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# Short Note

## First Sighting of a Leucistic Humpback Whale (*Megaptera novaeangliae*) in South African Coastal Waters

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Cetacean skin colour, in general, is determined by the presence of melanocytes and chromatophores (Behrmann, 1998). Melanocytes are found predominantly on the dorsal side of the body as well as on the fluke and flippers (Behrmann, 1998). Melanocytes produce melanin, which is stored in the upper epidermal layers giving cetaceans their dark colour. White parts of the body lack melanin, either due to the presence of chromatophores (i.e., natural white coloration) or due to an abnormality in the gene responsible for melanin production (i.e., tyrosinase) (Behrmann, 1998). When no melanin is produced in any part of the body, it results in albinism, causing individuals to have an absence of pigmentation in not only the skin, but also in the hair and eyes (Grønskov et al., 2007). If melanin is produced at a reduced rate, individuals may either be considered *leucistic*, with pigmentation missing from the skin or parts of the skin but not from the eyes, or *piebald*, with pigmentation missing from the skin in a random, patchy pattern (Clark, 2002; van Grouw, 2006; Fertl & Rosel, 2009).

Pigmentation deficiencies have been reported for at least 25 cetacean species (summarised in Hain & Leatherwood, 1982; Fertl et al., 1999, 2004). The majority of reports, however, come from the Northern Hemisphere, and pigmentation deficiencies have been reported for only two cetacean species in the Indian Ocean: (1) the southern right whale (*Eubalaena australis*) and (2) the sei whale (*Balaenoptera borealis*) (Best, 1970, as cited in Fertl et al., 1999). This note describes what we believe to be the first leucistic humpback whale (*Megaptera novaeangliae*) in the Southwest Indian Ocean and offers insight into the frequency of occurrence of abnormal pigmentation patterns in cetaceans.

On Tuesday, 2 August 2016, at 1332 h, a leucistic humpback whale calf and its presumed mother were observed in Algoa Bay, Eastern Cape, South Africa (33° 44' 15.1" S, 25° 55' 18.4" E), during southern right and humpback whale boat-based surveys (Figure 1). Photo-identification pictures and video recordings of behaviour were made from a 6.5-m rigid-hull inflatable boat powered by two 60 hp engines. Four crew members were present; the photographer of the group was situated on an elevated chair with an eye-height at 3 m above sea level for increased visibility. The calf, with an estimated length of 4.5 m, had normal dark pigmentation on its head, dorsal fin, and dorsal side of the fluke, but its body and the ventral side of its fluke were white (Figure 2). The colouration of the calf's pectoral fins could not be determined, but it had several scars on its body, which were dark in colour (Figure 2). The mother displayed normal pigmentation. The mother-calf pair travelled eastwards at a slow pace, and the calf displayed no unusual behaviour in comparison to sightings of traditionally pigmented individuals. Only three reports of anomalously white humpback whales (i.e., white skin in

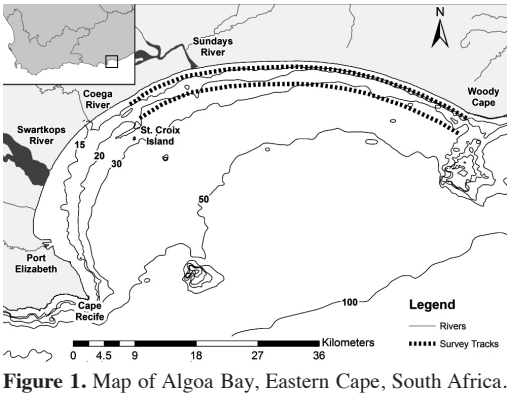


**Figure 1.** Map of Algoa Bay, Eastern Cape, South Africa. Survey track lines are indicated by the bold black dotted lines between the Islands of St. Croix and Woody Cape.

atypical parts of the body) have been reported in the scientific literature, and another four have been reported in the grey literature (Table 1).

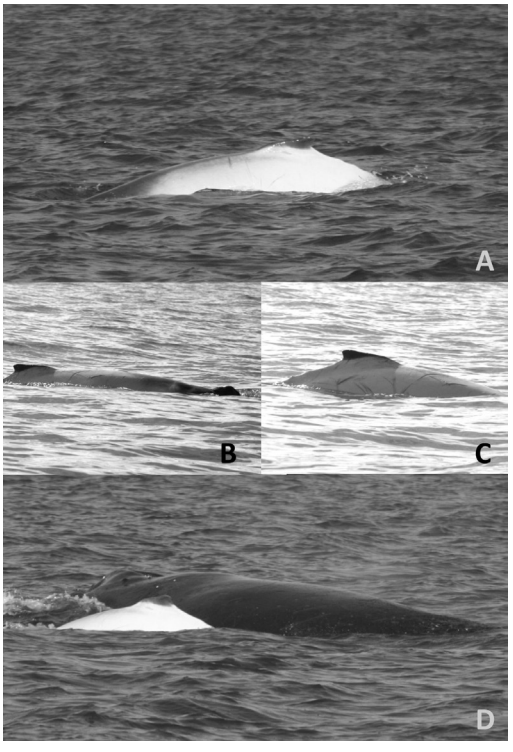


**Figure 2.** Leucistic humpback whale (*Megaptera novaeangliae*) calf observed on 2 August 2016 in Algoa Bay. The calf appeared to have a white body (A-D) with dark-coloured extremities and scars (B & C). (*Photo credit:* Eduard Drost, School of Environmental Sciences, NMMU)

Humpback whales migrating along the South African coast are believed to be part of breeding substock C1, wintering off Mozambique and Tanzania (Best et al., 1998). Additional substocks in the Southwest Indian Ocean are substocks C2 in the Mozambique Channel, including Mayotte Island and the Comoros Islands, and C3 in the coastal waters off Madagascar (International Whaling Commission [IWC], 2011). A fourth substock, C4, has been proposed to extend across the Mascarene group of islands, including Mauritius and Reunion (IWC, 2011). This note describes what we believe to be the first recorded sighting of a leucistic humpback whale in the Southwest Indian Ocean as no such individual has previously been described in (1) the local humpback whale photo-identification catalogue containing individuals from the C1 breeding substock migrating through Algoa Bay (Eastern Cape); (2) the national humpback whale photo-identification catalogue, primarily containing individuals from the C1 breeding substock migrating past St. Lucia (KwaZulu-Natal) (K. Findlay, pers. comm., 11 September 2016); or (3) any of the other photo-identification catalogues containing individuals from the C2, C3, and C4 breeding substocks (K. Findlay, pers. comm., 11 September 2016). The local whale watching company from Algoa Bay did report on a "white" adult humpback whale in August 2014 (Bottomley, 2014), but this individual has been assessed to be piebald based on available pictures (Figure 3).

The cause of the atypical pigmentation pattern observed in the calf is unknown but may be due to genetics (van Grouw, 2006; Hattori et al., 2010). Leucism is a homozygous trait; hence,

**Table 1.** Known sightings of anomalously white humpback whales (*Megaptera novaeangliae*) mentioned in scientific (indicated by an *) and grey literature

| Year first seen | Location | Age group | Type of deficiency | Reference |
|---|---|---|---|---|
| 1991* | Eastern Australia | Adult | Confirmed albino | Forestell et al., 2001; Polanowski et al., 2012 |
| 2002* | Ecuador | Adult | Leucistic | Castro et al., 2008 |
| 2008 | Eastern Australia | Adult | Leucistic | Department of Environment and Heritage Protection (DEHP), 2016 |
| 2011 | Eastern Australia | Calf | Presumed albino | The White Whale Research Centre (WWRC), 2016 |
| 2012 | Eastern Australia | Calf | Leucistic | WWRC, 2016 |
| 2013* | Norway | Adult | Leucistic | Lydersen et al., 2013 |
| 2014 | South Africa | Adult | Piebald | Bottomley, 2014 |

**Figure 3.** Piebald adult humpback whale (*Megaptera novaeangliae*) observed on 2 August 2014 off Seaview (Port Elizabeth, South Africa) (*Photo credit:* L. Edwards from Raggy Charters; permission for use granted)

various individuals may carry the recessive allele despite no other hypopigmented humpback whale having been reported in the C1 breeding substock. Considering the known humpback whale migration patterns (IWC, 2011), it seems unlikely that one of the Australian anomalously pigmented humpback whales could have fathered this calf. Other possible causes could be pollution (e.g., causing genetic mutation or endocrine disruptions; Pawalek & Körner, 1982; Bortolotti et al., 2003) or dietary deficiencies (Sage, 1962), although the aetiology of the latter is poorly understood.

Potential costs associated with atypical pigmentation patterns have been proposed (Hain & Leatherwood, 1982; Fertl et al., 1999) yet remain unknown. It is, therefore, imperative to report and communicate sightings of anomalously pigmented individuals on a regional as well as global scale to gain insights on their survivability and health condition. Furthermore, anomalously coloured cetaceans may provide opportunities to obtain insights on population movement patterns due to their increased probability to be sighted and positively identified (Hain & Leatherwood, 1982; Forestell et al., 2001). There is speculation on the degree of interchange between the Southwest Indian Ocean substocks as well as between breeding stocks B and C located off West Africa. Awareness of the existence of a distinctive individual may assist in gaining insights on intra- and inter-substock as well as inter-stock movements.

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