

Abbott's Booby on Assumption Island: A breeding mystery

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Abstract

The disputed question of whether *Sula abbotti* formerly bred on Assumption Island (Aldabra Group, Seychelles) is explored following its denial in a recent paper on the species. It is concluded that on balance the species probably did breed there until at least 1908.

Keywords: *Sula abbotti*, Assumption Island, Iles Glorieuses, nesting, tall trees

Résumé détaillé

La question de savoir si le Fou d'Abbott *Sula abbotti* nichait à l'île Assomption (groupe d'Aldabra, Seychelles) a été encore une fois contestée par Hume (2023) dans un article décrivant une nouvelle sous-espèce de cet oiseau. L'espèce ne niche aujourd'hui que sur l'île Christmas, dans l'Océan Indien oriental, où elle se reproduit sur la canopée de grands arbres. De tels arbres n'existent pas à Assomption et n'ont jamais été signalés par le passé. Hume (2023) ajoute son appui à l'hypothèse que les grands arbres sont nécessaires aux fous d'Abbott pour que les jeunes puissent s'envoler au moment de leur émancipation. Ces grands arbres n'existant pas à Assomption, le fou d'Abbott ne pouvait donc pas y nicher, contrairement à La Grande Glorieuses, qui était recouverte de grands arbres et où les fous d'Abbott étaient supposés nicher. Cependant le fou d'Abbott nichait également sur l'île Frégate, au large de Rodrigues (Mascareignes) au moins jusqu'en 1832, alors que les arbres de cette île ne sont pas grands. De là on peut conclure que ce n'est pas la hauteur des arbres qui conditionne la présence du fou d'Abbott mais peut-être la force du vent, qui peut permettre aux juvéniles de s'envoler pour leur premier envol. Le fait qu'Abbott lui-même, découvreur de l'espèce, mentionna qu'elle nichait à Assomption, et que les pêcheurs locaux se servaient du nom traditionnel « *fou boeuf* » pour nommer cette espèce (en raison de son cri bovin), indique que le fou d'Abbott était bien établi et régulier sur cette île. Ainsi

il est probable qu'en réalité il y nichait bien à l'époque au moins jusqu'en 1908. Il n'y a que des suppositions sans preuves qu'il nicha aux Iles Glorieuses. La végétation d'Assomption fut en grande partie détruite lors de l'exploitation du guano à partir de 1908.

Mots clés : *Sula abbotti*, Ile Assumption, Iles Glorieuses, nicher, grands arbres

Introduction

The question of whether Abbott's Booby *Papasula abbotti* actually bred or merely roosted on its type locality of Assumption Island (Aldabra group, western Seychelles), has been an open debate for many years. In a recent paper describing a new subspecies, *P. a. nelsoni*, of Abbott's Booby from subfossils in the Mascarenes, Hume (2023) also discussed the short history of the species on Assumption. In common with a number of earlier writers he concluded that it was only a roosting visitor, not a breeder, despite the discoverer, American medical doctor William Abbott in 1892, mentioning breeding (Ridgway, 1895). The argument used by these authors is that in its surviving colonies on Christmas Island it uses tall trees (Gibson-Hill, 1950; Nelson, 1971; Gray, 1981) and that these were absent on Assumption. Further it is claimed (Feare, 2016; Hume, 2023 & references therein) that fledging Abbott's Boobies would not be able to take their first flight from low trees or bushes, needing (on Christmas Island) particularities of wind direction and clearings to access and depart from nest sites (Gray, 1981; Nelson & Powell, 1986).

Occurrence on Assumption

The vegetation of Assumption's vegetation has been largely destroyed by guano mining (Stoddart *et al.*, 1970), but Rivaltz Dupont (1941), who first visited the island in '1905' (Dupont, 1935; 1906 according to Stoddart *et al.*, 1970ⁱ), before mining began in 1908, mentioned "... *Fou Boeuf* (*Sula abbotti*) of which a small colony is a fixture perching on the

ⁱ Importantly, Dupont, a well-regarded Mauritian agronomist who spent many years working in the Seychelles (Halais, 1942), also visited in 1910 and 1916 collecting insects and plants (Stoddart *et al.*, 1970). Fryer (1911) said he visited (also?) in 1907.

veloutiers [*Scaevola*, *Tournefortia*] at Assumption" (my translation). Fryer (1911), who collected two specimens, noted that it "*inhabits the large dune, never descending to low parts of the island.*", his diary also calling it *fou boeuf* and describing the characteristic cow-like voice (Stoddart, 1981), but saying nothing about breeding. Interpreting the surviving vegetation in 1967, Stoddart *et al.* (1970) noted that on the 'high dune' "*the dominant shrubs are low wind-trimmed Scaevola taccada and bushy Suriana maritima, with occasional Tournefortia argentea ... In the sheltered area immediately landward of the high dunes there is ... a narrow belt of stunted Thespesia populneoides woodland*". Note that the shrubs were 'wind-trimmed', implying a likely sufficiency of wind to lift off the young boobies. Fryer's (1910) photo of the edge of the High Dune, "90 feet [28 m] high", taken in 1908, shows very sparse shrubs on the slope, with some trees to one side, but the summit area is out of view. Baty (1895; Stoddart, 1981; Skerrett *et al.*, 2001) reported that "*on the slopes of the big sand hills the trees are much bigger, and on their branches the frigate birds and 'fous' make their nests*", and also "*boobies or fous of different kinds are to be found in the trees all over the island*" though he did not attempt to identify or clearly distinguish the species of tree-nesting boobies. Nicoll (1908), although not mentioning boobies in his text, published a photo captioned "*nest of Pink-footed Gannet (Sula piscator) on Assumption Island*", showing a large Red-footed Booby chick (now *S. sula*) on a nest in what appears to be a very large *Scaevola taccada* bush, almost a tree, twice the height of the men standing by it. Nicoll (1906) collected this species but saw no Abbott's. Although Dupont (1941), writing in 1937 before his death the following year, but by then ill and frail (Halais, 1942), suggested the birds still survived, he had himself written in internal reports after further visits in 1916 and 1929 (Stoddart, 1981; Gerlach, 2007) that the boobies and other seabirds had all been destroyed by 1909. However some birds appear to have hung on: Vesey-Fitzgerald (1936), in a rarely consulted booklet, commented, without giving a specific source for his informationⁱⁱ, that:

"This little-known species breeds only at Assumption Island and Christmas Island near

Java. It is to be feared that little help is given to this dwindling species by the Seychelles Government. Assumption has, for a number of years, been worked for guano, and during this time it is doubtful if a single young bird has been reared. Though the old birds, getting scarcer each year, through natural death from old age, nest regularly on Assumption, the eggs of this rare bird are thoughtlessly eaten by the guano labourers. The irony of the situation being, that probably not a single specimen egg is preserved in the great collections of the World."

His account of Seychelles birds was reprinted almost verbatim by Bradley (1941), where to the Abbott's Booby section was added only the laconic comment "[1937-Extinct]". Gibson-Hill (1950) also commented on the lack of eggs in museum collections. In a separate paper telling roughly the same story (Vesey-Fitzgerald, 1941) he noted, partly contradicting his earlier comments and presumably with new information following his visit to Assumption in 1937 (Prÿs-Jones *et al.*, 1981), that "*a single individual of this interesting species, which had been mateless for many years, is said to have finally disappeared about 1926*". Betts (1940) commented that "*I was told that no nesting had been attempted since 1930, and that, though one or two old birds continued to frequent the island for some time, none had been seen since 1936, and it is feared that the last one has died*". These seem to be variants of the same story altered by 'Chinese whispers' - however, assuming the writers' informants were genuinely referring to Abbott's Booby and not Red-footed, to which the same problems would have applied, there is general agreement that the birds used to nest on Assumption.

Iles Glorieuses as an alternative nesting site

Abbott's own very brief account of Assumption (Abbott, 1893) mentions no boobies, but he set a hare running by claiming that on Grande Glorieuse (= Glorioso) "*among seabirds there is a booby that seems to be peculiar to the island. They breed in large numbers upon the 'fouche' [Ficus] trees in company with frigates and common boobies*"; note the 'great numbers'. However he only collected dark-morph Red-footed and Masked Booby *S. dactylatra* there (Stoddart, 1981), the latter not being a tree breeder. He was in any case clearly confused about booby taxonomy: on Aldabra he claimed (Abbott, 1893) that "*boobies of several species ... abound*", but collected

ⁱⁱ He commented that "notes from all the islands administered by the Seychelles Government have been included", presumably supplied, for the outer islands, by plantation or concession managers.

only Red-foots (footnote by Ridgway), so the obvious inference is that he considered the dark morphs and white morphs of Red-foots to be different species, as Benson *et al.* (1975) pointed out long ago. Nicoll (1906) noted that dark phase birds predominated on Grande Glorieuse (and saw no Abbott's). Gibson-Hill however speculated that the birds 'peculiar to the island' on Glorieuse were Abbott's, though it seems unlikely that 'great numbers' of Abbott's would have been breeding there without being reported or collected. However after his 1906 visit to Assumption, Dupont (Stoddart, 1981) managed to muddy the waters by listing *S. cyanops* (= *S. dactylatra*) and *S. piscator* (= *S. sula*) from Assumption and *S. 'piscator'* and *S. abbotti* from Glorieuse, despite him never having been to the latter. Since he used *fou glorieuse* for his claimed 'Abbott's', and corrected himself later using the long established *fou boeuf* in relation to Assumption (Dupont, 1935, 1941), it seems he conflated Masked and Abbott's Boobies during his first visit to Assumption. His hearsay report of *fou glorieuse* presumably referred to the dark morph birds prevalent on that island; fishermen or turtle hunters may, understandably, like Abbott, have considered it a separate species. Nonetheless, Nelson (1974) and others (see Hume, 2023) have preferred Grande Glorieuse as the putative western Indian Ocean breeding site, despite the lack of direct evidence.

Short or tall trees on Rodrigues

Hume (2023) also argued that Abbott's Booby also used tall trees on Mauritius and Rodrigues. This was indeed no doubt the case in Mauritius, where the sole eye-witness account that appears to apply to them, by John Marshall in 1668, reported them nesting in tall trees (Khan, 1927; Cheke & Hume, 2008; Hume, 2023). On Rodrigues however, where boobies nested only on Ile Frégate in the lagoon, it was different. Although the *Ficus* trees on which the birds may have nested can grow to 20-30 m tall, enough to rival Christmas Island, Hume implies this was the case on Ile Frégate whereas in fact no trees on the islet actually exceed 7-8 m (pers. obs.). According to Balfour (1979) the surviving boobies (Red-footed) in 1874 favoured nesting on *Pisonia viscosa* trees rather than the figs: "*this tree is very abundant on a small ledge of coralline limestone on the west side of Frigate Island, where it is the favourite nesting place of the Fou*". Henry Slater (Cheke, 2019), also in 1874, noted the "*large colony of these birds in a grove on Frigate Island, that being the only islet*

sufficiently wooded". Vinson (1964) published a photo of old *Pisonias* on Frégate, with a man for scale, apparently 5 m tall at most. While these are significantly larger than *Scaevola* bushes usually are (but see above), they are also in a more sheltered location than the 'high dune' of Assumption, so tall trees are definitely not a necessity for Abbott's Booby to nest successfully. The last record of Abbott's Booby in Rodrigues was in 1832 (Cheke & Hume, 2008).

The local name

It is of considerable interest that both Abbott and Fryer were given the name *fou boeuf* for Abbott's Booby. This name was first used, in Rodrigues, by Tafforet (1726) and was still in use there until at least 1832 (Cheke & Hume, 2008; Hume, 2023). In Mauritius the name has survived but transferred, inappropriately, to the Masked Booby (Cheke, 1982), but although in use for that species since at least 1844, the birds are confined to the most distant offshore islet (Serpent Island) and known only to fishermen and bird-watchers. As Masked Boobies have their own name in Seychelles (*fu zenero* in creole; Cheke, 1982), it is most unlikely that the name's use in Seychelles derived from interchange with Mauritius, but either transferred from its use in Rodrigues with early colonists (who came from the Mascarenes) or was coined *de novo* in Seychelles from the bird's bovine voice. Its use also suggests that the birds were well known to those frequenting Assumption before the guano mining (fishermen, turtle hunters), and their presence thus long established; indeed Abbott wrote (MS cited in Ridgway, 1895) "*Creole name, 'Fou boeuf'. A few breed on Assumption. Said not to be found on any other island in these seas.*" Bourne (1976) citing Ridgway (1895), alleged the locals had said that it *nested* [my italics] nowhere else in the seas known to them, but this was over-interpretation; however fishermen use birds to locate fish shoals, and generally distinguish the species well.

Occurrence elsewhere

Whether breeding or roosting, its presence on Assumption is certain (and absence on other islands asserted). Regular roosts of the species outside Christmas Island have not been discovered anywhere else, though a juvenile was once seen roosting with other boobies on Peros Banhos (Chagos group) in 1996 (Symens, 1999; Hume, 2023ⁱⁱⁱ), and another

ⁱⁱⁱ This record was rejected without explanation by Carr (2011),

bird, an adult female, was photographed, and may have roosted, with Red-foots on Rota Island (Marianas, north Pacific) in April 2007 (Pratt *et al.*, 2009). Two possible Abbott's Boobies were seen at sea north of the Chagos in 1961 (Bourne, 1971), and subsequently Hiron *et al.* (1976) reported that "*pairs of Abbot's Booby were seen in the vicinity of the islands on two occasions*". As Bourne (1971, 1976) pointed out the pre-human Chagos atolls had suitable tall forest before it was largely cleared for coconut plantations. Nelson (1974; Hume, 2023) drew attention to Slud's (1967) observation of unidentified boobies on Cocos Island, far offshore Costa Rica, as possible Abbott's, but his description resembles (unlikely) juvenile gannets *Morus* spp.; they remain unidentified (but see comments in Bourne, 1976); Montoya (2007) tactfully omitted mentioning Slud's mystery birds.

Breeding phenology

Finally is there any significance in the dates Abbott and Fryer collected their boobies? All three specimens are adults, and do not differ in either morphology, plumage or genetically from birds on Christmas Island (Hume, 2023); they were also collected at the same time of year, Abbott's on 18 September 1892 and Fryer's on 7 September 1908^{iv}. Assumption (9°46'S) and Christmas Island (10°30'S) are at closely similar latitudes, though Christmas is much wetter (2000 mm/yr vs. c900 mm; Gray, 1981; Stoddart *et al.*, 1970) but the seasonality is similar: Assumption is wettest December-March, Christmas, December to May. Abbott's Boobies have an extraordinarily long nesting cycle. At Christmas Island the birds mostly return from April onwards, lay in mid-May to mid-July, their young fledge in December-January, but remain at or around the nest

being fed by the parents through until they finally leave during July-September, i.e. the whole cycle takes 16-18 months (Nelson & Powell, 1986). Thus in August-September the Assumption birds, if on the same timetable, could either be feeding small young, hanging around as their young finally became independent, or be taking a year off, as 20% of pairs present at the colony do on Christmas Island (Nelson & Powell, 1986). Nicoll (1906), who landed on Assumption on 12 March 1906, looked for, but failed to find any Abbotts Boobies: "*I saw no signs of Sula abbotti Ridgway. ... Sula abbotti was certainly not to be seen when we were there, and as it is a most striking-looking bird it is not likely to be overlooked*"^{5v}. In early March few birds which had fledged young the previous year would be likely to be back at the colony on Christmas Is., so its absence in March, if it bred on Assumption to a similar cycle, and the numbers were few, is not surprising; the birds were, of course, back there to be collected by Fryer in 1908. The collection dates, although consistent with breeding, do not advance the argument one way or the other.

Conclusion

Evidence for Abbott's Booby breeding on Assumption relies on the statement from Abbott in 1892 that it did so, together with mention by Dupont, who had probably seen the birds in 1905 or 1906, and the information on continued post-mining attempts given to Vesey-Fitzgerald and Betts. Evidence for it *not* doing so is entirely circumstantial and speculative. The name *fou boeuf* used by Seychellois fishermen, and their assertion to Abbott that the species was only to be seen on Assumption and not elsewhere 'in these seas', adds weight to the likelihood of breeding as the birds were known and evidently regular, as is confirmed by their continued presence 16 years later when Fryer collected his two. Hence I conclude, with Bourne (1976), Stoddart's excellent analysis (1981), Prŷs-Jones *et al.* (1981), Skerrett *et al.* (2001) and Gerlach (2007) *inter alia*, that on balance is it likely that the species did breed on Assumption.

Further evidence might be obtained by searching for subfossil remains in the 'large dune' at Assumption, most of the rest of the island's phosphatic surface having been removed or damaged by guano extraction. As far as I can establish the only subfossil material known from the island are some Holocene

but later (Carr, 2015) he explicitly rejected sight records: "*There have been at least two claims of this Christmas Island breeding endemic in the Chagos, sadly neither record has any supporting documentation or photographs. As such, it remains in the hypothetical list*". While identifying immature boobies requires caution and care, Abbott's are very distinctive with the immature resembling adults, so this seems an unnecessarily rigid approach now that sight records by established birders are widely accepted worldwide. Carr's 2011 book, furthermore, contains numerous inaccuracies and omissions in relation to the islands' history and the sorry story of the forced exile of its inhabitants in the 1970s.

^{iv} Hume (2023) lists Fryer's birds as collected in August (possibly what is on their labels), but in his diary (in Stoddart, 1981) Fryer reported finding a '*fresh kind of fou*', clearly Abbott's from the description, on 7 September. Stoddart acknowledged "*Lady Joan Fryer for access to Sir John Fryer's diary*"; the diary's current location is not known, but one hopes it has been preserved by the family.

^v Gibson-Hill (1950) did not consult Nicoll's *Ibis* paper, so implied from the lack of mention in the 1908 book that Nicoll had negligently failed to search for Abbott's Booby.

tortoise eggs collected by Fryer in 1908 (Bour, 1984), Honnegger in 1964 and Blackmore & Walker in 1977; the 1964/1977 eggs have been carbon-dated in the range $1,140 \pm 100$ to $1,570 \pm 120$ BP^{vi} (Burleigh & Arnold, 1986; Burleigh *et al.*, 1982). The presence of datable tortoise eggs does make it probable that bird bones would also be preserved in the calcareous medium of dune sand, so it would be worth investigating - no doubt many more species than just Abbott's Booby could potentially be recovered. However the presence of subfossil bones does not prove the birds were nesting, unless bones of nestlings or identifiable eggs were found.

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^{vi} BP = before present, the 'present' for radiocarbon dating being fixed notionally at 1950CE.

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