

# Ascension Island Biodiversity Action Plan

## ASCENSION ISLAND FRIGATE BIRD



Photo: D. Fox

### SUMMARY

**Taxonomy:** Kingdom: Animalia; Phylum: Chordata; Class: Aves; Order: Suliformes; Family: Fregatidae; Species: *Fregata aquila*

**Nativeness:** Endemic to Ascension Island

**Description:** Large, pelagic, ground-nesting seabird with predominantly dark plumage and long, slender wings up to 2m in span. Adult males are easily recognisable by conspicuous red throat sacs that are inflated during courtship and juveniles can be identified by their white heads. Feeds mainly on flying fish, often associating with schools of hunting tuna or dolphins which drive prey to the surface.

**IUCN Red List status:** Vulnerable 

**Local trend:** Stable 

**Threats:** The major threat to Ascension Island frigate birds is overfishing of tuna; secondary threats include invasive alien species, wind turbines, inshore fisheries bycatch and climate changed-induced habitat alteration.



**Distribution**

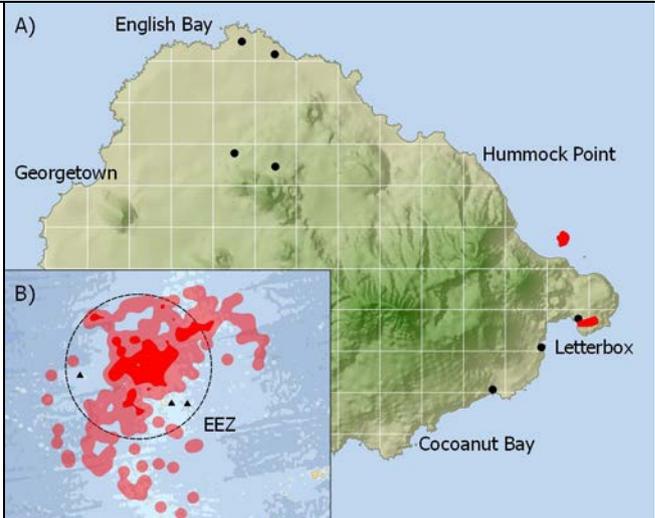
**Global**

Endemic to Ascension Island and surrounding waters to approximately 1,000 km.

**Local**

**Nesting:** The vast majority of Ascension frigatebirds currently nest on the summit plateau of Boatswain Bird Island, a 5 hectare islet 300m off the eastern coast [1,2] (Fig. 1). For more than a century, heavy predation by feral cats on the mainland meant that Boatswainbird Island supported the sole frigatebird breeding colony [3]. However, historical records and subfossil remains suggest that the species once bred extensively across the lowland plains of the main island, with putative colonies located between English Bay and Porpoise Point in the north, close to South Gannet Hill and Crystal Bay in the south, and around Crater Cliff and the Letterbox Peninsula in the south-east [4–7] (Fig. 1). Feral cats were successfully eradicated in 2006 [8] and since December 2012 a small breeding colony has re-established on the southern side of Letterbox, close to the Devil’s Inkpot site where the largest concentrations of sub-fossil remains were recovered [6].

**Foraging:** Ascension frigatebirds forage over a wide expanse of open ocean, incorporating much of the Territory’s 200 nautical mile maritime zone and beyond into international waters. The average foraging trip of a breeding adult lasts 2-3 days and extends to a maximum distance of 200-300 km from the island. However, displacements of over 1000 km have been recorded. Juveniles and non-breeding adults are even more wide-ranging, occasionally appearing as vagrants along the coast of tropical West Africa [9] and even as far north as Scotland [10,11].



**Figure 1:** A) Distribution of Ascension frigatebird nesting colonies as of December 2014 (AIG Conservation Department, unpublished data). Sites at which subfossil remains of frigate birds have been discovered are also shown (digitised from [5–7]). B) Foraging distribution of 48 breeding frigate birds tracked using satellite telemetry devices (AIG Conservation, unpublished data). The 50% utilisation distribution, or ‘core use area’, is shown in solid red and the 95% distribution, or ‘home range’ is shown in faded red. The boundary of Ascension Island’s 200nm exclusive economic zone (EEZ) and the location of shallow water seamounts (triangles) are also shown.

**3. Status**

Population estimate:	18,600 individuals	Trend:	Stable	IUCN status:	Vulnerable (VU)
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The inaccessibility of the main breeding colony on Boatswainbird Island makes accurate population counts challenging. Only two ‘complete’ censuses have been conducted, one in 1958 [3] and the other in 2001/2002 [2]. The population appears to have remained stable over this period, with approximately 6,250 pairs breeding annually and a total adult population of approximately 18,600 individuals [2]. However, this almost certainly represents a substantial decline relative to historical abundances. Records from 1750-1780 describe large breeding colonies of frigate birds on the main island which began to decline rapidly after the introduction of cats in around 1815 and were apparently absent by the 1880s [4]. Competition for nesting space on Boatswainbird Island is believed to have limited population growth [2,9], with nest usurpation and intraspecific aggression being a major source of breeding failure [3]. The relaxation of predation by feral cats and the subsequent re-colonisation of the mainland by breeding frigate birds in 2012 may therefore mark the beginning of a phase of population growth. The mainland colony increased from 2 nests in 2012-13 to 44 nests in 2014-15, although given the long maturation time of 8-10 years in frigate birds [12] this expansion has presumably been driven by the migration of breeding birds from Boatswainbird Island rather than by overall population growth.



4. Ecology	
Habitat & diet	
<p>Ascension frigatebirds nest on bare ground, apparently favouring gentle, windward-facing slopes with rocks for perching [3]. They are pelagic surface-feeders and generally forage far from land over open ocean [1,3,9], probably in association with cetaceans and tuna schools that drive smaller prey species within reach [13]. Their diet appears to be more conservative than that of other seabirds at Ascension Island, consisting almost entirely of flying fish of the genera <i>Exocoetus</i>, <i>Cypsilurus</i> and <i>Hirundichthyes</i> [3,4]. All prey is taken in flight as frigatebirds cannot normally take off from the water. During certain seasons, small groups can also be observed feeding on sea turtle hatchlings and sooty tern chicks over land. Kleptoparasitism of other seabirds is known to occur but is not thought to form a significant part of the species' diet [1,3,9]</p>	
Reproduction & life history	
<p>Some nesting occurs year round, but there is a pronounced peak in egg-laying between September and November and a lull between February and May [2,3]. A single egg is laid and is incubated by both parents for 43-50 days [3]. Chicks fledge at 6-7 months, but remain dependent on parents for a further 3-4 months post-fledging [3]. This protracted period of parental care means that successful birds can only breed biennially [2], although nesting success is typically low (20-35%) and re-nesting following failure is common [2,3]. Age-at-maturity and maximum lifespan are unknown, but based on related species are likely to be in the order of 8-10 years [12] and 40-50 years [14], respectively.</p>	
Taxonomy & population structure	
<p>The closest relative of the Ascension frigatebird is the magnificent frigatebird (<i>Fregata magnificens</i>) which breeds along the tropical Atlantic and Pacific coasts of North and South America [15]. Males of the two species are indistinguishable, but females and juveniles differ in the extent and location of black breast plumage [3,10].</p>	

4. Threats*	
<b>5.4.4 Fishing &amp; harvesting aquatic resources (unintentional effects, large scale)</b>	<b>Impact: MEDIUM</b>
<p>Ascension Island lies within an area of high tuna long-lining effort [16], which poses both direct and indirect threats to seabirds. No local observer data exist to assess the direct mortality of Ascension frigatebirds caused by incidental capture in pelagic longlines, although bycatch statistics reported by the Taiwanese fleet operating in and around Ascension's exclusive economic zone suggest that the risk is likely to be low [17]. This is supported by low by-catch rates reported for closely related frigatebird species in the Atlantic and Pacific Oceans [18,19]. The indirect impacts of fishing on marine food webs are therefore perhaps of greater concern. As surface feeders with a diet based primarily on flying fish, frigatebirds are highly reliant on sub-surface predators such as tuna to drive prey within reach [13]. Atlantic stocks of large tuna species have declined by an estimated 50 – 80 % over the past 50 years [20] and there is some evidence of impacts on Ascension's seabirds [21]. Any further depletion of tuna stocks as a result of overfishing would therefore be expected to have severe consequences in terms of reduced food availability and diminished breeding success [22].</p>	
<b>5.4.3 Fishing &amp; harvesting aquatic resources (unintentional effects, small scale)</b>	<b>Impact: LOW</b>
<p>Incidental capture of Ascension frigate birds in the local shore-based and vessel-based recreational and sports fisheries occurs periodically and can result in drowning or fatal injury [8,9]. The number of birds affected is currently estimated to be low, but could become a concern if local fishing effort were to increase substantially.</p>	
<b>8.1.2 Invasive non-native/alien species/diseases: named species</b>	<b>Impact: LOW</b>
<p>Ship rats (<i>Rattus rattus</i>) are found in all mainland habitats on Ascension Island, including the Letterbox Peninsula where a small frigate bird colony established in 2012. Rodent predation is not generally considered to be a significant threat to large, incubating seabirds such as frigates [9,23] and no interactions have been documented on nest cameras deployed at mainland frigate colonies. However, eggs and young chicks, which are sometimes left unattended from 9-10 days old [3], may potentially be at risk, particularly given evidence of an increase in rat abundance following the eradication of feral cats [21]. The rapid spread of invasive, drought tolerant shrubs such as</p>	



<p><i>Prosopis juliflora</i>, <i>Psidium guajava</i>, <i>Nicotiana glauca</i> and <i>Casuarina equisetifolia</i> over much of the Island’s previously barren coastal lowlands also poses a potential threat to ground nesting seabirds. These species have already colonised some putative former frigate nesting sites and unless their spread is controlled it is likely that some encroachment on existing colonies will occur in the future. Possible impacts could include a reduction in the extent of bare ground nesting habitat and the exacerbation of any disturbance or predation by rodents which occur at high densities in <i>Prosopis</i>-dominated habitats [24].</p>		
<b>11.1 Climate change &amp; severe weather: Habitat shifting &amp; alteration</b>	<b>Impact:</b>	UNKNOWN
<p>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 [4,25]. 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. Indeed, mass seabird breeding failures periodically occur at Ascension Island and there is circumstantial evidence to suggest that these are related to climate anomalies such as ENSO [1].</p>		
<b>3.3 Renewable energy</b>	<b>Impact:</b>	LOW
<p>In April 2010, five 53.5 m wind turbines were erected adjacent to the BBC power station complex at English Bay [26] and have since become a small but consistent source of seabird mortality. The turbines sit on an important coastal fly-way for birds commuting to and from Boatswain Bird Island [1] and are estimated to kill 30-40 seabirds annually, 50 % of which are frigatebirds (AIG Conservation, unpublished data).</p>		
<b>9.4 Garbage &amp; solid waste</b>	<b>Impact:</b>	NEGLIGIBLE
<p>The deleterious impacts of marine plastic pollution on seabirds have been well documented [27]. Juvenile frigate birds have occasionally been observed to take litter from the ocean surface and manmade items such as fishing lures have been found in nesting colonies (AIG Conservation, unpublished data). However, the available evidence suggests that frigatebirds seldom ingest plastic debris, preferring to take active prey [28]. No specific studies have been carried out for Ascension frigatebirds.</p>		
<p>*Threats are classified and scored according to the <a href="#">IUCN-CMP Unified Classification of Direct Threats</a> [29]</p>		

Relevant policies and legislation
International
<p>Ascension Island and Boatswain Bird Island are currently designated as Important Bird Areas by BirdLife International.</p>
Local
<p>Ascension frigatebirds are protected under the <a href="#">Wildlife Protection Ordinance 2013</a>, which prohibits the killing, capture or taking of seabirds or their eggs on Ascension Island without license.</p> <p>All known Ascension frigate bird nesting is contained within protected areas designated under the <a href="#">National Protected Areas Order 2014</a>. Boatswain Bird Island is designated as a Sanctuary, and the Letterbox Peninsula is designated as a Nature Reserve. The <a href="#">National Protected Areas Regulations 2014</a> restrict all forms of development within protected areas and prohibit access to Boatswain Bird Island without permit.</p>

Management notes
<p>Preventing over-fishing and preserving foraging associations between tuna and seabirds is probably the most pressing management issue facing Ascension frigatebirds, but may be difficult to influence locally due to the highly migratory nature of tuna species which exposes them to fishing effort in international waters. Regional stock management at the ICCAT level may therefore be the only effective means of achieving this goal. Nonetheless, research into the behaviour of tuna within Ascension Island’s marine zone is urgently needed to establish whether more resident populations exist that can be effectively protected at a local level. A 2014 review of Ascension’s inshore and offshore fisheries conducted by Cefas [30,31] and an earlier report by Envirofish [32] proposed a number</p>



of measures to strengthen fisheries management within Ascension Island’s EEZ, including improved licensing, enforcement and data collection. There are also growing calls to close offshore areas to commercial fishing of any kind, subject to alternative funding sources being found to meet the costs of enforcement. Irrespective of the final model of marine protection that is adopted, monitoring of seabird productivity and population trends will continue to form an important part of any broadly based system for assessing the health of Ascension’s marine ecosystem. Regular, standardised monitoring of frigatebird fledging success should therefore be continued as a means of detecting long-term changes in food availability and productivity, supplemented by periodic dietary studies and GPS tracking to characterise any shifts in foraging behaviour. Given the substantial inter-annual variation in breeding success of seabirds at Ascension Island, large sample sizes will be needed to detect long-term trends and should ideally be set following a formal analysis of statistical power.

Maintaining the conditions for the continuing expansion of the mainland nesting colony is of critical importance and should require minimal management. However, some degradation of nesting habitat by invasive weeds is likely to occur in the long term unless control measures are implemented. Preventing the spread of woody species into the important nesting areas of the Letterbox Peninsula should still be practical through frequent, low-level management and would be best organised through a formal site management plan to ensure continuity of action. Several perennial and annual weeds such as *Waltheria indica*, *Heliotropium curassivicum*, *Chenopodiastrum murale* and wild tomato (*Solanum* sp.) are also increasingly expanding their range into the seabird nesting areas of the Letterbox Peninsula and should be monitored. Regular monitoring of rat abundance on the Letterbox Peninsula and continued surveillance of a sample of frigate bird nests using nest cameras would also be prudent to detect emergent threats.

## SPECIES ACTION PLAN

PROPOSED ACTION	OUTCOME(S)	TIMEFRAME	PROPOSED START	PRIORITY	LEAD
Policy & Legislation					
Develop an implementation plan for reforming Ascension Island's fishing policies and marine protection legislation, taking into account the recommendations of previous consultancy reports and the outcome of deliberations on the future of the Territory's commercial offshore fishery.	1 policy document produced; 1 action plan produced	1 year	March 2015	HIGH	Director of Fisheries (AIG)
Repeal the blanket IBA designation for Ascension Island and designate the Letterbox Peninsula and the Wideawake Fairs as more spatially-relevant IBAs.	2 IBAs designated	2 months	February 2015	LOW	RSPB
Management					
Produce management plans for all nature reserves and sanctuaries, including timetables for the routine control of invasive species, and integrate into the BAP.	6 management plans produced	1 year	March 2015	MEDIUM	Head of Conservation (AIG)
Establish, map and maintain exclusion zones for <i>Prosopis juliflora</i> , <i>Nicotiana glauca</i> , <i>Casuarina equisetifolia</i> and other invasive drought-tolerant shrubs and trees within all coastal reserves.	6 exclusion zones cleared and mapped	6 months	June 2015	HIGH	National Park Warden (AIG)
Research & monitoring					
Collate and analyse existing oceanographic and fisheries resources relating to Ascension Island's exclusive fishing zone and surrounding waters, integrating spatial datasets into GIS wherever possible.	1 report produced	1 year	September 2014	MEDIUM	Marine & Fisheries Unit (AIG)

PROPOSED ACTION	OUTCOME(S)	TIMEFRAME	PROPOSED START	PRIORITY	LEAD
Map the movements and seasonal migrations of yellowfin tuna caught within Ascension Island's EEZ using tracking technologies and the deployment and recovery of mechanical tags.	15 fish tracked; 100 fish tagged	1 year	November 2014	MEDIUM	Marine & Fisheries Unit (AIG)
Locate and monitor the success of all mainland frigate bird nests through fortnightly nest visits and monthly searches of known colonies.	12 surveys completed; all nests monitored	1 year	September 2014	HIGH	Seabird Conservation Scientist (AIG)
Conduct a thorough search of all likely frigate bird nesting sites during the October-December nesting peak, particularly the coastline between Crater Cliff and Letterbox.	1 survey completed	1 day	December 2015	HIGH	Seabird Conservation Scientist (AIG)
Collate, analyse and publish all existing satellite tracking data for Ascension frigate birds; then review future tracking requirements.	1 academic paper published	6 months	January 2015	MEDIUM	Chief Scientist (AIG)
Conduct fortnightly surveys to estimate seabird mortality resulting from collisions with wind turbines at the BBC Wind Farm	24 surveys completed; 1 report produced	1 year	October 2014	MEDIUM	Seabird Conservation Scientist (AIG)
Produce a revised population size estimate for the Ascension Island frigate bird to update the 2001/2 census.	1 academic paper produced	1 year	September 2016	MEDIUM	Seabird Conservation Scientist (AIG)
Clean existing seabird monitoring data stored within the AEIOU database and update the database structure in line with current monitoring and research needs	1 database produced	1 year	February 2015	MEDIUM	Seabird Conservation Scientist (AIG)
Collate all existing seabird ringing data from Ascension Island into a centralised database	1 database produced	1 year	September 2014	LOW	Seabird Conservation Scientist (AIG)

PROPOSED ACTION	OUTCOME(S)	TIMEFRAME	PROPOSED START	PRIORITY	LEAD
Install fixed rodent monitoring lines on the Letterbox Plateau and initiate quarterly indexing of rat abundance	30 stations installed; 4 surveys completed	1 year	June 2015	MEDIUM	Seabird Conservation Scientist (AIG)
Communication & Awareness Raising					
Erect visitor information boards at access points and key features within all nature reserves and national parks, establishing a strong protected areas identity and awareness on Ascension Island.	10 signs installed	6 months	January 2016	MEDIUM	National Park Warden (AIG)
Publish a free guide booklet on Ascension Island's protected areas network to be made available at ports of entry, visitor attractions and other outlets.	500 booklets produced	3 months	June 2015	LOW	Tourism & Media Officers (AIG)
Celebrate World Ocean's Day as a focus for awareness raising activities associated with Ascension Island's marine environment.	1 event organised	1 day	June 2015	MEDIUM	Head of Conservation (AIG)
Work with the local fishing community to develop and install signage at the Pier Head offering guidance on best practice for avoiding and responding to incidental bycatch of marine turtles and seabirds.	1 sign installed	3 months	September 2015	MEDIUM	Director of Fisheries (AIG)
Arrange a vehicle tour for Island residents to view nesting seabirds in Letterbox Nature Reserve, providing an opportunity for families and less mobile members of the community to experience the wildlife of this remote part of the Island.	1 event organised	1 day	April 2015	LOW	Head of Conservation (AIG)
Produce an updated visitor information leaflet on the the biology and conservation of seabirds at Ascension Island	500 leaflets produced	1 month	February 2015	LOW	Tourism & Media Officers (AIG)

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