Ascension Island Biodiversity Action Plan

SOOTY TERN

SUMMARY

Taxonomy: Kingdom: Animalia; Phylum: Chordata; Class: Aves; Order: Charadriiformes; Family: Laridae; Species: *Onychoprion fuscatus*

Nativeness: Native, breeding

Description: Medium-sized, highly pelagic seabird with contrasting black and white plumage and a distinctive 'wideawake' call. Extremely sociable, forming very large nesting colonies on open ground. Diet consists predominantly of small fish and squid picked from the surface of ocean. Almost always feeds in association with sub-surface predators such as tuna and dolphins which drive prey within reach.

IUCN Red List status: Least concern LC

Local trend: Stable ⟷

Threats: The major threats to sooty terns are overfishing of tuna and invasive alien species; secondary threats include climate change-induced habitat alteration.

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DARWIN INITIATIVE

Distribution

Global

Sooty terns are widespread, pan-tropical seabirds ranging across much of the tropical and sub-tropical Atlantic, Pacific and Indian oceans. They typically nest on isolated, oceanic islands. Major Atlantic nesting colonies (>50,000 pairs) include Atol das Rocas (Brazil) (approx. 70,000 pairs [1]), the Tinhosas Islands (Sao Tome & Principe) (approx. 100,000-160,000 pairs; [2,3]), the Dominican Republic (approx. 80,000 pairs;[4]), Anguilla (UK) ([5]) and Ascension Island (approx. 200,000 pairs; [6]).

Local

Nesting: The vast majority of sooty tern nesting currently occurs on the coastal plain at the south- west corner of the Island, known locally as the "Wideawake Fairs". Two main sub-colonies can be distinguished, one at Mars Bay and the other at Waterside Fairs, although their footprints vary among breeding seasons (Figure 1; [6]). Historically, sooty terns nested over a wider area, including major sub-colonies inland of South Gannet Hill. However, these were displaced during airfield developments in the 1940s by the large-scale destruction of nests [7]. A small number of birds also once bred on Boatswain Bird Island [8], but the colony disappeared sometime between 1958 and 1990 [9].

Foraging: The foraging distribution of sooty terns during the breeding season is not known. Between breeding seasons sooty terns are pelagic and highly migratory, seldom approaching land. Tracking studies suggest that Ascension birds predominantly forage far to the north of the Island during the non-breeding phase, exploiting the productive waters of the equatorial central Atlantic (University of Birmingham/Army Ornithological Society unpublished data).

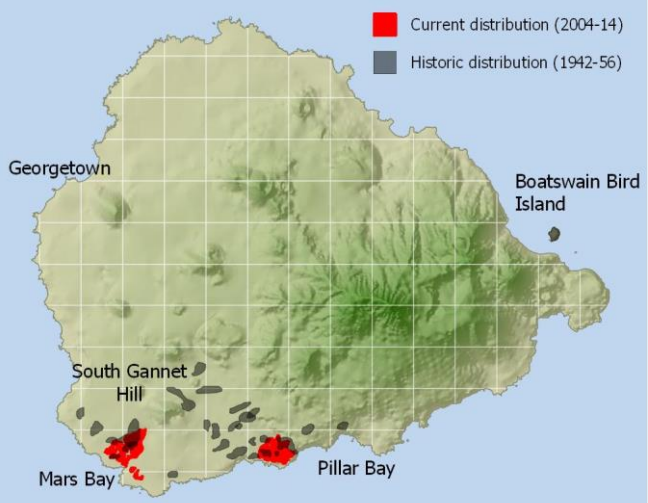

Figure 1: Distribution of sooty tern nesting colonies between 2004 and 2014 (Army Ornithological Society and AIG Conservation, unpublished data). Historical nesting locations reported for 1942-46 and 1958 are also shown for comparison (digitised from [7,8]).

4. Ecology

Habitat & diet

Sooty terns are highly pelagic and are generally only found close to land around breeding periods. Their diet consists mainly of small pelagic fish and squid caught at or near the surface of the ocean [8]. Sooty terns rely heavily upon prey driven within reach by small, surface-schooling tuna such as skipjack (*Katsuwonus pelamis*) and yellowfin (*Thunnus albacares*) and are seldom seen feeding independently of them in oceanic waters [10,11]. Nesting typically occurs on offshore islands and atolls, generally on bare ground or amongst low, sparse vegetation [8,12]

Reproduction & life history

Sooty terns at Ascension Island breed on a sub-annual cycle of approximately 9.6 months [7,13]. They are colonial nesters, often forming mixed colonies with other species such as noddies (*Anous* spp.). Each pair produces a single egg that is incubated by both parents for approximately 30 days, with chicks fledging at 8-10 weeks [8]. The majority of Sooty terns return to breed for the first time at 8-9 years old [14,15] and may live for more than 25 years [16].

Taxonomy & population structure

The Ascension Island sooty tern population appears to be morphologically distinct and demographically isolated from other Atlantic populations, with very little migration between neighbouring colonies [17]. However, genetic differences between colonies in the Caribbean and on Ascension have not been found, suggesting at least some recent connectivity [18].

3. Status				
GLOBAL	Population estimate:	ca. 35 million individuals	IUCN status:	Least concern
Wetlands International estimate the global population of sooty terns to number approximately 35 million birds divided across nine recognised subspecies [19]. Population size of the Atlantic and Caribbean subspecies *O. fuscata fuscata* is estimated at 1.6 – 2.1 million individuals [19]. Global population trends are not known, but are not believed to be declining sufficiently rapidly to be classified as 'Vulnerable' on the IUCN Red List [20].				
LOCAL	Population estimate:	ca. 175,000 nests per year	Local trend:	Stable
Sooty terns are the most numerous seabird species breeding on Ascension Island. The population has apparently remained stable over the past 20 years with an average of ~ 350,000 birds breeding in each season [6]. However, this probably represents a substantial decline relative to historical abundances. Using a range of secondary data, Hughes estimates that the breeding population numbered approximately 2.8 - 3 million birds between 1877 and 1958 but declined precipitously between 1970 and 1990 to its present levels [9]. A decrease in prey availability linked to the rapid expansion in commercial long-lining for tuna in the tropical Atlantic Ocean over this period has been implicated as the principle driver in the collapse of the population [9].				

4. Threats*		
8.1.2 Invasive non-native/alien species/diseases (named species)	**Impact:**	MEDIUM
Invasive ship rats (*Rattus rattus*) are known predators of sooty tern eggs and chicks and achieve some of their highest densities around active tern colonies [9,21]. Their numbers appear to be increasing rapidly following the eradication of feral cats in 2004 [9]. Introduced common myna (*Acridotheres tristis*) are also known to predate sooty tern eggs and have been implicated in high levels of breeding failure in some years [22]. Assessing the population-level impacts of rat and myna predation is difficult since it is rarely witnessed first-hand and scavenging on abandoned eggs and dead or dying chicks undoubtedly accounts for some of the observed damage. Nevertheless, the available evidence suggests that rat predation poses a significant and increasing threat that warrants immediate attention [9,21,23,24]. The encroachment of invasive Mexican thorn (*Prosopis juliflora*) into traditional sooty tern nesting areas may further exacerbate this problem if not managed. Invasive thorn scrub provides shelter, water and food, allowing rats to achieve far higher densities than they do in native habitats [21] and potentially survive seasonal absences of nesting birds. In addition, the spread of invasive vegetation also threatens to reduce the extent of suitable nesting habitat for sooty terns, which generally favour bare ground or areas of low, sparse vegetation [8,12].		
5.4.4 Fishing & harvesting aquatic resources (unintentional effects, large scale)	**Impact:**	MEDIUM
Ascension Island lies within a zone of intensive commercial long-lining for tuna and swordfish which poses both direct and indirect threats to seabirds [25]. Unlike some seabird species, terns do not appear to be susceptible to incidental capture in pelagic long lines (e.g. [26]). However, sooty terns are heavily reliant upon large schools of surface-swimming tuna to drive their prey within reach [10,11], making them highly susceptible to any over-exploitation of these species [27]. Although the Atlantic yellowfin tuna population is currently believed to be sustainably fished [28], biomass declined by approximately 50 % between 1965 and 2005 [29], which corresponds to an apparent collapse in the size of the Ascension Island sooty tern population by almost 90 % [9]. A dietary shift in chick provisioning also appears to have occurred during this period, with a significant decline in the proportion of fish and a corresponding increase in the proportion of squid, which has a lower nutritional value [9]. Again, overfishing has been implicated in this shift, with a decline in the availability of small fish driven to the surface by schooling tuna during the day forcing terns to switch to alternative food items, such as squid that tend to be active on the surface at night [9]. If tuna stocks continue to be overfished, impacts on the remaining sooty tern population are likely to be significant.		
11.1 Habitat shifting & alteration	**Impact:**	UNKNOWN
Few data exist on the interactions between climate, oceanography and seabird productivity at Ascension Island; however, it appears that the importance of the Island as a seabird breeding station relates to its position within a zone of elevated productivity driven by the westward flowing South Equatorial Current [30,31]. Any changes in current strength and position as a result of climate change could therefore have significant impacts on the productivity of the marine ecosystem and food availability for seabirds at Ascension Island. Similarly, changes in the		

depth of the thermocline and hence in the vertical distribution of prey species and tuna within the water column may also impact on foraging success. Mass breeding failures of sooty terns already occur periodically at Ascension Island [32] and there is circumstantial evidence to suggest that at least some of these are related to food shortages resulting from climate anomalies such as ENSO [33].

6.1 Recreational activities	**Impact:**	LOW

Both major sooty tern nesting colonies are accessible to visitors by road and are popular attractions. While this presents opportunities for awareness-raising, excessive disturbance can lead to nest abandonment. Visitor numbers are currently too low to pose a significant threat, but any plans to increase the tourism footprint on Ascension Island should consider measures to minimise disturbance to nesting birds. Fishermen have occasionally been observed driving through the sooty tern colony at Mars Bay crushing eggs and killing chicks, although this is not a regular occurrence.

4.4 Flight Paths	**Impact:**	LOW

The major sooty tern nesting colony at Waterside fairs lies directly beneath the flight path of aircraft departing from Wideawake Airfield. Given the infrequent flights on Ascension Island, disturbance by aircraft is unlikely to constitute a significant threat at present, but could become problematic if air traffic were to increase for any reason e.g. with the opening of an airport on St Helena. The United States Air Force has also expressed concerns over the potential for bird strikes involving nesting sooty terns. Indeed, an event involving an RAF transport in February 2015 has prompted a review of Bird Aircraft Strike Hazard (BASH) procedures, including the use of radar-based detection and deterrent systems. Although such events are very rare, if strikes were to occur more frequently it could create conflicts between airfield safety and conservation objectives.

9.2.3 Industrial & military effluents (type unknown)	**Impact:**	NEGLIGIBLE

With the unlikely exception of a petrochemical spill during tanker offloading, local threats from marine pollution are minimal. However, sub-toxic levels of polychlorinated biphenyls (PCBs) have already been detected in the tissues of sooty terns nesting at Ascension Island [34], demonstrating that even this remote population is not immune from global marine pollution issues.

*Threats are classified and scored according to the IUCN-CMP Unified Classification of Direct Threats [35]

Relevant policies and legislation

International

Ascension Island is designated as an Important Bird Area by BirdLife International.

Local

Sooty terns are protected under the Wildlife Protection Ordinance 2013, which prohibits the killing, capture or taking of seabirds or their eggs on Ascension Island without license.

The traditional sooty tern nesting areas at Mars Bay and Waterside Fairs are designated as Nature Reserves under the National Protected Areas Order 2014. The National Protected Areas Regulations 2014 restrict all forms of development within nature reserves, as well as many other potentially disruptive or destructive activities.

6. Management notes

An experimental study of the impacts of rats on sooty tern breeding success is urgently needed to define the scale of the problem and implement an appropriate response. Some chemical control with anti-coagulant rodenticides has been carried out within tern colonies but has generally been *ad hoc* or reactive in nature and has apparently been ineffectual in suppressing rat populations [9]. A significant and sustained scaling-up of control efforts may therefore be required and can only be justified if the conservation gains outweigh the financial costs and potential risks of selecting for rodenticide resistance. Assuming such gains can be demonstrated, a strategic plan for rodent management in the Wideawake Fairs will need to be developed, drawing on the considerable international best practice in this field. A combination of systematic poisoning and trapping, guided by improved rodent monitoring and behavioural studies, is likely to be the most effective approach. Excluding Mexican thorn and other woody

invasives from traditional sooty tern nesting areas may help to further limit rodent populations, and should be implemented regardless in order to preserve open nesting habitat.

Over-fishing of tuna is believed to be the principle threat facing sooty terns but will be difficult to manage locally due to the highly migratory nature of both terns and tuna. Regional stock management at the ICCAT level, although heavily criticised for its track record [29], is likely to be the only effective mechanism through which tuna abundance in the non-breeding range of sooty terns can be maintained. However, research into the home ranges of tuna and breeding sooty terns within Ascension Island's marine zone should be carried out as a matter of priority to determine whether there are populations and feeding associations that can be conserved at a local level. Regular monitoring of the diet and fledging success of nesting terns is also needed to detect long-term changes in food availability, and along with information on other seabirds, may provide a valuable indicator of the status of the Territory's marine ecosystem.

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