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A White Killer Whale in the Central Aleutians

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ABSTRACT. We observed a white adult male killer whale (*Orcinus orca*) on 7 August 2000 off the north side of Adak Island, Aleutians. An open saddle and a rounded dorsal fin tip suggest that this whale belongs to the fish-eating ("resident") ecotype. A circular scar matching a cookie-cutter shark (*Isistius* sp.) bite mark suggested that the animal originated in warmer waters. Photographs and description provided here should enable individual identification should this animal be seen again.

Key words: killer whale, *Orcinus orca*, pigmentation anomaly, cookie-cutter shark, *Isistius* sp., Aleutian Archipelago

RÉSUMÉ. Le 7 août 2000, nous avons observé un épaulard adulte mâle de couleur blanche (*Orcinus orca*) du côté nord de l'île Adak, îles Aléoutiennes. Sa selle ouverte et sa nageoire dorsale arrondie laissaient croire que cette baleine faisait partie de l'écotype des baleines mangeant des poissons (« résident »). Une cicatrice circulaire correspondant à une morsure de squaletet (*Isistius* sp.) laissait présumer que l'animal provenait d'eaux plus chaudes. Les photographies et la description fournies ici devraient permettre une identification individuelle advenant que cet épaulard soit aperçu de nouveau.

Mots clés : épaulard, *Orcinus orca*, anomalie de la pigmentation, squaletet, *Isistius* sp., îles Aléoutiennes

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On 7 August 2000, we observed an almost all-white male killer whale (*Orcinus orca*) on the north side of Adak Island (off Cape Adagdak) (52˚01.1′ N, 176˚35.0′W), central Aleutians, Alaska. We sighted the animal from a distance of about 1 km, within a group of about 15 individuals (at least 12, maximum 20 individuals) that included at least one other male. We did not get a direct comparison with the other male, but the white whale was clearly larger than any of the accompanying females. The height-to-width ratio of the dorsal fin (averaged from two photographs following Olesiuk et al., 1990) was 1.65. No other animal in the group showed atypical pigmentation. We were able to stay with the group for about half an hour, during which the white whale once approached our vessel within a distance of about 50 m. The other individuals of the widely scattered group stayed farther away and were not photographed.

While the whale appeared pure white from a distance, the characteristic black markings were visible as a tan shadow on close approach. Besides its lack of pigmentation, photographs revealed several distinct marks: 1) a rake scar of five parallel scratches on the left side near the trailing edge of the dorsal fin; 2) what appeared to be the bite of a cookie-cutter shark (*Isistius brasiliensis* or *I. plutodus*) behind the blow hole; 3) an "open saddle," i.e., a dark swirl entering the saddle dorsally (Fig. 1). The latter mark could aid subsequent individual identification should this animal be sighted again. Adak-based fishermen reported the white killer whale on at least one occasion within five days of our initial sighting. We have not seen this individual since that day, although we have passed the area at least six times every summer and encountered killer whales frequently.

Sightings of white cetaceans are rare, but they have been reported for a large number of species (Hain and Leatherwood, 1982; Fertl et al., 1999, 2004). White killer whales have previously been reported from the state of Washington, as well as from British Columbia, New Zealand, and the Azores (Fertl et al., 1999, and references within). In August 1997, a white male killer whale was seen off St. Lawrence Island in the northern Bering Sea (Speckman and Sheffield, 2001). Its skin was described as "creamy yellowish," with shadows of the normal patterns as well. The individual described here showed similar residual pigmentation. However, since no photographs were taken in August 1997, it cannot be determined whether that whale was the same individual.

A free-ranging white killer whale ("Chimo"), which died in captivity, was diagnosed with Chédiak-Higashi Syndrome, an inherited fatal disorder characterized by diluted pigmentation and reduced life span (Taylor and Farrell, 1973; Ridgway, 1979). Size and height-to-width ratio of the dorsal fin indicate that our Aleutian white killer whale was fully grown and therefore at least 20 years old (Olesiuk et al., 1990). This age suggests a different cause, rather than Chédiak-Higashi Syndrome, for the lack of pigmentation.

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FIG. 1. White male killer whale (*Orcinus orca*) off Adak Island, central Aleutians. Note the cookie-cutter shark (*Isistius* sp.) bite mark behind the blowhole, scratch marks on the dorsal fin, and the "open saddle." The inserts were collected from other frames. Contrast was enhanced on the saddle insert. (Photographs: M. Renner)

The open saddle seen on this white male is not found in mammal-eating (so-called "transient") killer whales (Baird and Stacey, 1988; Ford et al., 2000; Matkin et al., 2007), suggesting that this individual belongs to one of the fish-eating types ("resident" or "offshore") found in the temperate coastal waters of the North Pacific. This designation is also supported by the rounded shape of the dorsal fin tip. The fish-eating "resident" type of killer whale is also the most abundant ecotype in the eastern and central Aleutians (Zerbini et al., 2007).

The near-circular dorsal mark behind the white whale's blowhole fits the characteristics of a cookie-cutter shark bite mark (Jones, 1971). Cookie-cutter sharks prefer tropical to temperate waters. The few records of their presence in the North Pacific are all from the warmer waters of the Transition Domain, or even farther south (Favorite et al., 1976; Nakano and Tabuchi, 1990; Ocean Biogeographic Information System [OBIS], http://www.iobis.org/). Thus it seems likely that this whale came to the Aleutians from warmer deep waters, probably south of 40° N, before its scar could heal. In contrast to killer whales living along the west coast of North America, those found around the Hawaiian Islands commonly show cookie-cutter shark scars (Baird et al., 2006). Cookie-cutter shark bites have also been found in large numbers on Stejneger's beaked whales (*Mesoplodon stejnegeri*) beached on Adak Island; these were interpreted as evidence for migration to warmer waters (Walker and Hanson, 1999).

Given that a) neither we nor others have encountered this white killer whale in the Aleutian Archipelago before or since 7 August 2000, b) a white male killer whale, possibly the same individual, was observed in the northern Bering Sea in 1997 (Speckman and Sheffield, 2001), and c) the whale bears a putative cookie-cutter shark mark, we speculate that this individual is highly mobile and travels over a wide range in the North Pacific. Because male killer whales can live for 50 to 60 years (Olesiuk et al., 1990) this individual could be seen again for a long time to come. That it took so long to document this more than 20-year-old white individual is a reminder of how little is known about killer whales and their diet, seasonal movements, and habitat use in the Bering Sea. The recent controversy surrounding killer whales and the decline of other marine mammal species (Estes et al., 1998; Springer et al., 2003; Wade et al., 2007; Trites et al., 2007) highlights the need for these data.

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