

A MANAGEMENT PLAN FOR THE MARINE TURTLES OF ASCENSION ISLAND



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SECTION 1: EXECUTIVE SUMMARY AND GENERAL RECOMMENDATIONS

Summary

The green turtle (*Chelonia mydas*) nesting population at Ascension Island is the second largest in the Atlantic; one of the most important biodiversity assets of the UK. In addition, the hawksbill turtle (*Eretmochelys imbricata*) and the leatherback turtle (*Dermochelys coriacea*) have been recorded in the waters around Ascension Island. It is likely that there is a small resident population of hawksbill turtles whilst the leatherback is a rare/occasional visitor. All three species are protected under international law and classified by the IUCN (World Conservation Union) as endangered or critically endangered. Surveys have revealed the global importance of the Ascension Island green turtle population (Godley *et al.* 2001; Mortimer & Carr 1987). In particular, 45-55% of nesting occurs on three beaches. These are in order of importance; Long Beach, (beach number 12) Southwest Bay (beach number 1), and Northeast Bay (beach number 27). In addition, large aggregations of turtles are found in the waters off these three beaches, especially during the mating season (November-March). In this management plan we systematically detail the current and potential threats faced by the marine turtles of Ascension Island and suggest solutions to each problem. In this executive summary we consider the actions of utmost importance.

Recommendations:

1) Species and Habitat Protection at Ascension Island is continued and increased to include the provision of three legally protected areas (Long Beach, Southwest Bay, Northeast Bay)

The high degree of protection experienced by marine turtles at Ascension in recent years including direct protection under local legislation should be continued. Despite a past history of extremely high levels of direct exploitation of marine turtles and their products at Ascension, since the 1950's they have received almost blanket protection and this should be continued, with certain improvements (see below). Although in recent years general consideration has been given to concerns of marine turtle conservation, there is no formal protective status of any of the major nesting beaches and mating grounds. Ascension Island is currently in a period of economic change that may open it up to increased development pressures. **It is strongly recommended that formal protective status be given to key habitats used by mating and nesting marine turtles.** As a minimum, Long Beach, Southwest Bay, Northeast Bay and their associated offshore waters to the 30m isobath should be given absolute protection. Additional beaches of moderate importance may be added at a later date, based on continued evaluation of the impact of future development on these habitats. Key concerns with regard to development are sand extraction (**Section 5.1.1**) and anthropogenic light (**Section 5.1.2**) and the use of waters of less than 30m depth (**Section 5.5.1**).

2) Management and elimination of threats to the Ascension Island green turtles should remain high on the environmental agenda of Ascension Island Government, the UK Government and international conservation organisations.

All future development plans on Ascension should be subject to environmental impact assessment, with particular consideration of the potential effects on sea turtles.

The most important threats that constantly need to be monitored and addressed include the following three groups:

I) Those on Ascension Island that are currently inadequately dealt with:

- Threat of petrochemical spill (**Section 5.1.3**)
- Females stranding as a result of man-made objects (**Section 5.2.1**)
- Litter on beaches (**Section 5.2.3**)

II) Those on Ascension Island that are currently being managed with a need for minor improvements:

- Mining of beach sand (**Section 5.1.1.**)
- Light pollution (**Section 5.1.2**)
- Human disturbance (**Section 5.2.2**)
- Invasive plant species (**Section 5.3.1**)
- Predation by cats and dogs (**Section 5.4.2**)

III) Those outside the waters of Ascension Island

- Capture during migration on the high seas (**Sections 5.5**)
- Capture during migration in coastal waters and residence in foraging grounds in Brazil (**Sections 5.6**)

3) Annual monitoring of all major nesting beaches should be continued indefinitely.

Prior to this current project, initiated in 1998, the previous complete survey of the nesting population took place in 1977/78. During the next 20 years only a brief survey was conducted in 1992. It appears that during this intervening period the population has remained stable, if not actually increasing. Without regular monitoring, however, the population might have slipped into decline as has occurred at many marine turtle breeding sites around the world. Green turtles typically exhibit a high degree of inter-annual variation in the nesting numbers and thus there is a particular need for annual monitoring of this species.

- 1) Abundance of nesting turtles.** It is important to note that monitoring efforts should be designed so that temporal shifts in seasonality or changes in the relative importance of nesting beaches are assessed.
- 1) Reproductive success:** It is also important to calculate what proportion of nesting attempts result in egg laying and whether a sufficient proportion of nests hatch with high success rates.
- 1) Incubation temperatures:** The phenomenon of Temperature-Dependent Sex Determination (TSD) means that at warmer temperatures more females are produced. It is estimated that the overall sex ratio of hatchling production at Ascension is 75% female. Thus, relatively minor changes in temperature as a result of global warming could yield male deficient sex ratios in the future. This mandates continued monitoring of the sand temperature on the major nesting beaches.

SECTION 2: INTRODUCTION

Ascension Island is located in the middle of the South Atlantic at 7°55'S, 14°25'W. Of volcanic origin, it is 88km² in area. A dependency of St Helena, it is a separate UK Overseas Territory. Its wider natural history is reviewed in detail by Ashmole and Ashmole (1997; 2000 and references therein)

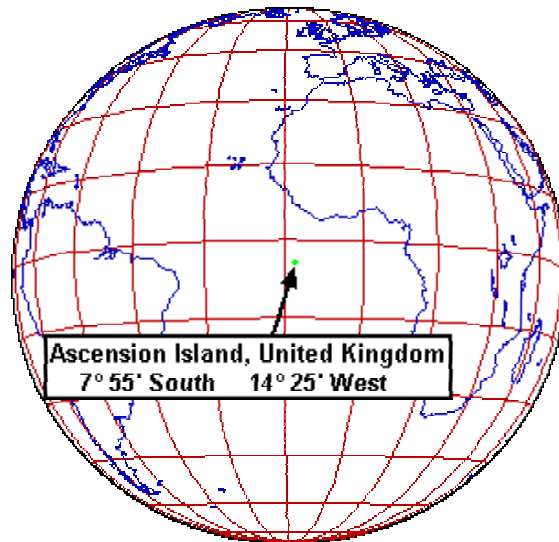


Figure 1. Location of Ascension Island.

The green turtle (*Chelonia mydas*) nests at Ascension Island in large numbers. In addition, the hawksbill turtle (*Eretmochelys imbricata*) and the leatherback turtle (*Dermochelys coriacea*) have been recorded in the waters around Ascension Island. It is likely that there is a small resident population of hawksbill turtles whilst the leatherback is a rare/occasional visitor. All three species are protected under international law and classified by the IUCN (World Conservation Union) as endangered or critically endangered.

Adult green (*Chelonia mydas*) turtles begin arriving at Ascension Island in November each year and are seen mating in the nearshore waters for the next 3-4 months (Godley *et al.* in 2002b). Females lay several clutches of eggs in a season at intervals of 10-16 days and mate approximately 30 days prior to laying their first clutch. Although low levels of nesting occur throughout the year, nesting largely occurs between December and July each year, peaking in March (Godley *et al.* 2001; Mortimer & Carr 1987). Hatching occurs from February until August with nests generally taking 45-70 days to incubate. At the completion of breeding adult turtles migrate back to foraging grounds in Brazil (Figure 2).

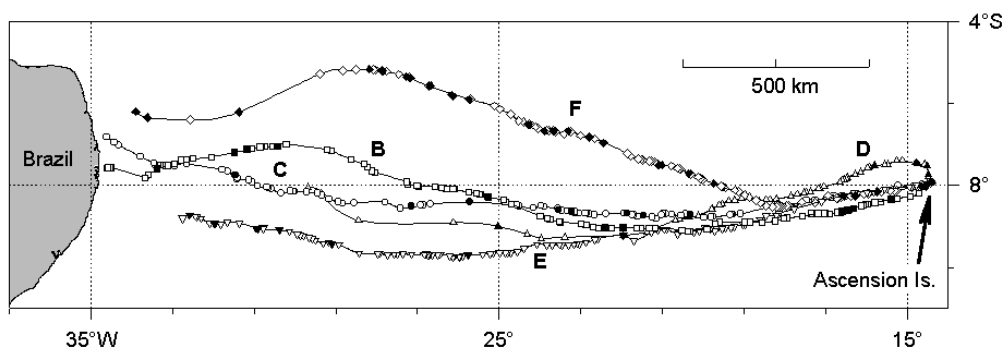
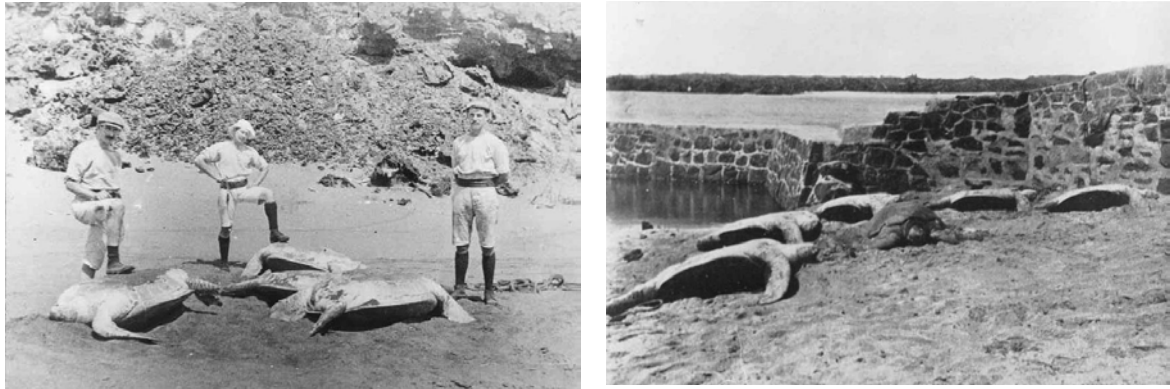


Figure 2. Satellite tracks from Luschi *et al.* (1998)

Since its discovery in 1501, Ascension Island has been famous for the green turtles (*Chelonia mydas*) which nest upon its beaches. These turtles provided fresh meat for passing ships. With the establishment of a marine garrison on Ascension in 1817, turtles became an important part of the diet of residents. In order for turtle meat to be available all year round, a Turtle Pond was built. In 1829 the Boat Harbour was converted to the second Turtle Pond to allow the storage of a greater number of turtles.

Turtles were also taken back to the UK where turtle soup was considered a great delicacy. The turtles were kept alive onboard the ship for the journey home, given no food and only had the occasional bucket of water thrown over them. Sometimes few survived the journey but it seems that the majority did.



Photos 1 & 2. Turtles being turned on the beach and stored in the Turtle Ponds (Photographs Courtesy of Ascension Island Heritage Society).

In 1822 alone, over 1500 turtles were harvested and by the 1860's the population had been affected and less than a few hundred were harvested on average each year (Figure 3; Huxley 1997; 1999). By the 1920's the trade in turtles had virtually stopped, and the ponds were no longer used for this purpose, although a few were still caught for Island residents. The last documented capture of a turtle on Ascension was in the 1950's. The turtles of Ascension Island are now protected under local law and it is illegal to disturb or harm them in any way.

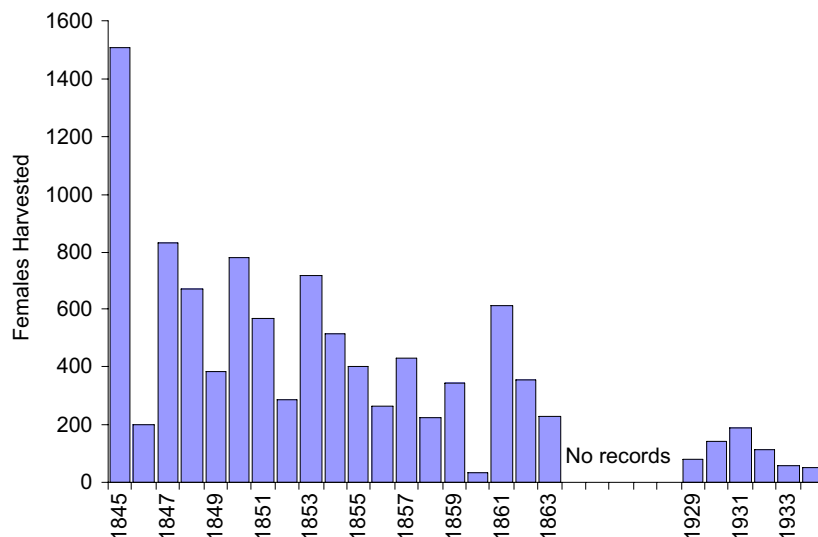


Figure 3. Records of number of females harvested each year on Ascension Island (Huxley 1999).

Historical harvest records provide a strong indication that the green turtle nesting population of Ascension Island was significant, confirmed by work of Carr and colleagues (Carr 1975; Carr & Hirth 1962). The first comprehensive scientific survey however was not undertaken until 1976/7 and 1977/8 (Mortimer & Carr 1987) when the annual number of nests was estimated as 7910-10764 and 5257-7154, in the two seasons, respectively.

In the Atlantic, although there are numerous areas where small numbers of green turtles still nest. Evidence suggests that the major nesting colonies for the green turtle are: Tortuguero, Costa Rica (Bjorndal *et al.* 1999); Ascension Island, UK (Mortimer & Carr 1987); Suriname (Shulz 1975); Aves Island, Venezuela (Sole & Medina 1989); Poilão, Guinea Bissau (Fortes *et al.* 1998); and Trindade, Brazil (Moreira *et al.* 1995). Although these are arranged in an approximate order of decreasing magnitude (as per Bowen *et al.* 1989), quantitative status surveys are often lacking, making rigorous inter-colony comparisons difficult. Given that by 1998 no comprehensive surveys of marine turtle population size at Ascension had been carried out for 20 years, the need for updated status information was acute, especially for a population which had been shown to feed in the waters of Brazil where there had been directed fisheries in recent decades (Marcovaldi & Marcovaldi 1999; Marcovaldi *et al.* 1998; Pritchard 1976).

The current Ascension Island Turtle Project was established in 1998 through a grant from the former Department of the Environment, Transport and the Regions (DETR) Darwin Initiative for the Survival for Species. After two successful years of monitoring (the nesting seasons of 1998/1999 and 1999/2000) a grant from the Foreign and Commonwealth Office (FCO) Environment Fund for the Overseas Territories enabled monitoring to continue for a further two seasons (2000/2001 and 2001/2002). The results of both of these projects to date are used in the synthesis of this management plan.



Photo 3. Tracks on Long Beach, January 2002.



Photo 4. Hatchling green turtle

SECTION 3: CURRENT PROTECTIVE LEGISLATION AND RELEVANT LEGAL INSTRUMENTS

Before reviewing the status and threats to the Ascension Island marine turtle population it is worthwhile reviewing the existing laws and legal instruments that may have relevance to sea turtles at Ascension:

A) Legislation on Ascension

There are two local laws under which marine turtles are afforded protection on Ascension Island. These are:

- 1) The Endangered Species (Ascension) Control Ordinance of 1976 (see appendix 1),
- 2) The Wild Life (Protection) (Ascension) Ordinance of 1944 and the Wild Life (Protection) (Ascension) Regulations 1967 (see appendix 2)

The Endangered Species (Ascension) Control Ordinance is designed to control exports and imports of endangered species. The Wild Life (Protection) (Ascension) Ordinance prohibits the killing, capturing or taking of any wildlife within Ascension unless under the control of the governor.

NB As yet no nesting beaches or marine habitats are afforded any official protection.

B) Environment Charter for the UK Overseas Territories

On 26 September Ascension Island and Her Majesty's Government signed the Ascension Island Environment Charter (Appendix 3). This sets out guiding principles and commitments for both Ascension Island and the UK Government relating to the management of the environment.

C) International conventions:

The UK's ratification of the following international agreements covering marine turtles has been extended to St Helena and Ascension Island.

- Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
- Convention on Biological Diversity (CBD)
- Convention on Wetlands of International Importance especially Waterfowl Habitat (Ramsar Convention).
- Other international instruments that the UK has not signed which could have future relevance include :
 - Inter-American Convention for Sea Turtle Conservation
 - Memorandum of Understanding under the Convention of Migratory Species Concerning the Conservation Measures for Marine Turtles of the Atlantic Coast of Africa

D) Additional commitments of UK Government

The recent projects undertaken on Ascension, including commissioning this management plan, help to fulfil the obligations of DEFRA (entered into as DETR) and FCO to the following actions of the UK Marine Turtles Grouped Species Action Plan:

“5.1.4, Review current levels and effectiveness of legislative protection of marine turtles in all UK waters, particularly Northern Ireland, and all the UK Overseas Territories, and ensure appropriate protection measures are brought in where gaps are identified by 2005. (ACTION: DETR, EHS, FCO)”

5.5.9, Consider contributing to marine turtle conservation activities of British Overseas Territories through the support of data gathering, collation and exchange. (ACTION: DETR, FCO, NHM)”

and contributes to the following additional action in the same document:

“5.1.6, Provide support, in the form of advice, information sharing, and assistance to build capacity and resist detrimental development, to UK Overseas Territories in order to facilitate the conservation of their marine turtle populations at viable and sustainable levels. (ACTION: DfID, FCO)” (Anon., 1999).

SECTION 4: ASSESSMENT OF POPULATION STATUS

Basic Biology

Although there is probably nesting in all months, the vast majority occurs between December and July each year, peaking in March. The technique most commonly used to assess nesting population size is to count the number of clutches laid in a particular season (Schroeder & Murphy 1999). Although seemingly straightforward, the task of counting nests is however far from trivial when a population lays clutches on many beaches and where the nesting season lasts for many months. In such cases, labour intensive surveys are required, and for this reason there are surprisingly few assessments of population size for some of the largest rookeries in the world.

Assessment of Status

In the first year of this current study all 32 beaches on the island were surveyed as per Mortimer and Carr 1987 (see figure 4). However, in later years some of the more remote nesting beaches hosting trivial proportions were not monitored regularly, instead efforts were concentrated on the more important beaches (Godley *et al.* 2001).

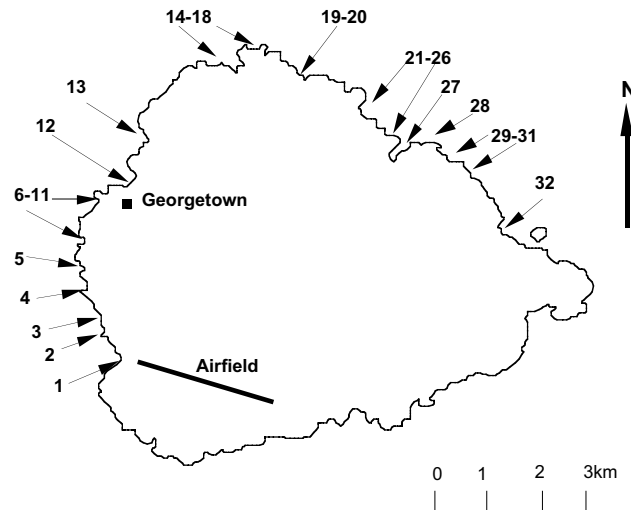


Figure 4. Map of Ascension Island showing 32 beaches (after Mortimer & Carr 1987)

In the 1998/1999 season it was estimated that 13,882 clutches were laid (Godley *et al.* 2001), with a further 13,053 in 1999/2000 and 6,704 in 2000/2001. These results are illustrated in figure 5.

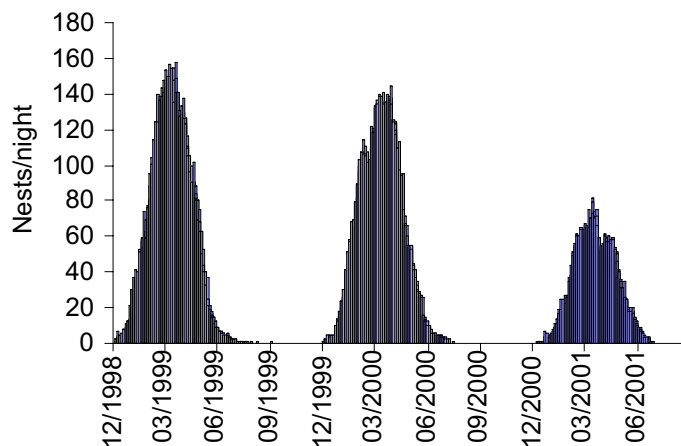


Figure 5. Number of nests recorded in 1998/1999, 1999/2000 and 2000/2001 seasons.

Such inter-annual fluctuations are common in green turtles. Being herbivores, the availability of the food of this species is linked closely to climatic conditions that can vary dramatically (Broderick *et al.* 2001). In addition, as most females of this species nest at variable intervals (often 3-4 years in this population), low nesting years are inevitable. This does reinforce the need however for continued monitoring of this endangered reptile. It will not be until we have data from several more years that we will have a full appreciation of the current status of this population. There is room however for cautious optimism, as all of these years show similar or greater nesting levels than was estimated in the first detailed studies in the 1970's (Mortimer & Carr 1987).

In table 1 we present data for the number of turtle nesting emergences (approximately one third result in nest laying) and the proportion of the total nesting that occurred on each beach for each of the five years that complete nesting surveys were conducted.

Beaches	1976/77	1977/78	1998/99	1999/00	2000/01
1	2793 (15.4)	2195 (18.2)	4500 (12.5)	4696 (13.8)	2378 (14.1)
2-5	1821 (10.0)	1569 (13.0)	5434 (15.1)	7258 (21.4)	2901 (17.2)
6-11	2453 (13.5)	1428 (11.8)	4599 (12.8)	4224 (12.5)	1641 (9.7)
12	3118 (17.1)	1760 (14.6)	9651 (26.8)	8763 (25.8)	5191 (30.7)
14-20	1341 (7.4)	783 (6.5)	2819 (7.8)	1975 (5.8)	918 (5.4)
21-26	976 (5.4)	822 (6.8)	1820 (5.1)	1229 (3.6)	850 (5.0)
27	2703 (14.9)	1469 (12.1)	3216 (8.9)	3088 (9.1)	1833 (10.9)
28	804 (4.4)	420 (3.5)	1172 (3.2)	593 (1.7)	230 (1.4)
29	1743 (9.6)	1191 (9.8)	1986 (5.5)	1324 (3.9)	710 (4.2)
30-32	440 (2.4)	456 (3.8)	839 (2.3)	774 (2.3)	210 (1.2)
Total	18192	12093	36036	33924	16862

Table 1. Estimated number of nesting emergences recorded (and the percentage of total nesting emergences) at each beach in the five years when full monitoring has occurred on Ascension Island. Data from the 1976/77 and 1977/78 seasons were taken from Mortimer and Carr (1987).

These results highlight the global importance of the green turtle nesting colony of Ascension Island; Long Beach, (number 12) Southwest Bay (number 1), and Northeast Bay (number 27) are the three major nesting beaches on the island, receiving between 45-55% of all clutches laid in any given season.

- **Recommendation: Annual monitoring of all major nesting beaches should be continued indefinitely.** Prior to this current project, initiated in 1998, the previous complete survey of the nesting population took place in 1977/78. During the next 20 years only a brief survey was conducted in 1992. It appears that during this intervening period the population has remained stable, if not actually increasing. Without regular monitoring, however, the population might easily have slipped into unchecked decline as has occurred at many marine turtle breeding sites around the world. As green turtles typically exhibit a high degree of inter-annual variation in the nesting numbers there is a particular need for annual monitoring of this species. Such monitoring could be carried out by members of the Ascension Island Turtle Group/Ascension Island Conservation Officer in conjunction with turtle biologists and needs to address the following:
- **Abundance of nesting turtles:** At the end of the fourth consecutive year (August 2002) of intensive monitoring as a result of Darwin Initiative and FCO funding, we will be able to suggest the minimum possible monitoring regime necessary to have meaningful nesting abundance estimates from the counting of tracks in future years. Wardening, funded as part of a developing ecotourism initiative has lead to the formation of the AITG (see **Section 6**) and will not only allow the collection of status monitoring data, but also facilitate the evaluation and amelioration of future potential threats. It is important to note that monitoring efforts should be so designed as that

temporal shifts in seasonality or changes in the relative importance of nesting beaches are assessed.

- **Reproductive success:** In addition to enumerating the number of tracks resulting from adult turtles on the nesting beaches, it is also important to calculate what proportion result in egg laying and whether a sufficient proportion of nests hatch with high success rates.
- **Incubation temperatures:** The phenomenon of Temperature-Dependent Sex Determination (TSD) occurs in all marine turtle species. At approximately 29 °C, a 1:1 male: female ratio is produced. At warmer temperatures more females are produced. Work has shown that there is significant inter-beach variation in temperature of nests (; Broderick *et al.* 2001; Hays *et al.* 1995, 1999, 2001) and it is estimated that the overall sex ratio of hatchling production at Ascension is 75% female (Godley *et al* 2002a). Thus, relatively minor changes in temperature as a result of global warming could yield male deficient sex ratios in the future. This mandates continued monitoring of the sand temperature throughout the season on the major nesting beaches and the timing of onset and duration of the nesting season so that prompt remedial action can be undertaken should male production fall below critical levels.

SECTION 5: THREATS AND RECOMMENDED MANAGEMENT

In an evaluation of the status of the Ascension Island green turtles, Mortimer (1992) listed the following problems:

- 1) Sand mining
- 2) Artificial lighting
- 3) Disturbance by turtle watchers
- 4) Impact of beach huts
- 5) Predation by feral cats

The *Ascension Island Management Plan* (Pickup 1999) lists the following as essential work required to protect marine turtles on Ascension Island;

- 1) Control of invasive vegetation on nesting beaches
- 2) Monitoring of turtle breeding populations
- 3) Establishment of a conservation officer.

The following were classified by Pickup (1999) as of medium priority:

- 4) Restriction on mining of beach sand
- 5) Control of light pollution
- 6) Control of human recreational disturbance
- 7) Eradication of feral cats and control of pet cats
- 8) Continuation of ban on harvest of turtle products

We give an account of all threats and recommended solutions below. This is an exhaustive account given in a systematic manner. Prioritisation as to the most important aspects is given in *Section 1: Executive Summary and General Recommendations*.

5.1 General Habitat Degradation

5.1.1. Mining of Beach Sand

5.1.2. Light Pollution

5.1.3 Threat of Fuel Spill

5.1.4 Construction of Roads

5.2. Threats to Turtles on the Nesting Beach

5.2.1. Stranded Females

5.2.2. Disturbance to Nesting Females

5.2.3 Litter on Nesting Beaches

5.3. Threats to Eggs/Nests

5.3.1. Invasive Vegetation

5.3.2. Increasing Temperatures

5.3.3. Erosion/Inundation by the Sea

5.3.4. Nesting Activities of other Females

5.4. Threats to Hatchlings

5.4.1. Light Pollution

5.4.2. Predation by Cats and Dogs

5.4.3. Predation by Frigatebirds

5.4.4. Predation by Land Crabs

5.4.5. Predation by Fish

5.5. Threats to Adult Turtles in Nearshore Waters

5.5.1. Boating Activity In Clarence Bay

5.6. Threats to Turtles on the High Seas

5.7. Threats to Turtles at the Feeding Grounds

5.1 GENERAL HABITAT DEGRADATION

5.1.1. Mining of Beach Sand

In the past, large amounts of sand have been removed from nesting beaches on Ascension for construction work (Fletemeyer 1986; Mortimer 1986; Mortimer 1992). Although natural cyclical erosion and accretion occurs on the nesting beaches with sand being eroded from one area and deposited in another, it is likely that most of the sediments remain in a limited local “pool”. Removal of sand results in a net loss of sand from the island and at critical levels of loss will undoubtedly result in detrimental effects to turtle reproductive efforts (Shabica 1982). As beaches become narrower, turtles effectively lay closer to the sea putting nests at greater risk of inundation (See **section 5.3.3**). Moreover, as the beach platform is lowered by sand mining the eggs are more susceptible to being drowned in standing water, because they are closer to the level at which water ‘pools’ during periods of heavy ‘roller’ activity. As they become less sandy, beaches may be unable to support nesting or be more likely to have turtles stranded on uncovered rocky outcrops (See **section 5.2.1**). Anecdotal accounts of island residents suggest that the removal of large quantities of sand from Long Beach has resulted in a permanent narrowing and lowering of the beach platform.

Recommendations

- Continuation of the current unofficial moratorium on removal of sand from all beaches on the island.
- Creation of legislation preventing sand extraction in the future.
- Sand for future development should be imported.

5.1.2. Light Pollution

Artificial light cast onto the nesting beaches affects the orientation of both adult and hatchling turtles (Mrosovsky & Kingsmill 1985; Peters & Verhoeven 1994; Salmon & Wyneken 1994; Witherington 1992). Sea turtle hatchlings generally emerge from their nests at night (Mrosovsky 1968). As hatchlings leave the nest to find the sea they are under the influence of several cues that aid their navigation. Principally they are attracted to light, the horizon over the sea being the brightest point in the natural environment when no anthropogenic light exists. The use of beach huts and their associated night time lighting during the hatching season inevitably disturbs hatchlings, as they are attracted to the artificial lights, away from the sea. Hatchling misorientation has been recorded as a result of recreational activity at Southwest Bay, Turtleshell, Long Beach and English Bay. In addition, it has been recorded at Beach 17 by the Power Station and is likely at the POL plant at Catherine Point (Beaches 6-8), which exhibits a high light level.

Adult turtles are also affected by lighting visible from the beach. Nesting females tend to avoid beach sections with bright lights. This has the potential to increase density of nests on beach areas with less artificial lighting. Increased nest density can result in greater nest destruction by nesting turtles themselves, and the increased concentration of nests creates a situation where more nests are susceptible to a single threat, such as predation or tidal inundation. It is worthy of note that a greater proportion of adult turtles have used Long Beach in recent years than in the 1970's (Table 1). This was first noted in a partial survey by Mortimer (1992) and is likely to be the result of the lighting in Georgetown having been changed from white lighting to sodium vapour lamps in 1984.

Photopollution is a major issue in the coastal areas of the SE USA and elsewhere, and consequently significant research and development of suitable lighting systems has been undertaken (Witherington & Martin 1996). A copy of this manual and associated US ordinances on light pollution is housed with the Ascension Island Conservation Officers for consultation. Low-pressure sodium vapour lights (SVL) have been shown to be less attractive to green turtle hatchlings. Thus, one management solution is to replace current incandescent or fluorescent lighting with SVL or “turtle friendly.” lighting. Existing USAF buildings near the shore at beach 1 and 3 have these lights and appear not to cause misorientation.

Recommendations

- Given the relatively low usage of beach huts it is suggested to owners/management that as lights are replaced these yellow lights are used.
- Future planning permission for construction of new buildings or modification of existing structures for commercial or residential use near any nesting beaches should be contingent on suitable lighting being used.
- It is suggested that steps are taken at both the POL and the Power Station to reduce ambient light and regular monitoring for hatchling misorientation is undertaken.
- A light ordinance to be used in conjunction with future planning regulations should be created.

5.1.3 Threat of fuel spill – action plan

Fuel oil for the power station, aircraft and road vehicle fuel all arrive by ocean tanker. Some aircraft fuel is also stored aboard a resident oil tanker that anchors in Clarence Bay (adjacent to Long Beach). Whilst the resident tanker is unlikely to be present in the long term, the threat of fuel spill from tankers, visiting vessels or storage facilities (which are close to the shore) is real. Currently there is no contingency plan in place for action in event of a fuel spill. Given the importance of Ascension Island for sea turtles and seabirds, an elaboration of such a plan and the presence of necessary equipment are viewed as a priority.

Recommendations

- Elaboration of a fuel spill contingency plan for the moored and visiting fuel tankers, marine pipeline, POL (Petroleum Oil & Lubrication) storage depot and associated pipeline and the Power Station.



Photos 5 & 6: The proximity of the POL storage depot and the fuel tanker to nesting beaches.

5.1.4 Construction of roads

Construction of roads and tracks has been carried out behind several nesting beaches (1,3, 6-11,12,14,15). When these are clinker based (Beach 6-8, 12) it results in clinker spilling onto the beach. This has potential of changing the prevailing colour of the beach, increasing sand temperatures to unnatural levels (See **section 5.3.2**).

Recommendations

- No further clinker aggregates should be used on tracks behind beaches.
- The creation, maintenance and any changes to existing routes should be subject to planning legislation.

5.2. THREATS TO TURTLES ON THE NESTING BEACH

5.2.1. Stranded Females

Natural causes

One of the major threats to adult turtles on Ascension Island is the stranding of females on the rocks whilst they endeavour to make their way back to the sea. The main hotspots for stranded females are at Catherine Point near Georgetown (Beaches 6-8), Turtlesell (Beach 2), Porpoise Point (Beaches 21-26) and the English Bay (beaches 14-17) beaches. This is a factor which is likely to be a natural part of the ecology of the species, although unchecked anthropogenic effects could play a role (e.g. sand extraction leading to increased rockiness: see **section 5.1.1**; photopollution leading to misorientation: as per **section 5.1.2**).

In an attempt to reduce the chance of mortality as a result of stranding we have co-ordinated the formation of a network of volunteers that can be contacted to assist females back to the water. By regular checking of key trouble spots at dawn, prompt reporting from the public and the quick reactions of Turtle Wardens, Works and Services, Police and US Base personnel many of these females can be returned to the water. For example in 2001, 29 females were returned to the water and only 3 females died as a result of stranding, significantly less than in previous years.

Anthropogenic causes

Additional turtles are trapped each year among man-made structures in and under the surface of the sand. These are the landward ends of submarine pipes and cables, which as a result of their superficial positioning, the actions of nesting turtles and dynamic processes shaping the beaches are seasonally uncovered. We were informed that the most hazardous pipes have recently been removed by the USAF contractor on Ascension (pers. comm. Major Jim Fisher, USAF Commander) but uncovered cables are still visible on Southwest Bay (beach 1), Turtlesell (beach 2) and at the POL at Catherine Point (beaches 6-8). High seas in late January however uncovered three sets of pipes on Southwest Bay which had been covered by sand and these were promptly removed by the USAF contractors with little if any impact on the nesting beach. Additionally, there is one pipeline on Beach 17 at the Power Station, which may become a hazard if not fully covered. **See photos below:**



Photo 7: Rescuing stranded female



Photo 8: Cable at Turtlesell Beach

**Photo 9:** Pipes at Power Station Beach**Photo 10:** Pipes at Southwest Bay, since removed.

To give an international perspective on these problems it is worth considering how they would be dealt with in the USA. In Florida, USA (where green turtles also nest and are protected under the Endangered Species Act), if an existing structure has caused “take” due to a problem that was not previously documented or that was previously not an issue at the site in question, the entity who owns the land that the structure is on (and in most cases the owner of the structure itself) would be required to enter into a Section 7 consultation with USFWS to determine the best methods of minimizing future take and implement an incidental take permit (ITP). The repercussions of causing the death of a green turtle would then depend on what was authorized in the ITP issued by USFWS. If there was violation of the ITP, or there was knowledge that the take would result and an ITP wasn't enacted, penalties would be applicable. Under Florida law a person may be imprisoned for a period of up to 60 days or fined up to \$500 plus an additional penalty of \$100 for each unit of marine life (turtle) taken or destroyed. Under the ESA, any person who knowingly violates any provision of the Endangered Species Act may be assessed a civil penalty of up to \$25,000 or criminal penalty of up to \$100,000 and up to one year imprisonment.

Recommendations

- The Stranding Network should be continued, co-ordinated by Ascension Island Turtle Group, Ascension Island Society of the Prevention of Cruelty to Animals and Ascension Island Government Conservation Officer.
- Any future structures in or around nesting beaches should be subject to environmental impact assessment.
- Construction/removal of structures should be during the period when nests are least likely to be incubating (September to October)
- All structures should be firmly anchored and flush with the bedrock whilst on land and in the near shore environment to the 30m isobath.
- It is preferable that structures are laid using directional drilling.
- Given the stringency of US Federal regulations regarding such “take” issues, the US Air Force should be urged to ensure that all existing cables can not cause entanglement and threat of mortality to endangered marine turtles.
- The pipeline at beach 17 by the power station should be more completely covered. All Island organisations should be urged to remove all their effete structures from nesting beaches.

5.2.2. Disturbance to nesting females

If disturbed during the early phases of nesting, females may abandon their efforts and return to the sea. At Ascension, disturbance of nesting females is low as few people visit the

beaches for reasons other than turtle watching and Island residents are relatively well aware of how to behave when turtle watching. There has been a successful outreach programme where public meetings have been held, numerous press articles have been published and field visits have involved all children on the island through the school or youth groups.



Photos 11 & 12: Scouts and Guides assist with nest excavations

Occasionally however, visitors to the island, sometimes unwittingly, cause disturbance of nesting females by their behaviour on the beach. Long Beach is the main venue used for the observation of turtles. Along the back of the beach runs a rough track which leads to the Saints' Club Beach Hut, the track is often used by people in motor vehicles who come down to the beach looking for turtles. This presents a threefold threat:

1. Lights from the vehicles disturb nesting females.
2. As turtles often cross the track there is a collision hazard
3. Hatchling turtles can also be attracted away from the sea toward car headlights.

Recommendations

The beach usage and absolute level of disturbance is currently low and does not mandate draconian measures. As there are many nesting females, for much of the season disturbance is limited to the early part of the night. There are several steps, however, which should be taken to improve the current situation.

- Closure of the road at night: We proposed that this track be closed to vehicles at night to prevent these threats. The issue was raised at a public meeting and the Administrator and the Police agreed at which point the road would be closed. A gate with accompanying signs has now been produced thanks to the donation of materials by the RAF and expertise and labour by SERCO. Management of the barrier is still an issue that needs to be resolved, but it is hoped that this will be achieved for the 2001/2002 nesting season.
- Continued Improvement of Public Awareness: An informational leaflet (see photo 19 below) produced as part of the Darwin project is in its second printing (sponsored by FCO and Cable and Wireless). This details rules of conduct as pertaining to sea turtles and is widely distributed at all ports of entry and should contribute to minimisation of disturbance.
- Through the wardening system set up under the current FCO sponsored project (see **Section 6**), visitors are given an informal slide/video show about the turtles and then accompanied to the beach for turtle watching. Through perpetuation of this scheme, accidental unintentional disturbance will be reduced.



Photo 13: Gate and sign at Long Beach.



Photo 14: Turtle track crossing road at Long Beach.

5.2.3 Litter/debris on nesting beaches

The nesting beaches of Ascension, compared to many other areas of the world, are remarkably free from litter but given the size of the local human population, some of the beaches are nevertheless subject to quite a high level of domestic refuse left by beach users. Beaches most used by people are sequentially subject to cleanup campaigns and the environmental damage is likely little more than aesthetic. Anthropogenic debris including unnaturally situated lava boulders are however likely to be a problem at several sites; beach 4 (Payne Point), beach 12 (Long Beach) and Beach 17 (Power Station) In 2001, the USAF contractor requested tasking for a clean-up of beach 4 but it was refused by fiscal authorities. This leaves significant amounts of debris in the sand column, which could cause obstruction or even damage to nesting turtles.

Recommendation

- Continued environmental awareness,
- A litter collection service should be instigated at the most densely used beaches.
- USAF should instruct contractors to fully clean the beach area of Payne Point to greater than one metre deep, to avoid potential impact on sea turtles or their nests.
- Merlin should remove any debris from beach 17 at the Power Station.
- All debris on Long Beach should be removed, however responsibility for debris may be difficult to assign.
- Ongoing surveillance is necessary to highlight structures that become sequentially uncovered.

5.3. THREATS TO EGGS/NESTS

5.3.1. Invasive vegetation

Mexican thorn bushes (*Prosopis juliflora*) on the island pose a problem and can rapidly spread across the upper parts of beaches. The bushes themselves can act as an obstacle to adult and hatchling turtles. In addition, their root systems will remove moisture from the sand and can directly invade incubating eggs. Pictured below are the last few thorn trees removed from a cove at English Bay.

Continuing from the work of several island residents, a programme of removing all bushes and vegetation from the beaches has been undertaken during the FCO sponsored project. All nesting beaches are now free of bushes and their root systems have been treated to prevent new growth. Minimal work will now be needed to maintain control of this pest species with respect to marine turtles. This is something however that needs constant attention but would be easily dealt with if one or two days every 6-8 weeks were dedicated to removing all young plants from the beaches.



Photo 15: Scouts removing thorn trees



Photo 16: Beach cleared of vegetation.

Recommendations

- Beaches are kept clear of Mexican thorn trees

5.3.2. Increasing temperatures

The sex of hatchling marine turtles is determined by temperature (Temperature-dependent sex determination/TSD). At temperatures above 29°C a greater proportion of a clutch of eggs will be female and at lower temperatures more males are produced. Studies at Ascension suggest a female biased sex ratio of the order of 75% female (Godley *et al.* 2002a). With the prospect of an increase in temperatures resulting from global warming a real possibility is that an even greater proportion of females will be produced. At some other breeding sites turtles may shift their nesting location to cooler beaches but at Ascension this would not be possible. Alternatively females may nest at cooler times of the year and thus shift the nesting season. Whatever the outcome of global warming this situation needs to be continually monitored. It is worthy of note that changing the colour of beaches by the addition of clinker used to make roads behind nesting beaches may have the potential to exasperate this situation (see **Section 5.1.4**)

Recommendations

- Monitoring of sand/nest temperatures should be continued in the future so as to facilitate recognition of any incipient problem and to feed results into political decision-making processes addressing climate change.
- There should be a cessation of road making using clinker behind important nesting beaches.

5.3.3. Erosion/Inundation by the Sea

Many nests are lost as a result of erosion/inundation by waves from proximate storms or the rollers generated at distant sites. A small level of such losses is to be expected as part of natural processes, however sand removal (See **section 5.1.1**) may increase this threat with the sand platform being unable to withstand the waves leading to inundation of the whole beach. This occasionally occurs on Long Beach and is possibly the result of past sand mining as observed by Mortimer (1992) at this site. Current hatching success seems to be high however as most nests incubate at times when few of these inundation events occur.

Recommendations

- Continued monitoring should highlight any emerging problems but it should be noted here that the prohibition of sand removal from beaches should be continued with supporting legislation to embody this in law. Should the population be in decline thought might be given to increasing hatching success through the transplantation or relocation of “at risk” nests.

5.3.4. Nesting Activities of other females

The high density at which clutches of eggs are laid on the beaches of Ascension make it inevitable that some clutches will be excavated by other females as they dig or camouflage their nests.

Recommendations

- As this is a natural phenomenon resulting from high nesting densities there is little that can be recommended at the current time. This is a factor, however, which would be worsened by sand extraction, artificial lighting and any other factors which result in the effective shrinkage of the available nesting habitat. Thus, continued protection of current nesting habitats is a priority.

5.4. THREATS TO HATCHLINGS

5.4.1. Light Pollution

As detailed above hatchlings are attracted to manmade light and misorientation can occur on land (see **section 5.1.1**). It is also possible that lights from anchored vessels in Clarence Bay could aggregate hatchlings at night. This would leave them open to increased predation risk from fish that aggregate under vessels.

Recommendations

- Preliminary research is undertaken to investigate the possibility of hatchling aggregation
- Ships are asked to keep their lights to a safe minimum, with preference to sodium vapour lamps.

5.4.2. Predation by Cats and Dogs

Although there is evidence that both domestic and feral cats and dogs kill hatchlings, the number of hatchlings killed is likely to be low. This unnatural mortality will be reduced as part of the current FCO funded RSPB/AIG cat eradication plan currently underway.

5.4.3. Predation by Frigatebirds

Frigatebirds (*Fregata aquila*) take many hatchlings from the beaches and at sea, however this predation is natural and although may appear severe, frigatebirds will only affect the very small proportion of those hatchlings that emerge at dusk or dawn.

5.4.4. Predation by Land Crabs

On some beaches on the north east of the island land crabs (*Gecarcinus lagostoma*) descend at certain times of the year, when this coincides with the hatching season, the crabs will take hatchlings. As with the frigatebirds this predation is part of the natural food chain and not a matter of concern at the present time. With increased vegetation of the island, it is conceivable that land crab populations may increase but it is unlikely that they could reach a level to be of great concern to the reproductive success of the turtles.

5.4.5 Predation by fish

Ascension's waters host a diversity and abundance of fish, many of these are predatory and have potential as hatchling predators, certainly grouper caught by local fishermen during the hatching season often contain hatchlings. This is undoubtedly a natural part of the ecology but should predatory fish be artificially elevated or concentrated this could conceivably lead to excessively high predation rates. Although no quantitative studies have been carried out to date the possibility that dumping of food wastes in inshore waters could cause such perturbations in the local ecology should be considered. Contractors to the USAF currently dump food wastes in large quantities at Payne Point.

Recommendation

- It is recommended that a study be undertaken to confirm which fish species take hatchlings and the likely impact of the USAF food dumping at Payne Point.

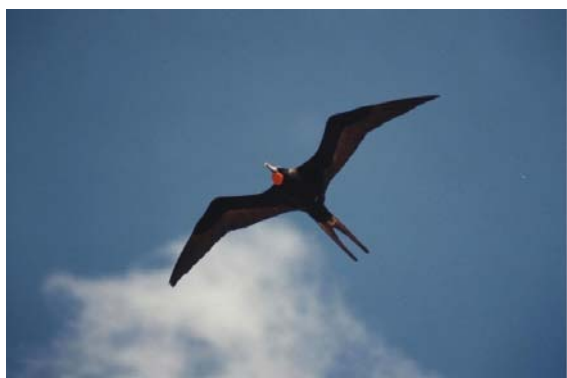


Photo 17: Ascension Island Frigatebird



Photo 18: USAF food dumping site at Payne Point.

5.5. THREATS TO ADULT TURTLES IN NEARSHORE WATERS

5.5.1. Boating activity in inshore waters

Significant aggregations of turtles are found in the inshore waters throughout the breeding season and particularly in Clarence Bay, off Long Beach and to a lesser extent in Southwest Bay and Northeast Bay. This is especially true during the mating season (November-March) (Godley *et al.* 2002a; Hays *et al.* 2001). Mating turtles often pair at the surface and all must surface regularly to breathe, thus placing them at risk from being hit by boats. In addition, females nest several times during the season and between nests they rest in nearshore waters spending most of their time in shallow waters (<30m; Hays *et al.* 1999; 2000; Mortimer & Portier 1989)

Recommendations

- Although there are few high-powered boats in use at Ascension a speed limit should be considered in key areas within a set distance of the shore. Should tourism increase, a survey would be necessary to properly instigate any legal framework

but at present, all high-speed boat operators could be requested to idle within 500m of shore and stay out of Clarence Bay, Southwest Bay and Northeast Bay.

5.6. THREATS TO TURTLES ON THE HIGH SEAS

The turtles which breed at Ascension traverse the Atlantic from feeding grounds in Brazil crossing many hundreds of kilometres of international waters (Luschi *et al.* 1998). Whilst very difficult to control what happens in the high seas the level of illegal fishing and its effects on the ecology of the season within the EEZ of Ascension Island and St Helena are not known. It is noted here that as long as there is no monitoring and enforcement of fishing methods and bycatch that a possible threat to marine turtles in the migratory phase exists.

Recommendation

- Institution of surveys and monitoring of fishing effort within the EEZ of Ascension Island and St. Helena. Contacts and networks should be established with fisheries and fishermen, to facilitate the sharing of information regarding marine turtles and their accidental capture in the high seas.

5.7. THREATS TO TURTLES AT THE FEEDING GROUNDS

Although adults from the Ascension population are thought largely to forage in Brazilian coastal waters (Carr 1975; Luschi *et al.* 1998), the life cycle of juveniles involves extended periods in pelagic ocean current systems (Musick & Limpus 1997) and they probably share coastal foraging areas with juveniles from other populations (Lahanas *et al.* 1998). This life cycle may expose this population to a number of fisheries. Although small-scale traditional fisheries for marine turtles once existed in Brazil (Pritchard 1976), they are no longer in operation (Marcovaldi & Marcovaldi 1999), and all marine turtle species are legally protected. Turtles are, however, still incidentally caught in fishing gear. A national programme of marine turtle conservation now exists in the Brazilian feeding grounds where the mortality resulting from catch by artisanal fisheries at some sites has been reduced (Marcovaldi *et al.* 1998). Unquantified bycatch and consumption however do still exist (pers. comm. Eduardo Lima, TAMAR)

Recommendation

- The British Government support Brazilian efforts to understand and reduce marine turtle capture. This would involve further studies of marine turtle habitat usage, an extensive survey of bycatch of marine turtles including genetics analyses to confirm the genetic makeup of stocks subject to bycatch which will build on that already undertaken by Projecto TAMAR in Brazil.
- The Brazilian Government be encouraged to fulfil its obligations under international conservation agreements and domestic conservation legislation

SECTION 6: DEVELOPMENT OF INFRASTRUCTURE FOR ECOTOURISM INITIATIVE AND ONGOING TURTLE CONSERVATION EFFORTS

As a major step towards the protection of marine turtles and increasing their importance on the island, one of the main aims of the current Darwin/FCO turtle project was to establish and leave in place an infrastructure for ecotourism. The definition we would use would be that ecotourism related to sea turtles in this case should be sustainable, low impact turtle watching which at the same time provides a venue for conservation education and assists in the generation of revenue needed for monitoring and conservation. The following achievements have been made to date:

Leaflets

Turtle information leaflets developed as part of the Darwin Initiative Turtle Project and produced by the FCO with assistance from Cable & Wireless are now distributed to all persons arriving on the island by the Police at each port of entry. These describe the biology, detail how to treat turtles and also give information as to how visitors can participate in a wardened turtle tour (below).



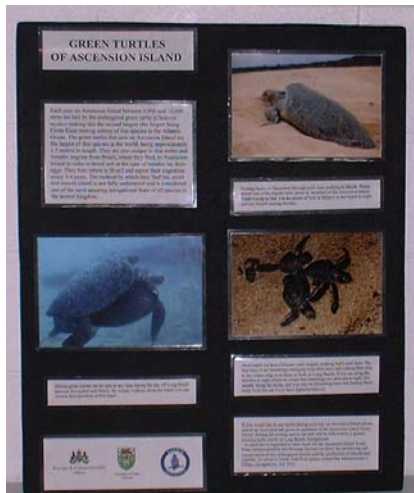
Photo 19: Leaflet produced



Photo 20: Turtle team 2001.

Display Boards

A display board is now in place at the Airhead. This is intended to provide information for visitors on arrival to the island on how to see mating, nesting and hatching turtles. It is possible for an additional copy of this display board to be placed at the Pierhead, the only other port of entry to the island, for the arrival of any passenger ships. A display board is also in place at the Turtle Ponds in Georgetown. This has historic information on the ponds and trade in turtles from Ascension Island.



Photos 21 & 22: Display Boards at Airhead and Turtle Ponds

Ascension Island Turtle Group (AITG)

The AITG has now been set up under the auspices of the Heritage Society. This is an all-inclusive group of resident volunteers and hourly paid part-time workers. The role of AITG is to carry out monitoring and conservation activities related to turtles including:

Beach monitoring

Collaboration with scientific research

Direct Action: Co-ordination of stranding network, clearing of thorn trees

Education: school visits, turtle wardening, the instigation of a Conservation Centre, designing and production of a web site as part of its umbrella organisation, the Heritage Society <<http://www.heritage.org.ac>>.

Turtle Wardening

A slide projector and screen have been purchased by the project and a set of slides with a script produced. This is complemented by a short educational video produced by the project. The show is now presented several times weekly by Turtle Wardens. Following the talk the group is taken down to Long Beach to watch turtles. A night vision scope has been purchased to aid turtle watching with minimum disturbance. Places on the slide show/tour can be booked via the Administrators Office. An advert now runs each week in the Islander Newspaper and has been inserted into the turtle leaflets distributed at the ports of entry. A fee of £2.50 is currently charged, with the aim to allow this venture to become self-sufficient.

Conservation Centre

The old Georgetown Bakery has been allocated to the AITG/Turtle Wardens and RSPB and AIG Conservation Officers for use as a Conservation Centre. Talks will now be conducted at this venue which can also house exhibits, educational material and merchandise which can be sold to help sustain conservation efforts.

Recommendations

It is recommended that these initiatives be encouraged to grow, thus facilitating several positive benefits including:

- Continued monitoring of the population status
- Gathering of data regarding threats
- Direct Action: Turtle rescue and Plant control
- Increased Public Participation and Awareness

THE FUTURE?

Ascension Island is entering into times of extreme change. This management plan will help Ascension Island Government put into place legislation and management that will safeguard and improve the status of Ascension Island green turtles. The presence of on-Island Conservation officers and the AITG equipped with sufficient knowledge and infrastructure to ensure this is carried out bodes well for this population.

SECTION 7. BIBLIOGRAPHY

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APPENDIX 1: ENDANGERED SPECIES (ASCENSION) CONTROL ORDINANCE
(Ordinance A2 of 1976)

AN ORDINANCE TO PROVIDE FOR THE CONTROL OF CERTAIN EXPORTS FROM, AND IMPORTS TO, ASCENSION.

Enacted by the Governor.

Commencement

[31 May 1976]

Short title

1. This Ordinance may be cited as the Endangered Species (Ascension) Control Ordinance.

Power to forbid certain imports and exports

2. The Administrator may, and if so directed by the Governor shall, from time to time by Order specify

- (a) any live or dead animal;
 - (b) any live or dead plant; or
 - (c) any article derived from any animal or plant;

and may forbid the import or export of the same.

Guidance in making specifications

3. The specification made under section 2 of this Ordinance shall, so far as is practicable and necessary, reflect the provisions of the Convention on International Trade in endangered Species of Wild Fauna and Flora, 1973.

Terms of licence issued by Administrator

4. (1) Any Order made under section 2 shall not apply to the importation or exportation of anything therein referred to under and in accordance with the terms of a licence issued by the Administrator.

(2) A licence issued under subsection (1) may be to any degree general or specific, may be expressed to be valid for such period as may be stated in the licence and may be modified or revoked at any time by the Administrator.

(3) A person who, for the purpose of obtaining, whether for himself or another, the issue of a licence under subsection (1)—

- (a) makes a statement which he knows to be false in a material particular,
 - (b) furnishes a document or information which he knows to be false in a material particular, or
 - (c) recklessly makes a statement which is false in a material particular,

shall be guilty of an offence and shall be liable on conviction thereof to a fine not exceeding £100 for a first offence and to a fine not exceeding £500 for a second or subsequent offence.

Offences

5. Any person who fails to comply with or contravenes any of the provisions of this Ordinance or any subsidiary legislation made hereunder shall be guilty of an offence and upon conviction shall be liable to a fine not exceeding £500 or a term of imprisonment not exceeding two years or to both such imprisonment and fine.

Offences by Company; etc

6. Where any offence under this Ordinance is committed by a company, firm or other association of individuals whether incorporated or not, every director and officer of the company, every partner and officer of the firm, and every member and every person concerned in the management of the affairs of the association, as the case may be, shall severally be liable to be prosecuted and punished for the offence, unless the act or omission constituting the offence took place without his knowledge, consent or connivance.

APPENDIX 2: WILD LIFE (PROTECTION) (ASCENSION) ORDINANCE
(Ordinance 2 of 1944 and Legal Notice 3 of 1967)

AN ORDINANCE TO PROTECT WILD LIFE IN ASCENSION.

Commencement

[12 April 1944]

Short title

1. This Ordinance may be cited as the Wild Life (Protection) (Ascension) Ordinance.

Interpretation

2. In this Ordinance, unless the context otherwise requires—

“Dependency” means the Dependency of Ascension, and the territorial waters thereof;

“wild life” includes all beasts, birds, reptiles, and insects, and the young and eggs thereof.

Regulations

3. The Governor may make regulations prohibiting or controlling the killing, capturing, or taking, of any wild life within Ascension. (*Amended by L.N. 3 of 1967*)

Offences

4. Any person who acts in contravention of, or fails to comply with, any regulation made under this Ordinance, or acts in contravention of, or fails to comply with, the conditions of any licence issued or authority granted under or in pursuance of this Ordinance, shall be guilty of an offence against this Ordinance.

Penalties

5. Any person who commits an offence against this Ordinance shall be liable on summary conviction to a fine not exceeding £50, and in the case of a second or any subsequent offence, in addition to such fine, to imprisonment with or without hard labour for a term not exceeding three months.

Forfeitures

6. Where any person has been convicted of an offence against this Ordinance any wild life or product thereof which has been the subject of such conviction shall be forfeited, and the court may, in addition to any other penalty that may be imposed, order any firearms, machine, instrument, apparatus, article or material which has been used in the commission of the offence to be forfeited also.

WILD LIFE (PROTECTION) (ASCENSION) REGULATIONS
(Legal Notices 18 of 1944 and 3 of 1948)

Short title

1. These Regulations may be cited as the Wild Life (Protection) (Ascension) Regulations.

Licence

2. (1) Any person desiring to kill, capture or take any of the wild life named in the Schedule to these Regulations shall apply to the Administrator for a licence stating the purpose for which the wild life is required, and giving such other particulars as the Administrator may require.

- (2) The Administrator may in his discretion grant or refuse the licence applied for, or may grant a licence on terms and conditions to be specified therein.

Penalty

3. Any person who kills, captures, takes or wilfully injures any wild life which is named in the Schedule to these Regulations, or has in his possession any such wild life or the product thereof except under the authority of a licence issued by the Administrator, and in accordance with the terms and conditions stated in such licence, shall be guilty of an offence against these Regulations.

SCHEDULE

Donkeys.

Goats.

All birds and the eggs and plumage thereof except domestic fowls.

Frogs and frog spawn.

Lizards and lizard eggs.

Turtles and turtle eggs.

APPENDIX 3: ASCENSION ENVIRONMENT CHARTER

Guiding principles

for the UK government, for the government of [*our territory*] and for the people of [*our territory*].

- 1.) To recognise that all people need a healthy environment for their well-being and livelihoods and that all can help to conserve and sustain it.
- 2.) To use our natural resources wisely, being fair to present and future generations.
- 3.) To identify environmental opportunities, costs and risks in all policies and strategies.
- 4.) To seek expert advice and consult openly with interested parties on decisions affecting the environment.
- 5.) To aim for solutions which benefit both the environment and development.
- 6.) To contribute towards the protection and improvement of the global environment.
- 7.) To safeguard and restore native species, habitats and landscape features, and control or eradicate invasive species.
- 8.) To encourage activities and technologies that benefit the environment.
- 9.) To control pollution, with the polluter paying for prevention or remedies.
- 10.) To study and celebrate our environmental heritage as a treasure to share with our children.

Commitments

The government of the UK will:

- 1.) help build capacity to support and implement integrated environmental management which is consistent with [*our territory*'s] own plans for sustainable development.
- 2.) assist [*our territory*] in reviewing and updating environmental legislation.
- 3.) facilitate the extension of the UK's ratification of Multilateral Environmental Agreements of benefit to [*our territory*] and which [*our territory*] has the capacity to implement.
- 4.) keep [*our territory*] informed regarding new developments in relevant Multilateral Environmental Agreements and invite [*our territory*] to participate where appropriate in the UK's delegation to international environmental negotiations and conferences.
- 5.) help [*our territory*] to ensure it has the legislation, institutional capacity and mechanisms it needs to meet international obligations.
- 6.) promote better cooperation and the sharing of experience and expertise between [*our territory*], other Overseas Territories and small island states and communities which face similar environmental problems.
- 7.) use UK, regional and local expertise to give advice and improve knowledge of technical and scientific issues. This includes regular consultation with interested non-governmental organisations and networks.
- 8.) use the existing Environment Fund for Overseas Territories, and promote access to other sources of public funding, for projects of lasting benefit to [*our territory*'s] environment.

- 9.) help [*our territory*] identify further funding partners for environmental projects, such as donors, the private sector or non-governmental organisations.
- 10.) recognise the diversity of the challenges facing Overseas Territories in very different socio-economic and geographical situations.
- 11.) abide by the principles set out in the Rio declaration on environment and development (See Annex 2) and work towards meeting International Development Targets on the environment (See Annex 3).

The government of [*our territory*] will:

- 1.) bring together government departments, representatives of local industry and commerce, environment and heritage organisations, the Governor's office, individual environmental champions and other community representatives in a forum to formulate a detailed strategy for action. (See Annex 1).
- 2.) ensure the protection and restoration of key habitats, species and landscape features through legislation and appropriate management structures and mechanisms, including a protected areas policy, and attempt the control and eradication of invasive species.
- 3.) ensure that environmental considerations are integrated within social and economic planning processes; promote sustainable patterns of production and consumption within the territory.
- 4.) ensure that environmental impact assessments are undertaken before approving major projects and while developing our growth management strategy.
- 5.) commit to open and consultative decision-making on developments and plans which may affect the environment; ensure that environmental impact assessments include consultation with stakeholders.
- 6.) implement effectively obligations under the Multilateral Environmental Agreements already extended to [*our territory*] and work towards the extension of other relevant agreements.
- 7.) review the range, quality and availability of baseline data for natural resources and biodiversity.
- 8.) ensure that legislation and policies reflect the principle that the polluter should pay for prevention or remedies; establish effective monitoring and enforcement mechanisms.
- 9.) encourage teaching within schools to promote the value of our local environment (natural and built) and to explain its role within the regional and global environment.
- 10.) promote publications that spread awareness of the special features of the environment in [*our territory*]; promote within the territory the guiding principles set out above.
- 11.) abide by the principles set out in the Rio declaration on environment and development (See Annex 2) and work towards meeting International Development Targets on the environment (See Annex 3).