



**Plate 16.** Part of the Greater Crested Tern breeding colony at Grand Polyte, Cosmoledo Atoll, Seychelles. In the background, a sparse group of Red-footed Boobies roosting on *Pemphis acidula*. © A Quatre

## First population estimate of breeding Greater Crested Tern on Cosmoledo Atoll, Seychelles

by Josep Nogués (Lead author), Ariadna Fernández, Alex Quatre & Adrian Skerrett

This paper reports the discovery of one of the most important breeding sites for Greater Crested Tern *Thalasseus bergii* in Seychelles: Cosmoledo Atoll. This colony, now estimated at about 234 breeding pairs, has sometimes been reported by residents or visitors to Cosmoledo but without supporting details. It is now confirmed for the first time. Although ecotourism is not fully developed in the atoll, access to the colony should be strictly regulated.

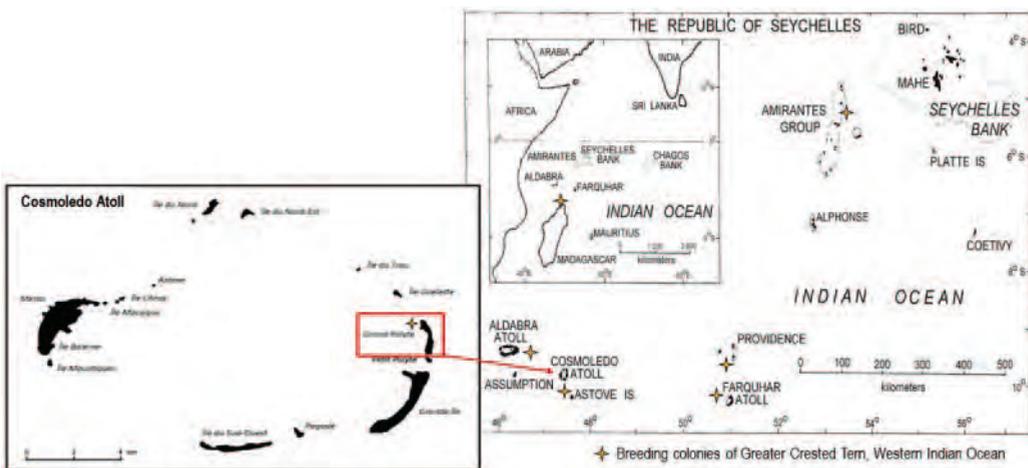
The Greater Crested Tern *Thalasseus bergii* is a large, graceful tern with a tropical and subtropical distribution. The species is resident on islands and coastlines of the Red Sea and Persian Gulf out to the Atlantic coast of South Africa and Namibia, and across the Indian Ocean and central Pacific to the Society Islands with race *thalassinus* in the western Indian Ocean (del Hoyo *et al.* 1996). Race *velox* (breeding on Red Sea coasts) has also been recorded as a visitor to the region by the Seychelles Bird Records Committee (Skerrett *et al.* 2017). Terns are colonial breeders, and monogamous pair-bond species, and do not occupy nesting sites until the breeding season. The species is listed as ‘Least Concern’ by IUCN (IUCN 2016) and its global population is estimated to number *c.* 150,000–1,100,000 individuals (Wetlands International 2006).

In Seychelles, the species has one or two laying periods: December–January and June–August, with successful breeders probably missing the next breeding period and returning to breed in a 12-month cycle (Skerrett 2013). Breeding has been confirmed at seven islets of Aldabra (Diamond and Prŷs-Jones 1986), Etoile (Dawson 1966, Skerrett 2016a), African Banks (Vesey-Fitzgerald 1941, Feare 1979), Providence Atoll (Stoddart 1967, Diamond and Prŷs-Jones 1986, Skerrett 2016), and Farquhar (2001 photographic evidence, Duhec *et al.* 2017). The species may still breed within the Amirantes group, where decent numbers of adults well-accompanied by begging juveniles are often reported by the staff of the Island Conservation Society (i.e. Desroches, Poivre, St. Joseph and Alphonse) (ICS archive). Rocamora 2013 suggested that a minimum of 50 pairs continue to breed in the northern Amirantes due to ornithological observations at Boudeuse, Etoile and African Banks in November 2013. However, there has been no ornithological visit to Etoile during the breeding season (possibly the main breeding site) for more than 50 years (Dawson 1966). The species formerly bred and may also breed now at Astove (Bayne *et al.* 1970), and has been speculated to breed in the lagoon islets of Cosmoledo (possibly up to 100 pairs; Skerrett 2016), where the species is commonly encountered, but without supporting evidence of breeding.

Outside the breeding season, Greater Crested Terns can be found at sea throughout this range, with the exception of the central Indian Ocean (del Hoyo *et al.* 1996). It is its wide dispersal and the fact that the species is fairly common throughout Seychelles all year round that suggest that some breeding colonies remain to be discovered (Skerrett, 2016).

The Seychelles population of Greater Crested Tern as a whole has been estimated at 310–650 pairs (Skerrett 2016). This total includes a presumed 0–100 pairs on Cosmoledo.

The most important breeding colony of Greater Crested Tern of the all-Western Indian Ocean is at Nosy Foty on the west coast of Madagascar, c. 30 km to the west of Antsiranana, with c. 10,840 pairs (Le Corre *et al.* 2009). This colony is situated less than 400 km south-east of Cosmoledo Atoll (9.7S, 47.6E), the second largest atoll of the Aldabra group, c. 120 km east of Aldabra Atoll, 700 km east of Africa and 1,000 km south-west of Mahé, Seychelles. Three breeding colonies are known to exist at the vicinity of Cosmoledo Atoll. The largest in Seychelles, Bancs de



**Figure 1.** Map of the Western Indian Ocean showing the important localities mentioned in the text; Madagascar, Cosmoledo Atoll, Aldabra Atoll, Bancs de Providence and Farquhar, Seychelles (right); and detail of Cosmoledo Atoll with Grand Polyte framed in red (left).

Providence, is estimated at 200–300 pairs (Skerrett 2016), the Aldabra colonies up to 40 pairs (Diamond and Prÿs-Jones 1986) and Bancs de Sable in Farquhar with about 2–4 pairs (Duhec *et al.* 2017).

Cosmoledo is an outstanding biodiversity hotspot in Seychelles. Despite being unprotected, the numbers of seabirds found breeding at the atoll are of international importance (i.e. the largest Booby colony of Seychelles and one of the largest Sooty Tern colonies of the Western Indian Ocean), and as a result Cosmoledo is an Important Bird Area (Rocamora & Skerrett 2001).

On 19 February 2018, Alex Quatre, as fly-fishing guide for the Alphonse Fishing Company, visited the uninhabited island of Grand Polyte, on the East rim of Cosmoledo. He filmed from a distance an entire breeding colony of Greater Crested Terns. The film was used as a method to describe the first documented record of Greater Crested Tern breeding on Cosmoledo Atoll, record numbers and breeding site characteristics. In this way, 234 pairs of Greater Crested Terns were counted nesting on Grand Polyte. There was a minimum of 230 pairs sitting on eggs with at least 40 downy chicks ageing mostly C1 and C2. Terns were nesting on an open sandy area mostly covered with coral rubble mixed with small patches of dead seagrass. The site was surrounded by sparse low stands of *Suriana maritima* and *Scaevola taccada* and larger shrubs of *Pemphis acidula* dominating the area at the east side of the island. Nests, a shallow scrape in the ground with no nesting material, were irregularly spaced. Based on the observation that most Greater Crested Terns were with eggs and that the majority of chicks observed were ageing an early C2, and knowing that the species has a 25–30 days incubation period (Skerrett 2013), we estimated that the laying dates were at least from beginning of January. In addition, only one unsuccessful mating attempt was reported when analyzing the film in detail.

Cats and rats were eradicated from Grand Polyte by Island Conservation Society (ICS) in November 2007 (Rocamora 2007), and both were proved positively to be absent in 2014 (Pinchart *et al.* 2015). This success not only has benefited the establishment of the Greater Crested Terns on Grand Polyte, it has also favoured other colonial breeders, and terrestrial ground/shrub/tree nesting seabirds like Masked Booby (*Sula dactylatra*), Red-tailed Tropicbird (*Phaethon rubricauda*) and Red-footed Booby (*Sula sula*).

Breeding success is poorly known in the region but elsewhere productivity is 0–0.6 per nest (del Hoyo *et al.* 1996). Cosmoledo Atoll is rarely visited by ornithologists, and some of the nineteen islands that form the atoll had never previously been surveyed, preventing any temporal analysis of population changes. We believe this is the first description of nesting, and thus the first substantiated breeding record, for Greater Crested Tern on Cosmoledo.

**Table 1.** Total Seychelles population of Greater Crested Tern 2018 (updated from Skerrett 2016).

Location	Population (pairs)	References
Aldabra	60–100	Diamond & Prÿs-Jones 1986, Rocamora & Skerrett 2001
Cosmoledo	234	This paper
Astove	Unknown, possibly 0–50	
Bancs Providence	200–300	Skerrett 2016
Northern Amirantes	c. 50–100	Dawson 1966, Feare 1979, Rocamora 2013
Farquhar	c. 4–6	Duhec A., Jeanne R. & Skerrett A. 2017
<b>Total</b>	548–790 pairs	(1,644–2,370 birds as per wetlands international 2006)



**Plate 17.** Detail of Greater Crested Tern colony at the colony of Grand Polyte, Cosmoledo. © A Quatre

In summary, we now know of four breeding populations of Greater Crested Tern throughout Seychelles with recent breeding on Astove and Northern Amirantes yet to be confirmed. The estimated total Seychelles population is raised significantly by 21.5% (upper limit) to 77% (lower limit).

Of the known sites, only Aldabra is properly protected (Etoile and African Banks also receive legal protection but as they are uninhabited this is ineffective and poaching of eggs is known to occur). The small colony at Farquhar is monitored by Island Conservation Society, but the importance of the other two areas must be addressed with more resources allocated for better monitoring and management. Cosmoledo has recently become a destination for fly-fishing operations and it is hoped that this activity will help to support the presence of an ICS Conservation Officer by way of a conservation levy on each visitor, a system already in operation at other islands of Seychelles. A foundation has been registered, Cosmoledo Foundation with trustees from ICS, Islands Development Company (island managers), tourism investors at Cosmoledo and Ministry of Environment.

Colonies are prone to human disturbance and adults will desert eggs and small chicks if approached, moving elsewhere to re-lay (Diamond and Prÿs-Jones 1986). Egg collection and disturbance at the tern colonies should be strictly prohibited. Meanwhile, conservation awareness and education work targeted at both local government and the fishermen are important. Fly-fishermen and other visitors to Cosmoledo must be requested to avoid visiting the one known colony and to be aware that in the event they discover any other colony it should be reported to Island Conservation Society.

## References

- Dawson P (1966).** A survey of the sea birds of the Seychelles Islands. *Oologists' Record* 40: 1–11.
- Diamond AW & Prys-Jones RP (1986).** The biology of terns nesting at Aldabra Atoll, Indian Ocean, with particular reference to breeding seasonality. *J. Zool. Lond (A)* 210: 527–549.
- Duhec A, Jeanne R & Skerrett A (2017).** Breeding seabirds of Farquhar Atoll, Seychelles including the return of two species: Red-footed Booby *Sula sula* and Greater Crested Tern *Thalasseus bergii*. *Sea Swallow* 66.
- Feare C, Millet J, Duhec A, Risi M, Nogués J, Bluemel J, Morgan M & Bristol R (2017).** Outer Islands Seabird Status Reports 2016. Unpublished report for Island Conservation Society, Mahé Seychelles.
- IUCN (2016).** The IUCN Red List of Threatened Species. Version 2016–3. Available at: [www.iucnredlist.org](http://www.iucnredlist.org). (Accessed: 07 December 2016).
- Labiche A & Rocamora G (2009).** Variation of abundance of land birds and reptiles on Grande Ile and Grand Polyte (Cosmolédo atoll) between the pre and post rat eradication periods (2005 to 2008). In G Rocamora, & A Jean Louis, *Réhabilitation des Ecosystèmes Insulaires. Rapport annuel au secrétariat du FFEM. Quatrième année d'opérations 1/05/08 au 30/06/09. Annex 13* (pp. 75–82). Seychelles: Island Conservation Society.
- Le Corre M & Bemanaja E (2009).** Discovery of two major seabird colonies in Madagascar. *Marine Ornithology* 37: 153–158.
- Mortimer J & Constance AM (2000).** Observations on the birds of Cosmoledo Atoll, Seychelles. *Bulletin of the British Ornithologists' Club* 120: 46–57.
- Pinchar J & Martin L (2015).** *Cosmoledo Expedition: 8th November–6th December 2014*. Unpublished technical report for Island Conservation Society, Mahé, Seychelles.
- Rocamora G (2007).** *Eradication plan for rats and cats for Grande Ile and Grand Polyte, Cosmoledo Atoll (Seychelles), in 2007*. Project Rehabilitation of Island Ecosystems in Seychelles (FFEM).
- Rocamora G & Skerrett A (2001).** Seychelles. In L. D. Fishpool, & M. I. Evans, *Important Bird Areas in Africa and associated islands* (pp. 751–768). Cambridge, UK: Birdlife International.
- Rocamora G, Feare CJ, Skerrett A, Athanase M & Greig E (2003).** The breeding avifauna of Cosmoledo Atoll (Seychelles) with special reference to seabirds: conservation status and international importance. *Bird Conservation International* (2003) 13:151–174.
- Skerrett A (1999).** Birds of Cosmoledo. *Birdwatch* 29: 4–6.
- Skerrett A (2013).** Greater Crested Tern *Thalasseus bergii*; pp 448–4450 in Safford RJ and Hawkins AFA (eds) 2013. *The Birds of Africa. Volume VIII: The Malagasy Region*. Christopher Helm, London.
- Skerrett A (2016).** Birds of Providence Atoll, Seychelles, and first population estimates of breeding Greater Crested Tern *Thalasseus bergii* and Black-naped Tern *Sterna sumatrana* at Bancs Providence. *Sea Swallow* 65.
- Skerrett A, Betts M, Bowler J, Bullock I, Fisher D, Lucking R & Phillips NJ (2017).** Fifth report of the Seychelles Bird Records Committee. *Bulletin of the African Bird Club* 24 (1): 63–75.

**Adrian Skerrett**

Email: [askerrett@hotmail.com](mailto:askerrett@hotmail.com)