



Indian Ocean Seabird Group

## IOSG NEWSLETTER n° 3

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### It's a happening thing !

Registrations for the inaugural Indian Ocean Seabird Conference reached target levels at the end of December. So it's on! A conference program will be available and circulated to IOSG members and other registrants at the end of January. Although we have passed the closing date, registrations will continue to be accepted as long as we can find seats on the Christmas Island flights. However, if you want to be sure of getting there, please book soon ([www.Christmas.net.au/iosgconference.php](http://www.Christmas.net.au/iosgconference.php)).

Nic Dunlop ([tern@git.com.au](mailto:tern@git.com.au))



### Workshop "Seabirds as bioindicators in the western Indian Ocean", Victoria, Mahé Seychelles, 13-15 December 2007

From 2005 to 2007 a research programme funded by the Western Indian Ocean Marine Science Association (see [www.wiomsa.org](http://www.wiomsa.org)) has been running that represents the start of a long-term study on the feeding ecology, breeding parameters and population structure on the main tuna-associated seabird species of the western Indian Ocean. The goal was to assess the possible impacts of natural and man-induced changes in food webs of the region on seabird ecology. The study has been ongoing since 2002 in the Mozambique Channel and extended to the Seychelles in 2005 where seabirds coexist with an important and growing industrial purse-seine fishery. Part of the programme was a workshop to present the main findings and to discuss the development of the project with fishery managers, stakeholders, researchers, and local NGOs. The workshop was then to review the implementation of a long term programme to use seabirds as bioindicators of the marine environment.

The workshop was held between 13 and 15 December 2007 at Victoria, Seychelles. Forty-one people were able to participate over the three days, thanks to the financial support of WIOMSA and wonderful organisation of Nature Seychelles. Half a day was devoted to presentations of local results by the different partners of the project (University of Réunion Island, University of Coimbra, Portugal, CEBC-CNRS, IRD, Nature Seychelles, Island Conservation Society, Wild Wings).

Then invited external participants presented their long term and invaluable experience in seabird-fishery-environment interactions all over the world. This included temperate and polar case studies presented by Sarah Wanless and Bob Furness (North Sea), Henri Weimerskirch (subantarctic ocean), Rob Crawford (South Africa) as well as tropical ones by Brad Congdon (Eastern Australia), Nick Dunlop, Janos Hennicke (western Australia) and Jan Veen (West Africa). Overall a fascinating overview of how seabirds can be used as bioindicators of their marine environment from the equator to the poles and a wonderful source of inspiration for us in the tropical western Indian Ocean! These different talks should be published in a special issue of the Western Indian Ocean Journal of Marine Science, hopefully next year.



Two round tables were also organised with national and international fishery agencies, NGO's, island managers and stakeholders to implement a long term program on seabirds as bioindicators at a regional scale.

Local and foreign participants also visited Cousin Island, a Special Reserve managed by Nature Seychelles, where an important part of the field work has been done.

Overall a very successful and stimulating workshop!

Matthieu Le Corre ([lecorre@univ-reunion.fr](mailto:lecorre@univ-reunion.fr))

**The Christmas Island Seabird Project: Investigations of the Christmas Island seabird community linking research and conservation.**

Christmas Island, an isolated oceanic island in the Eastern Indian Ocean, has a unique seabird community. On this tropical Australian island breed two endemic seabird species, Abbott's Booby and Christmas Island Frigatebird, and one endemic subspecies, the golden morph of the White-tailed Tropicbird. Moreover, CI has the largest breeding population of Red-tailed Tropicbirds in Australia and is breeding ground for Brown and Red-footed Booby, Great and Lesser Frigatebird and Common Noddy.



So far, little has been known on the ecology of tropical seabirds in general and also knowledge on Christmas Island seabirds has been sparse. In addition to the scientific interest in the Christmas Island seabirds, there has been an urgent demand for data from a conservational point of view: Abbott's Booby and Christmas Island Frigatebird are listed as Endangered and Critically endangered respectively (IUCN 2006) but without information on the species' ecology has it been neither possible to detect nor to evaluate actual threats to these seabirds.

In 2004, I initiated the Christmas Island Seabird Project (CISP). In cooperation with Parks Australia North Christmas Island, the project investigates the three booby and frigatebirds species as well as the Red-tailed Tropicbird. It aims to elucidate the ecology of Christmas Island seabirds and, by doing so, to create a sound scientific foundation for the effective protection of this seabird community. Using a variety of methods such as data loggers, satellite transmitters, banding and nest monitoring, the CISP investigates key parameters of foraging behaviour and reproductive performance on both individual and population level of the aforementioned species.

Over the last 4 years, the project has yielded comprehensive and detailed data sets, e.g. on the habitat utilisation, foraging movements and diet of Abbott's Boobies and Christmas Island Frigatebirds. Moreover, a non-sustainable rate of chick mortality in Red-tailed Tropicbirds was detected and cat predation could be identified as a major cause. Data

like those are scientifically interesting and additionally contribute immensely to develop management strategies for an effective protection of the Christmas Island seabirds. Consequently, the Christmas Island Seabird Project will be continued on a long-term basis to further elucidate the ecology of tropical seabirds and to provide data crucial to successfully protect this very original seabird community.

Janos Hennicke (janos.hennicke@uni-hamburg.de)

**Fregate census reinforces benefits of rat removal**

The first census of Seychelles' Fregate Island's seabird population since the eradication of rats in 2000 has proven, once again, that the removal of introduced predators is key to safeguarding island bird populations.



The census was conducted by the ecologist from nearby Cousine Island, Frankie Hobro and environmental conservation NGO, Nature Seychelles' volunteer Rahel Winiger, at the request of Fregate's Steve Hill, and showed a tremendous growth in seabird numbers over the previous, limited survey.

The research team censused Lesser Noddies, Fairy Terns and White-tailed Tropicbirds and indicated that over 35,000 pairs of Lesser Noddies breed on Fregate, representing a five fold increase over the previous survey.

In addition, work by the Fregate ecology team to rehabilitate much of the island environment had resulted in a large expansion in the distribution of the species.

Nirmal Sha (nirmalshah@natureseychelles.org)

**Night time research**

For the first time wardens on Nature Seychelles' Cousin Island are carrying out a census of the island's Audubon Shearwaters, at the same time as monitoring the other Cousin seabird groups.

Making its nest in burrows in the ground and between rocks, the Audubon Shearwater can be

exceptionally difficult to find. As a result the wardens will be crawling out of bed at night, when the birds begin calling, to try to find as many burrows as possible.

In order to overcome the difficulties of long, narrow and twisting nest burrows the wardens will be using playbacks of Audubon Shearwater calls, played at burrow entrances. Fortunately chicks find it impossible not to respond to playbacks providing a reliable measure of the number of occupied burrows.

Nirmal Sha (nirmalshah@natureseychelles.org)



### **Anomalous nesting and associated behaviour of Seychelles Sooty Terns in 2005**

#### *Sooty Tern breeding season in the Seychelles*

Historically, the onset of the Sooty Terns' laying season in the Seychelles has been associated with the onset of the south-east monsoon, with laying commencing in early June, or occasionally late May. This is known from records, going back to the 1920s, from the industry involved in harvesting and sale of eggs in the Seychelles. Laying is preceded by a long period of pre-breeding behaviour beginning in February. In late April/early May some birds land in the nesting area during the night.



Laying occurs in June and is highly synchronized throughout the colony. In 1973, 75% of the c. 395,000 eggs laid that year were laid in a 9-day

period. This pattern is typical for the major colonies of the Seychelles and Amirantes.

In recent years, however, there has been a tendency towards earlier laying on Bird Island although this has not been a uniform trend. Dates of laying of the first eggs are: 2000 – mid-May, 2001 – 28 April, 2002 – late May, 2003 – 25-26 May, 2004 – 14 May.

#### *The 2005 season on Bird Island*

The nesting season of Sooty Terns in the Seychelles in 2005 was unprecedented. In 2005, huge numbers of Sooty Terns arrived over Bird Island in January. They began settling during the day on beaches, on a sandbank at the southern end of the island and at the southern end of the airstrip, but not in the traditional colony area at the north-west of the island. On 17 February an egg was found at the top of the western beach, and on 27 February two eggs were laid at the southern end of the airstrip, with two more subsequently laid on the southern sandbank. On Aride, Sooty Terns also arrived over the island early in January/February.

The large number of Sooty Terns remained over Bird Island into March, when they transferred to the main colony area, landing during the day around midday, with much displaying on the ground. No eggs were recorded. Later in March the number of birds over the island diminished and this situation prevailed until early May, when they again began landing during the day. Eggs began to be laid in mid-May but only in small numbers, and this continued until early June, when mass-laying began.

On Aride, egg-laying began in the second week of April but similarly lacked its normal synchronicity. This continued into mid-May, when more intensive laying was observed in parts of the island.

#### *Possible factors underlying the 2005 events*

In his PhD thesis, Sebastien Jaquemet (2005) has shown that Seychelles Sooty Terns normally breed when primary productivity, as determined by satellite measurements of chlorophyll concentrations in surface waters, rises at the onset of the south-east monsoon in the Seychelles area (see also Jaquemet et al. 2007, Deep Sea Research). Primary productivity supports the higher trophic levels on which Sooty Terns and other predators depend for food. The extremely early onset of breeding activity recorded on Bird and Aride in February 2005 may thus reflect an increase in food abundance at this time. Two possible causative factors for such an early increase in food availability are:

1° The tendency towards earlier breeding over the last 5 or so years might be indicative of an earlier increase in primary productivity in recent years than formerly. In this case the 2005 breeding events in February might just be an extreme step in what appears to be a current trend.

2° Early breeding in 2005 could result from an extreme event that led to an abnormal increase in primary productivity. The obvious candidate is the 26

December 2004 tsunami, generated by the large submarine earthquake of the north-west coast of Sumatra. The tidal wave from this extended to the East African coast. In the Seychelles, some damage was caused on the east coast of Mahé whereas on Bird and Aride its effect was seen as an increase in the number of tidal cycles over a short period on 26 December. Seychelles appeared to escape the full force of the waves, which might have lost energy on their westward passage when they encountered the Seychelles-Mascarene ridge. Turbulence created here and over the Seychelles Bank might have increased nutrient availability at a time when this does not normally happen, leading to a flush in primary productivity to which the birds could have responded by commencing early breeding activity. Such a tsunami-generated flush of productivity would, however, have been temporary, so that any increased availability of food would have been short-lived, perhaps leading to an early curtailment of breeding activity, as was recorded.

Most of this is highly speculative, and although a few facts and details may be added, the scenarios are likely to remain speculative due to lack of hard evidence. Nevertheless, the 2005 events are fascinating and the timing of breeding in future years will be exciting to follow.

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### **Roosting During Foraging Trips in Christmas Island Frigatebirds**

I have been a spectator to an enlightening conversation on the IOSG network this week concerning the fairly unique foraging patterns of the endemic Christmas Island Frigatebird. Dr Nick Brickle who is program manager for the Wildlife Conservation Society (Indonesia Program) and David James formerly with Parks Australia North on Christmas Island and a naturalist who knows Indonesia quite well. Nick was reporting the sighting of 55 CI Frigatebirds perched on the numerous fish traps surrounding Pulau Rambut north-west of Jakarta.

David confirmed the identifications from some digital photos and then made the following comments

*“Christmas Island Frigatebirds breed only on CI but their main foraging grounds are on the Sunda Shelf (including Peninsular Malay) , extending out to the Sulu Sea. They reach Wallacea , northern Yellow Sea, west of the Anadmans, etc. but only as strays.*

*They use non-breeding roost sites off Sabah, off Tioman Island, in the Anamba and Natuna Groups, several spots in the Sulu Sea, and limestone stacks off Phuket in the Andaman Sea. No doubt they have roost sites in the Java Sea as well though no specific ones are known as yet. In fact there are a lot of records from the north coast of Java, and the following helps to explain why”.*



*“Because frigates can’t roost on the water (unlike all other seabirds), they use roost sites to extend their stay in foraging areas, and extend their marine range beyond the max return trip distance from the breeding colony. Taking > 1yr to breed means only part of the population breeds in a given year. The non-breeding roosts also allow non-breeders and immatures to escape the intense competition around the breeding grounds from hormonally charged breeding birds. The roosts compliment their famous aerial skills that have evolved in association with the abolishment of any unnecessary weight (very hollow bones, reduction of preening gland and associated water proofing oils, reduction of salt excretion glands, legs, walking and swimming muscles, webs, etc) and their extreme morphological adaptations to improve flight. The roost sites are an extremely important part of their life-history strategy, though this aspect of their lives is virtually unstudied”.*

To my knowledge roosting-sites have not been given much consideration in consideration of foraging energetics and David’s musings are a variation on the central place foraging theory that generally underpins seabird breeding biology.

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*Call for contributions: This is the thirtd Newsletter of the Group. We plan to prepare the next issue for April or May 2008. So do not hesitate and send your contributions to one of the editors (see above) now!*