

OBSERVATION OF A LEUCISTIC BROWN NODDY *ANOUS STOLIDUS* IN TETIAROA, FRENCH POLYNESIA

SIMON DUCATEZ¹ & JAYNA L. DEVORE²

¹Institut de Recherche pour le Développement, Unité Mixte de Recherche 241 – Ecosystèmes Insulaires Océaniques, Campus d'Outumaoro, 98702 Faa'a, Tahiti, French Polynesia (simon.ducatez@ird.fr)

²Tetiaroa Society, Motu Onetahi, Tetiaroa, French Polynesia

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ABSTRACT

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We observed a leucistic Brown Noddy *Anous stolidus* on the atoll of Tetiaroa in French Polynesia. This individual was mostly light grey, similar in coloration to a Blue Noddy *Anous ceruleus*. To the best of our knowledge, this is the first report of a Brown Noddy with such plumage. Brown Noddies and White Terns *Gygis alba* were particularly aggressive towards the aberrantly colored Brown Noddy.

RÉSUMÉ

Nous avons observé un Noddi Brun *Anous stolidus* leucistique sur l'atoll de Tetiaroa en Polynésie française. Cet individu était principalement gris clair, d'une coloration similaire à celle du Noddi Bleu *Anous ceruleus*. À notre connaissance, il s'agit du premier signalement d'un Noddi Brun avec un tel plumage. Les Noddis Bruns et les Sternes Blanches *Gygis alba* étaient particulièrement agressifs à l'encontre de ce Noddi Brun aux couleurs aberrantes.

Key words: *Anous stolidus*, Brown Noddy, *Gygis alba*, Laridae, leucism, Tetiaroa

Leucism is the abnormal feather coloration owing to the total or partial absence of melanin from all or part of the plumage but not necessarily from the soft parts (van Grouw 2006, Guay *et al.* 2012). Leucistic individuals have been reported in a diverse range of seabirds (Gross 1965), including species in the families Diomedidae (Mancini *et al.* 2010, Risi *et al.* 2019), Procellariidae (Mancini *et al.* 2010, Ayala-Pérez *et al.* 2014, Raine & Sprague 2022), and Spheniscidae (Forrest & Naveen 2000, Levinson *et al.* 2021). Leucistic individuals have also been described in several species of Lariidae (Hubbs & Bartholomew 1951, Ayala-Pérez *et al.* 2014).

This anomaly may go undetected in light-colored species and is likely more obvious in species with darker coloration. For example, in the dark-colored Black Noddy *Anous minutus*, several leucistic individuals have been described (Clapp 1974, Paton 1981, Blyth 2020). Here, we report an observation in Tetiaroa, French Polynesia, of a Brown Noddy *A. stolidus*, whose plumage was mostly light grey instead of the usual brown. We also describe the aggressive behavior of other Brown Noddies and of White Terns *Gygis alba* towards this aberrantly colored individual.

Tetiaroa (17°00'S, 149°34'W) includes 12 islets, of which 11 are uninhabited and one hosts a luxury hotel. Eleven seabird species breed on the atoll, including Black Noddies, Brown Noddies, and White Terns. From July 2021 to June 2022, we counted shorebirds and seabirds during monthly surveys along the coastline of the entire atoll. On 28 February 2022, we observed a “noddy-like” bird with light-colored plumage on the southern tip of Reiono, an uninhabited islet in the southeastern portion of the atoll. The

plumage of this individual was mostly light grey, although the primaries, secondaries, and rectrices were darker than the rest of the plumage (see Fig. 1).

The overall coloration of the bird was similar to a Blue Noddy *A. ceruleus*, although the bird was much stockier and larger, and it had a stronger and broader bill that was more reminiscent of a Brown Noddy. There was no obvious melanin loss from the soft parts as compared to normally colored Brown Noddies: the beak, legs, and eyes were all very dark. Species identification was supported through comparison to other Brown Noddies in the vicinity, including sometimes on the same branch (see Fig. 1). The leucistic bird had a similar general size, shape, body proportions, bill size, and bill shape to those observed on the Brown Noddies roosting adjacent to it (Fig. 1). We observed this bird on 28 February 2022 between 11h39 and 12h21, though it went out of sight for nine minutes during this period. The bird was detected as it was hovering over *Pandanus tectorius* trees. It landed three times for up to four minutes, always on the same tree, eventually taking off due to the harassment of other Brown Noddies. It would fly up to several hundred meters away—either along the coastline, over land, or over the lagoon—before coming back to the same tree. On two occasions, it flew over the barrier reef (situated at about 90 m off the coastline) and over the ocean before flying back. Each time, it aimed for the same tree, in which other Brown Noddies were resting. During our observation, this noddy was almost constantly harassed by Brown Noddies, White Terns, or both. When in flight over the land, up to three Brown Noddies chased it; it was only when flying away from land (a few dozen meters over the lagoon or over the ocean) that it was not followed. When sitting on the tree, either one or two

Brown Noddies dove at it regularly, causing the leucistic bird to dip its head at each attack before it eventually took off again. White Terns also joined the chase to harass the bird in flight over the land (Fig. 1), and up to five White Terns were observed chasing it at the same time. In contrast, although Red-footed Boobies *Sula sula* were nesting near the focal site and flew past the leucistic bird, they did not show any particular interest towards it.

Though we did not find reports of aggressive behaviors towards individuals with aberrant plumage in other Lariidae, the persecution of leucistic or albino individuals by birds of the same or other species is not unusual and has been described multiple times, especially in Passeriformes (e.g., see Nero 1954, Sage 1962, Harris 1983, Withgott & McMahon 1993), and it may significantly affect the survival and breeding opportunities of these birds. Unfortunately, we had no information on either the age of the individual nor of its fate after our observation. This leucistic bird was not seen

during the following atoll-wide surveys (in March, April, May, and August 2022). However, one month earlier on 24 January 2022, we observed a light grey noddy-shaped seabird landing in the middle of a Brown Noddy group on a sandbar about 1 km north of Reiono. We were over 500 m from the sandbar and could not confirm the bird's identification. If this was indeed the same bird, this individual would have spent at least 35 days on the atoll.

Several thousand pairs of Brown Noddy breed on the atoll, where Brown Noddy chicks exhibit a polymorphic down color—including light, dark, and intermediate morphs—as is the case at other Brown Noddy breeding sites (Chardine *et al.* 2020). However, this polymorphism is lost as the chicks acquire their juvenal plumage, and no other similarly aberrant plumage has been reported for juveniles or adults of this species on the atoll. We did not find any reports of similar plumage in the literature either. However, a blog post from February 2016 by Duncan Wright shows a picture of a



Fig. 1. Leucistic Brown Noddy *Anous stolidus* observed in Tetiaroa, French Polynesia. Pictures a) to d) show the leucistic bird next to Brown Noddies with normal plumage, which often harassed the leucistic individual. Picture e) shows White Terns chasing the leucistic bird. Pictures f) to j) show of the same bird from different angles. All photos by Simon Ducatez.

similarly colored Brown Noddy photographed in French Frigate Shoals in the Hawaiian Archipelago (Wright 2016). This bird was referred to as a “leucistic Brown Noddy chick” without further information. We also examined the 7000 Brown Noddy pictures available in the Macaulay Library at the Cornell Lab of Ornithology (Macaulay Library 2022), but failed to find any records of a Brown Noddy with plumage similar to the one we observed in Tetiaroa. Interestingly, one picture in this library shows a Brown Noddy observed at Midway Atoll in the Hawaiian Archipelago in 2007 (ML243774711) displaying an entirely white plumage, a pink bill, pink legs, and black eyes. This shows that, though very rare, other leucistic plumages exist in this species. To the best of our knowledge, the grey plumage we observed has not been described in this species. This may seem surprising, since the Brown Noddy has a very broad distribution—it breeds in most suitable tropical islands in the Pacific, Indian, and Atlantic oceans (Chardine *et al.* 2020)—and numerous large colonies have been monitored in all oceans (see examples in Chardine *et al.* 2020), two parameters that are likely to increase the probability of observing aberrant plumage (Zbyryt *et al.* 2021). For example, Dr. Chris Surman has worked in a colony of 100000 Brown Noddies over the past 20 years in the Eastern Indian Ocean but has never observed any leucistic variant (Chris Surman, pers. comm.). Leucistic Brown Noddies are therefore likely to be particularly rare. This rarity might be explained by lower survival rates or breeding success for leucistic individuals related to the extreme intra- and interspecific harassment they experience.

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