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Short communication

Melanistic southern right-whale dolphins (*Lissodelphis peronii*) off Kaikoura, New Zealand, with records of other anomalously all-black cetaceans

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Abstract Reports of anomalously pigmented cetaceans, including melanistic (all-black) individuals are infrequent. We observed four melanistic southern right-whale dolphins (*Lissodelphis peronii*) including a calf, off Kaikoura (42°34′S, 173°50′E), New Zealand. We also compiled records of melanistic individuals from five other species of cetaceans. The ecological context of melanistic pigmentation of cetaceans is not well understood; however, it may increase heat absorption, affect ability to capture prey, impair visual/social communication, and/or increase conspicuousness to predators.

Keywords melanism; melanistic; anomalous pigmentation; southern right-whale dolphin; *Lissodelphis peronii*; cetacean; New Zealand

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INTRODUCTION

Anomalously pigmented cetaceans are infrequently reported. Variations encompass a wide continuum, which ranges from pale colours, where normal pigmentations are reduced or absent (e.g., albino animals) to hyper-pigmentation, where darker colouring is prevalent and may mask other pigmentation patterns (e.g., melanistic or all-black individuals). Hain & Leatherwood (1982) and Fertl et al. (1999) reviewed the few occurrences of anomalously white cetaceans. To date, no such review is available for melanistic cetaceans. We consider this manuscript to be a preliminary assessment, since more records likely exist. We report an instance of melanism in southern right-whale dolphins; we also review published and unpublished records of melanistic cetaceans.

RESULTS

On 27 August 1999, during non-systematic small-boat (5.8 m) surveys for cetaceans, a group of 500+ southern right-whale dolphins (*Lissodelphis peronii*, Lacépède, 1804) was observed c. 15 km (8 n mile) south-east of Kaikoura (42°34′S, 173°50′E), South Island, New Zealand, in waters with a bottom depth greater than 1500 m. The group was spread out over c. 2 km^2 and was easily observed for c. 1 h since the seas were calm (Beaufort Sea State of 0). High-speed porpoising was observed for c. 30 min.

The group of animals was identified as southern right-whale dolphins because of the lack of a dorsal fin and the characteristic pigmentation of a black body with white pigmentation on the melon, rostrum, flanks, pectoral flippers, tail flukes, and other ventral surfaces (Jefferson et al. 1994; Newcomer et al. 1996, Fig. 1A). Within the normally pigmented dolphins, four melanistic individuals were observed spread throughout the group. They occasionally leapt clear of the water; therefore, it was possible to determine that these dolphins lacked the typical white pigmentation pattern (Fig. 1B). The individuals were

Fig. 1 **A,** Typical black and white colouring of southern-right whale dolphins (*Lissodelphis peronii*). **B**, One of four melanistic southern right-whale dolphins sighted off Kaikoura. (Photos: I. N. Visser.)

identified as three adults (from 2 to 3 m in body length, estimated against the length of the research vessel) and one calf (less than half the size of the melanistic adult it accompanied), swimming in an "echelon" position (Norris & Prescott 1961).

DISCUSSION

A wide range of anomalously pigmented northern and southern right-whale dolphins have been recorded, including all-white individuals (Brown 1973; Watson 1981), partial whites, greys, partial darks (Cruikshank & Brown 1981; Newcomer et al. 1996), and one melanistic (Jefferson et al. 1994; Newcomer et al. 1996). Our record of melanistic southern right-whale dolphins off New Zealand is the first from these waters. What makes it particularly interesting is that multiple anomalously pigmented individuals were within the same group, including a melanistic calf accompanying a melanistic adult.

We compiled an additional 12 records of melanistic individuals from five other cetacean species (Table 1). Although melanistic pigmentation probably occurs more often than these records indicate, it may be difficult to distinguish this anomaly in the field, particularly for certain species of cetaceans. The overall colouring of some species may be predominantly black (e.g., false killer whale,

Pseudorca crassidens) or counter shaded, where lighter pigmented areas may be predominantly on the ventral surfaces (e.g., Burmeister's porpoise, *Phocoena spinipinnis*). Hyper-pigmentation, i.e., darker than normal pigmentation, may also occur from hybridisation (e.g., Zornetzer & Duffield 2003; Willis et al. 2004).

Some species show wide variation of pigmentation between geographic locations, e.g., humpback whales, *Megaptera novaeangliae*, which typically exhibit a greater degree of white coloration in the Southern Hemisphere populations than those in the Northern Hemisphere populations (Kaufman et al. 1987). Furthermore, some animals that have been alluded to as melanistic may not, upon closer examination, be all-black, but rather are darkly hyper-pigmented (e.g., Workman 1982; Nishiwaki 1996).

It is also possible that mixed-species groups have resulted in false reports of melanistic individuals, e.g., killer whales in non-predatory associations with long-finned pilot whales (*Globicephala melas*) and false killer whales (Jefferson et al. 1991). Individuals of these latter species could be misidentified as melanistic killer whales. Given these difficulties in identifying melanistic individuals, we noted which records included substantiating evidence (e.g., photographs/stranding, Table 1).

The ecological context of pigmentation patterns of cetaceans (both on the individual and species level) is not well understood. Hain & Leatherwood (1982), Fertl et al. (1999), and Forestell et al. (2001)

Table 1 Records of melanistic cetaceans (these refer to one free-ranging individual unless otherwise noted).

Species and date	Location	Comments	Source
Humpback whale (*Megaptera novaeangliae*)			
16 Sep 1999	Va'vau, Kingdom of Tonga 18°42′S 174°03′W	adult	I. N. Visser*
Bottlenose dolphin (*Tursiops truncatus*)			
Feb 1993	Kaikoura, New Zealand 42°27′S 173°39′E	adult	I. N. Visser*
Shortbeaked common dolphin (*Delphinus delphis*)			
15 Sep 1993	Cavalli Islands, Northland, New Zealand 34°58′S 173°57′E	adult	I. N. Visser*
Aug 1996	c. 100 miles offshore of San Francisco, CA, United States	2 adults	L. T. Pusser*
Southern right-whale dolphin (*Lissodelphis peronii*)			
16 Nov 1988	southern Chile 33°03′S 75°33′W	adult	Jefferson et. al. (1994), Newcomer et. al. (1996), J. S. Grove (pers. comm.)*
27 Aug 1999	Kaikoura, New Zealand 42°34′S 173°50′E	3 adults, one calf	this report*
Killer whale (*Orcinus orca*)			
Pre-1847	north-west coast of North America	adult	Scammon (1874)†
Apr or May 1921	Du Pont Dock, WA (?), United States	age class not provided	Scheffer & Slipp (1948)
16 Nov 1941	Tacoma, WA, United States	age class not provided	Scheffer & Slipp (1948)
pre-1948	Deception Pass, WA, United States	age class not provided	Scheffer & Slipp (1948)
Dall's porpoise (*Phocoenoides dalli*)			
Jun/Jul 1985	western Aleutian Islands, AL, United States	stranded, adult	T. Jefferson (pers. comm.)*
Pre-1966	Japan	age class not provided	Nishiwaki (1966)
Sep 1996	70 miles offshore of Astoria, OR, United States	adult	L. T. Pusser*

*Photographic evidence available.
†p. 89 in Scammon (1847), illustrates an all-black "*Orca rectipinna*", assumed to be an adult male *Orcinus orca*.

discussed the possible costs of aberrantly pigmented cetaceans, namely for anomalously white individuals. Melanism could increase heat absorption (particularly in warmer climates), possibly affect ability to capture prey (e.g., inability to flash a counter-shaded belly towards prey), it may impair visual/social communication and/or increase conspicuousness to predators.

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