AN ALBINO CAPE CORMORANT *PHALACROCORAX CAPENSIS*

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Albinism has been recorded in many vertebrate taxa (Halls 2004). It is a genetic anomaly in which an autosomal recessive gene causes an absence of the enzyme tyrosinase, resulting in a total lack of melanin pigment in the skin, scales, hairs, feathers and eyes (van Grouw 2006). The skin and eye colour of albinos is pink because the blood can be seen through the transparent, unpigmented tissues. In birds, it is the most frequently reported colour aberration, although it is the least frequent in occurrence. This is because it is commonly mistaken for the most frequently inheritable aberration in birds, leucism, which is a partial or total lack of melanin in the plumage (sometimes also in the skin)—but not in the eye—due to an inherited disorder of the deposition of these pigments (van Grouw 2006). There are at least 10 other types of inheritable colour aberrations in birds.

Albinistic birds are almost never observed, not only because albinism is rare, but also because albinos have low survival rates (van Grouw 2006). Therefore, little is known about this colour aberration in the wild (natural frequency of occurrence, survival and behaviour of albino birds). Observations of albinos, however brief, represent unique opportunities to gather information about this phenomenon.

In cormorants, no cases of correctly identified albinos were found in the literature. "Albinism" was mistakenly applied to an aberrant individual of Great Cormorant *Phalacrocorax carbo novaehollandiae* (Buller 1874) and one of Pied Cormorant *Phalacrocorax varius* (Falla 1932); the descriptions of the animals indicated leucism or another form of aberration. This error is still common today, with birders often reporting "albinism" or "partial albinism" for leucistic birds on birdwatching forums, for example. Aside from the problem of misidentifying the cause of the aberration, the use of the term "partial albinism" is incorrect, as albinism, by definition, cannot be partial. An albino Cape Cormorant *Phalacrocorax capensis* was reported by Cooper (1985) in the collections of the South African Museum of Cape Town. Examination of this 100-year-old specimen revealed that it might indeed have been an albino. However, in the absence of information about the eye colour of this bird when it was alive, this will remain difficult to confirm.

We report here an albino Cape Cormorant found on 21 March 2011 at Gansbaai Harbour (34°35'S, 19°20'E), Western Cape, South Africa (Fig. 1a). To our knowledge, this is the first published observation of albinism in a cormorant. Albinism was determined by the presence of fully white plumage, pink skin (visible on feet and around the eyes), pink bill and pink eyes (changing to grey-pink in the absence of strong lighting), pointing to non-pigmented iris and retina (Fig. 2a). The bird, which was in poor condition, was captured and sent for rehabilitation, but died after three weeks, despite attempted feeding. Following an autopsy, the remains were incinerated. Gansbaai Harbour is approximately 13 km from the nearest breeding colony of Cape Cormorants, Dyer Island, where a population of approximately 20 000 pairs breeds every year (Ocean and Coasts, Department of Environmental Affairs). Dyer Island currently shelters the largest colony of the species in South Africa.

The albino Cape Cormorant, which showed no yellow or orange coloration of the gape (Figs 1b, 2b), was judged to be a juvenile (Crawford 2005). This bright coloration is not melanin-based and would therefore have been present in an older albino bird. This is demonstrated by a rare observation of an immature or adult ino Great Cormorant with orange-coloured gape skin (Goula & Parchas 2011). Ino birds almost entirely lack melanin, but have better eyesight than albinos, and therefore a higher survival rate (van Grouw 2006). Considering that Cape Cormorants breed on Dyer

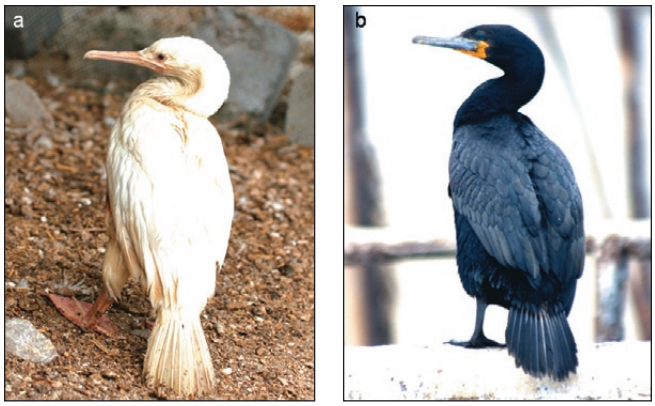

Fig. 1. (a) The albino Cape Cormorant from Dyer Island (photo: Wilfred Chivell). (b) Common adult morph (photo: courtesy of Michelle Lindley).

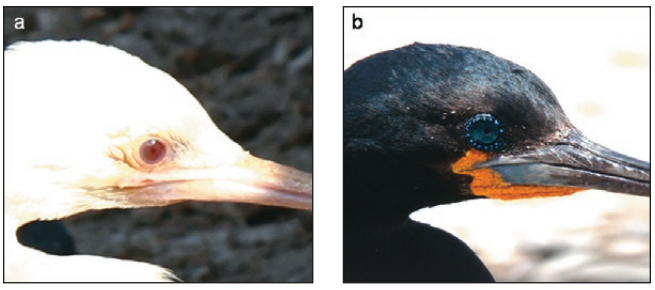

Fig. 2. (a) Head of the albino Cape Cormorant (photo: Wilfred Chivell). (b) Common adult head (photo: courtesy of Anne Voorbergen).

Island annually from October to February (T.R. Cook pers. obs.), this bird had fledged one to three months before its discovery on the continental shore. Albino birds die notoriously young, which further explains why they are so rarely observed. One of the main reasons for this is their poor eyesight. The absence of melanin in the iris and retina causes light-sensitivity or difficult depth-perception (van Grouw 2006). The latter symptom is an obvious disadvantage in the Cape Cormorant, which is a visual predator feeding on small, highly mobile, shoaling pelagic fish: Cape Anchovy *Engraulis encrasicolis*, South African Sardine *Sardinops sagax* and Horse Mackerel *Trachurus trachurus* (Crawford & Dyer 1995). Albino birds, because they are more conspicuous, are also targeted more easily by predators (Terres 1980). Full-grown Cape Cormorants have few known aerial or terrestrial predators, but are attacked in the water by Cape Fur Seals *Arctocephalus pusillus pusillus*, which kill thousands of juvenile birds around Dyer Island during the fledging period (Marks *et al*. 1997), and possibly by subadult White Sharks *Carcharodon carcharias*, which have occasionally been seen to bite and release seabirds in waters adjacent to Dyer Island (Johnson *et al*. 2006).

The autopsy of the bird revealed bacterial enteritis, bacterial nephritis and septicaemia, likely related to an infection it contracted while in the rehabilitation centre. The bird probably died because it was immunocompromised, due to its poor body condition (N. Parsons pers. comm.). The albino fledgling had likely lost condition in the wild because it was starving, owing to its reduced ability to catch its prey. It may also have been subjected to repeated physical harassment by its conspecifics, as has been observed for albinos in other flocking bird species (Terres 1980). Last, but perhaps not least, a white cormorant is almost a contradiction in terms, as is illustrated by the etymology of "cormorant," which derives from the old French "corp" (crow) and "marenc" (from the sea) (Le Garff 1996). Whatever the species, the "sea-crow" is mostly dark brown or black, and this is certainly not without reason. Cormorants have superficially wettable (also called "partially wettable") feathers that have probably evolved as a mean of reducing the costs of fighting against buoyancy during diving through the loss of part of the air trapped within the plumage (Grémillet *et al*. 2005). However, this feature, combined with an absence of important subcutaneous fat, means that their insulating efficiency is relatively low. As a possible compensation for this, the black colour of their feathers and skin could be an efficient means for absorbing heat, enabling them to warm up quickly when they are on the sea surface, in flight or back on land, thus balancing heat losses to the aquatic environment (Siegfried *et al.* 1975). According to this hypothesis, the albino Cape Cormorant would have been unable to absorb heat efficiently and would have faced severe thermoregulatory challenges in the cold waters of the Benguela, adding negatively to an already negative energy budget.

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