. Pryor (1991) reported that when capturing and studying individuals (*Feresa attenuata*) in captivity their behaviors are more like a wolf than a dolphin. They growl, snap, and would not hesitate to attack a person or another cetacean. Moreover, they have been reported to attack other delphinids incidentally caught in tuna nets in the Eastern Tropical Pacific (Mitchell, 1975; Northridge, 1985; Würsig, 2000). Never did we observe aggressive behavior with us or with other delphinids.

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