Status of Birds in the Marine and Coastal Environment of the Nairobi Convention Area: Regional Synthesis Report

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Foreword

We live in very challenging time: a time of rapidly degrading coastal and marine environment and a growing understanding of the linkage between human development and the environment. Historically, governments have developed policies and enacted laws relating to environmental protection centered on species protection, or reducing the level of pollution entering rivers and oceans. This approach has been successful at load reduction, but the greatest challenge has been the inability to link localized changes in chemical emissions or habitat loss in one region to regional or ecosystem wide health.

With only 0.5% of the world's seas under any form of protected area designation, the governments of the western Indian Ocean region prudently adopted the Convention for the protection and management of the marine and coastal environment in the western Indian Ocean and several protocols, including a protocol concerning protected wild fauna and flora. The objective of the Nairobi Convention is "to prevent, reduce and combat pollution of the Convention area and to ensure sound environmental management of natural resources using the best practicable means at the contracting parties disposal. The aim is to ensure that the people of the region prosper from a healthy Western Indian Ocean. On the other hand the protocol on protected areas, wild fauna and flora, is more specific and it encourages the Contracting Parties to establish a comprehensive network of Marine Protected Areas for the protection of coastal and marine biodiversity by identifying and prioritizing ecosystems that may require protection.

It is in this regard that the Nairobi Convention and BirdLife Africa Secretariats deployed their range of comparative advantages and expert networks to review the extend to which marine and coastal birds are protected with an aim of using birds as indicators of ecosystem health. The use of birds as indicators takes into account the fact that, birds are integral components of ecosystems. They forage over large geographic areas and they live in almost every type of environment and are at the top of the food chain, therefore they are vulnerable to accumulating chemicals.

Understandably, ecosystems are usually so complex that no single indicator can address all concerns. Nevertheless, the status of different species of birds can give an indication of whether the system is healthy or otherwise, and a study of birds is useful to gain an understanding of ecosystems health. Since a fully diverse ecology is needed to support a healthy number and range of bird species, a lower than expected number or range of species in an environment clearly indicates a lower ecological diversity.

The regional synthesis report is a product of extensive consultations between the Nairobi Convention and BirdLife Africa Secretariats, government institutions, academia, and stakeholders in identifying and proposing priority site for designation as Important Bird Areas (IBAs). The regional synthesis report was preceded by national status reports of birds and their habitats in each of the participating country.

This report on the "Status of birds in the marine and coastal environment of the Nairobi Convention Area" is a major contribution to the implementation of Contracting Parties decision that calls upon each party to recognize or designate important bird areas in their respective territories as a tool for conservation of marine and coastal ecosystems, and use information on birds as indicators of ecosystem health.

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Table of contents

List of Figures

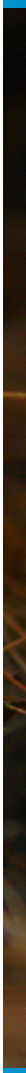
List of Tables

Sooty terns and Common noddies, Comoros (© Ross Wanless)

Acronyms and Abbreviations

ABNJ	Areas Beyond National Jurisdiction
ACLME	Agulhas Current Large Marine Ecosystem
AEWA	African-Eurasian Waterbird Agreement
CBD	Convention on Biological Diversity
CHM	Clearing House Mechanism
CMS	Convention on Migratory Species
COP	Conference of the Parties
EAME	East African Marine Ecoregion
EBA	Endemic Bird Area
EBSAs	Ecological and Biological Significant Areas
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ENSO	El Niño Southern Oscillation
GEF	Global Environment Facility
GHG	Greenhouse gases
FAO	Food and Agriculture Organisation
HWM	High water mark
IAS	Invasive Alien Species
IBA	Important Bird Area
ICM	Integrated Coastal Management
ICRAN	International Coral Reef Action Network
ICZM	Intergrated Coastal Zone Management
IOTC	Indian Ocean Tuna Commission
ISSG	Invasive Species Specialist Group
ITCZ	Inter-tropical Convergence Zone
IUCN	International Union for the Conservation of Nature
MEAs	Multilateral Environmental Agreements
MPAs	Marine Protected Areas
NBSAPs	National Biodiversity Strategies and Acttion Plans
NGO	Non-Governmental Organisation
NTF	National Task Force
RFMO	Regional Fisheries Management Organisation
RLI	Red List Index
RSAPs	Regional Strategics and Action Plans
SCLME	Somali Current Large Marine Ecosystem
SEA	Strategic Environmental Assessment
SEC	South Equatorial Current

SST	Sea Surface Temperature
SWIOFC	South West Indian Ocean Fisheries Commission
UNEP	United Nations Environment Programme
WIO	Western Indian Ocean
WIOMSA	Western Indian Ocean Marine Science Association
WWF	World Wide Fund for Nature



White-tailed tropic bird, Seychelles (© Ross Wanless)

Executive Summary

The Western Indian Ocean (WIO) region is recognised as a global biodiversity hotspot and is one of the least ecologically disturbed areas of the world. The high biodiversity in the WIO and its broad array of habitats, both in the coastal and marine environment, are however under increasing pressure from burgeoning coastal populations. Over 40 million people live in the coastal zone of the WIO, and signs of overexploitation and unsustainable conversion of coastal habitats for use such as agriculture, aquaculture, port expansion and urban development are becoming increasingly obvious.

The Nairobi Convention for the protection of the marine and coastal environment was signed in 1985 to, inter alia, protect and guide the sustainable development of marine and coastal environments of the WIO region. Ten countries in eastern Africa, southern Africa and the Islands States of the western Indian Ocean are signatories to the Convention. The Convention has three protocols that provide regional frameworks for protecting critical sites and vulnerable fauna and flora. Annex II of the Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region documents endangered wildlife in the region, including a list of important bird species. This report aims to update this species list and evaluate the status of birds and their habitats in the region.

The WIO region is a biodiversity hotspot for a wide variety of organisms such as coral reefs, mangroves, marine mammals and sea turtles. The WIO supports populations of the globally endangered dugong and is the region where the coelacanth was first discovered. The northern (Somalia and northern Kenya) and southern (western coast of South Africa) coasts are characterised by cool, nutrient-rich waters and high planktonic activity. The marine shallow-water environment of the central East African coast is dominated by highly diverse coral reef systems associated with warm, low-nutrient waters. Along this part of the coast, mangroves, coral reefs and seagrass meadows are important and productive areas which support a diversity of life and provide food and other resources to coastal communities. They are also important foraging and nesting sites for birds.

Birds are a vital part of the world's biodiversity and are present in almost all habitats worldwide. While birds themselves are important conservation priorities, conserving their habitats will also help in protecting many other species and the wider ecosystem. Protecting a network of sites that are important for birds will also protect other non-avian biodiversity. In this way, birds are "umbrella" species for conserving wider ecosystems. The marine and coastal environment of the WIO region supports a high diversity and large numbers of coastal birds and seabirds. Many coastal species (including shorebirds) are Palearctic migrants to the region and rely on the productive foraging areas in mangroves and mudflats. Many of the WIO's seabird species occur in great numbers in three zones. Tropical waters are dominated by frigatebirds, tropicbirds, terns and boobies, while further south the neritic waters of South Africa are home to several near-endemic species. The more temperate, pelagic waters are dominated by albatrosses and petrels that travel to these productive waters to feed.

The report compiles known information on birds for the purpose of conserving birds and the wider ecosystems in the WIO region. It highlights species and habitats that are most in need of conservation to guide decision-makers and conservationists on where to distribute scarce funding and human capacity. Potential marine Important Bird Areas (IBAs) are also highlighted in this report, being important sites for protection of birds and wider ecosystems.

The specific goal of this regional synthesis report is to provide an objective and scientific basis for reviewing the bird list in the Protocol Concerning Endangered Wild Fauna and Flora in the Western Indian Ocean Region, which in its current form has many gaps. The report also provides information on the status of birds and the key habitats in the region, including the status of coastal and marine ecosystems in the WIO region. Using the information on the status of coastal and marine ecosystems in the WIO region, the synthesis has identified potential areas that can be designated as Important Bird Areas (IBAs) in the region, which could be candidates for increased formal protection.

The regional synthesis report was preceded by the development of national reports by a group of experts in each of the Contracting Parties. These national reports listed important bird species, sites and threats within the respective countries. The regional synthesis report brings together the information contained in the national reports and provides an overview of the status of birds in the WIO region. The regional synthesis report presents a priority list

of bird species of conservation concern requiring some form of management, based on those listed by the individual countries. The priority list of bird species of conservation concern was compiled by scoring the species based on their conservation status, dependence on marine or coastal environments, population trends and population numbers in the region.

The final list consists of 108 species that are of conservation concern; half of them are globally listed as being Critically Endangered, Endangered or Vulnerable, according to the International Union for the Conservation of Nature (IUCN) Red List of species. Many bird species in coastal forest habitats are at risk of extinction, as are those that use the open ocean. Many species that use mangroves are also listed. A large number of species on the priority list have decreasing population trends, even those that are categorised as Least Concern on the Red List. The overall rate of bird biodiversity loss is stable, but this is because the worsening conservation status of some species in the region has been offset by improvements in the status of other species, especially in Mauritius and Seychelles. These results highlight the importance of monitoring programmes, even for species considered "common", which will pick up small changes that may herald the start of large scale changes in the ecosystem.

The main threats facing the listed bird species include, Invasive Alien Species (IAS), agricultural expansion and climate change. IAS affects a large proportion of seabirds at their breeding colonies and can cause massive breeding failures. Agricultural expansion and destruction of habitats for economic development, although affecting fewer species, has a higher impact on a greater proportion of species in the region. Biological resource use is also a major threat to birds in the region, either directly, through the use of birds themselves, or indirectly through habitat destruction due to logging and bycatch of seabirds due to fishing activities. Underlying these specific threats is a lack of national capacity and regional cooperation to enforce environmental regulations.

The effect of climate change on birds in the WIO region was examined. The information on the impacts of climate change on WIO birds is limited. However, it is becoming clearer that species with specific prey and habitat requirements will be the worst affected, while generalist species will cope better with the changing environment. The increasing frequency and intensity of extreme weather events will affect breeding birds. Coastal birds will also be affected by rising sea levels that will flood breeding sites and destroy habitats such as mangroves and low-lying atolls and islands. Changing weather patterns and increased sea surface temperatures (SST) may change prey distribution and availability. Increasing SSTs will also affect the incidence of upwelling, such as off the Somali coast, whereby nutrient-rich waters from the depths come up to the surface and support a high abundance of fish and other marine life.

This report makes a first attempt at identifying marine IBAs in the region, which could be candidates for increased formal protection. These are areas at sea which are important to birds for foraging or resting. The sites presented here were identified by experts at a workshop in October 2011, using foraging range data to determine how far birds tend to travel from their breeding colonies. Thus the sites are all seaward extensions from breeding colonies. The data and methods to identify other at-sea sites away from terrestrial colonies, such as pelagic foraging areas, are lacking. A total of 53 sites are identified, many of them in South Africa and in the island nations, as these countries have many seabird breeding colonies.

Potential actions that could be taken by the Contracting Parties using the Nairobi Convention framework are listed in Chapter Nine (Conclusions and Recommendations). These actions include:

a) reviewing bird species listed in the Annex II of the Protocol Concerning Protected Areas and Endangered Wild Fauna and Flora (Appendix 1), and species lists for other taxa in the protocol;
b) providing formal protection for species listed in the revised bird list (See section 8.2 and Appendix 4) and their habitats;
c) promoting regional conservation actions and policies that encompass the high seas, also known as Areas Beyond National Jurisdiction (ABNJ);

d) creating links between the Nairobi Convention and the complementary Multilateral Environmental Agreements (MEA) such as CBD, CMS and Ramsar Convention, and regional fisheries bodies discussed in section 7.3; and
e) establishing a network of bird experts in the region to advise on bird protection

Other actions suggested target specific threats, such as limiting the introduction and spread of IAS, collaboration between countries to reduce the risk of oil pollution and better regulations and enforcement of coastal development.

Fairy Tern, Seychelles (© Ross Wanless)

1. Introduction

The Western Indian Ocean (WIO) encompasses a large area from the east coast of Africa to 80° E and from the Arabian Peninsula and India in the north to the Southern Ocean in the south. The WIO as covered by the Nairobi Convention comprises ten coastal and island countries in eastern and southern Africa and their Exclusive Economic Zones, ranging from the Southern Ocean to the Red Sea (see Figure 1). The marine and coastal zone of this region is characterised by a diversity of habitats with a high diversity of species. Coastal ecosystems such as coral reefs, estuaries, lagoons and coastal waters are some of the most biologically productive systems on earth, and provide important goods and services for a large coastal population (De Fontaubert *et al.* 1996). Marine and coastal systems globally have been estimated to provide humans with more than US$21 trillion worth of ecosystem goods and services, such as nutrient cycling, raw materials, food and tourism (Costanza et al. 1997; Harley *et al.* 2006). Other ecosystem services include regulating water balances, buffering land and providing protection from erosion from storms and waves (De Fontaubert et al. 1996).

Seabird and coastal bird diversity is high and they are found in all habitats in the WIO region. The birds and their habitats are coming under increasing pressure from the growing human population. While birds themselves are important conservation priorities, conserving them will also help in protecting many other species and the wider ecosystem. A network of sites that are important for birds will also capture most other biodiversity (Brooks *et al.* 2001). In this way, birds can also act as "umbrella" species for ecosystems. For example, protecting important mangrove habitats for birds will also protect the fish and invertebrates that use the mangroves as feeding and nursery areas. Their protection will yield multiple benefits for other biota, ecosystem health and human wellbeing.

Birds can serve as indicators of the highest priority areas to conserve (Fishpool and Evans 2001) and as indicators of the state of the ecosystem. Changes in bird populations can be used to infer what changes are occurring in the environment, as they integrate a set of ecological factors (BirdLife International 2004a). Birds are useful as indicators because relatively more is known about them than most other taxa and they occur in a wide range of habitats, while many species are also habitat specialists.

Seabirds are thought to be effective indicators of the state of the marine environment because they occupy a high level on the food chain and often have very broad distributions (Croxall *et al.* 2012; Lascelles *et al.* 2012 and references therein). Seabird research is increasingly providing information on the health of fish stocks, ecosystem health, ecosystem change and the impact of climate change (Einoder 2009). For example, breeding failure or low recruitment of sensitive seabird species is linked to widespread declines in fish stocks (Croxall *et al.* 1999; Piatt and Sydeman 2007). Seabirds also play an important role in industrial capture fisheries. They feed on commercially valuable fish and as a result, fishing vessels track their foraging areas to locate fish shoals.

The countries in the WIO region have a responsibility to protect the globally important assemblages of birds in the marine and coastal environment. The region is an important area for migratory birds from Europe and Asia, especially shorebirds. In order to conserve these birds throughout their range, the WIO countries must identify networks of protected areas for them. There are also several endemic and near-endemic species found in the marine and coastal environment. Because they are found nowhere else in the world and rely on the unique habitats found in the WIO, these species can only be protected within the region.

This report aims to provide a regional overview of the status of birds in the marine and coastal environment of the WIO and the threats they are facing, and identify important sites for the conservation of birds and the wider ecosystems.

1.1 The Nairobi Convention

The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region is an agreement by the member states that governs the development of the marine and coastal zone in eastern Africa. The Contracting Parties are Comoros, France (Réunion), Kenya, Madagascar,

Mauritius, Mozambique, Seychelles, Somalia, Republic of South Africa and Tanzania, and the Convention area comprises the marine and coastal environment that falls within the jurisdiction of these countries, namely the Exclusive Economic Zone (EEZ; Figure 1): The Contracting Parties of the Nairobi Convention.). The Convention was signed in 1985 and came into force in 1996. It was then amended and adopted in April 2010. The Nairobi Convention provides a mechanism for cooperation in the region and allows the Contracting Parties to work together to solve both national and transboundary environmental problems in the marine and coastal regions.

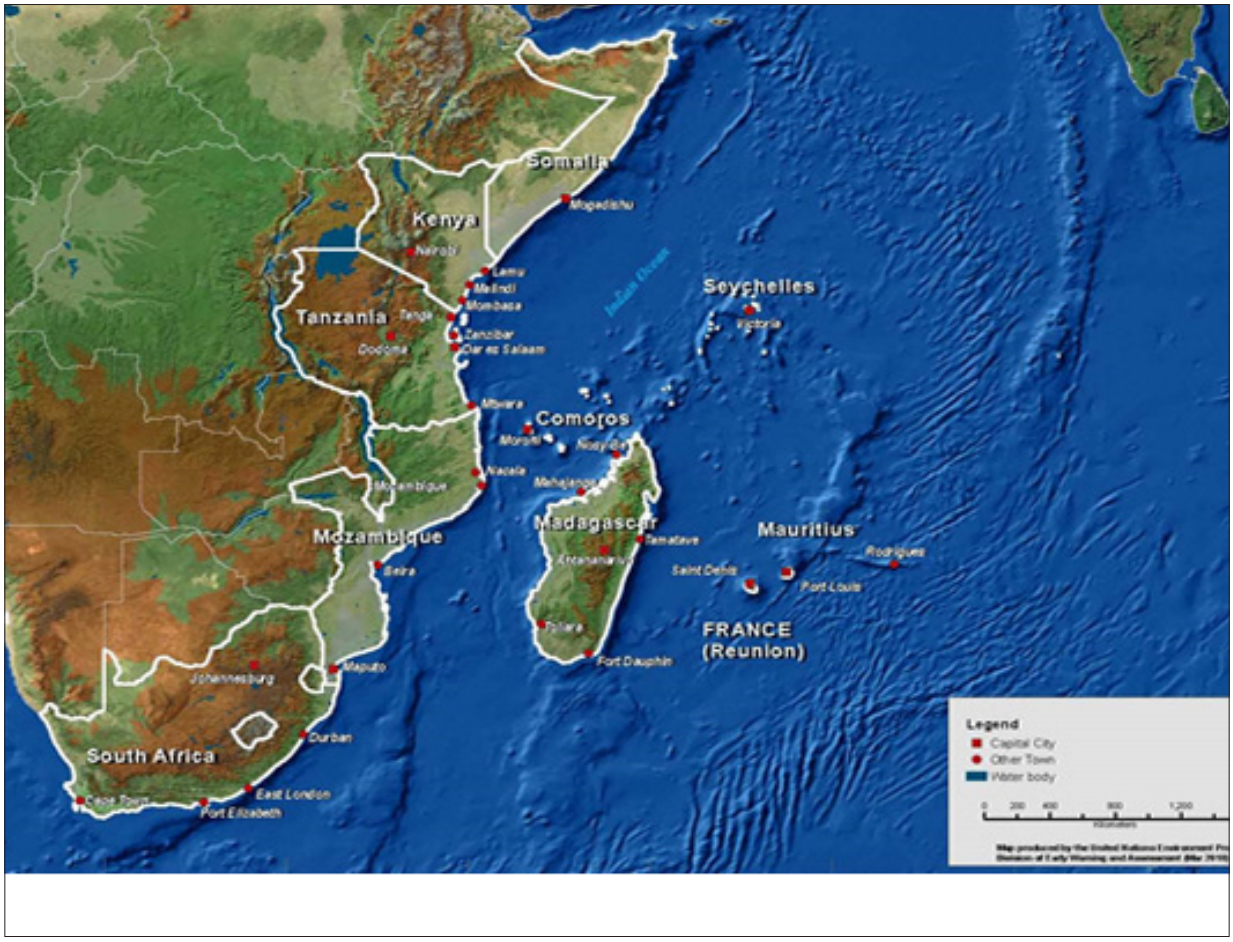


Figure 1: The Contracting Parties of the Nairobi Convention.

As a part of the Convention, the Contracting Parties agreed to the Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region. The Protocol recognises the importance of protecting and improving the state of the wild fauna and flora of the Eastern African region as natural resources that constitute important cultural, scientific, recreational, educational and economic heritage. The Protocol urges the Contracting Parties to take the appropriate measures to "maintain essential ecological processes and life support systems, to preserve genetic diversity, and to ensure the sustainable utilization of harvested natural resources under their jurisdiction". It also lists the species of wild flora and fauna that are protected under this Convention (Appendix 1).

Since the Convention was signed in 1985, the Eastern African region has come under intense pressure resulting from increasing populations, overexploitation and conversion of coastal habitats for use such as agriculture, aquaculture, port/harbour expansion or urban development. Some of these developments have led to the degradation of vital coastal and marine habitats. This degradation and the consequent loss of biodiversity have created a knowledge gap of the current state of biodiversity in the region. The aim of this regional report is to improve knowledge of the state of birds in the marine and coastal environment of the region and assess the threats and conservation actions that can be taken. The report also provides guidance on the management of the wider ecosystems in the coastal and marine zones.

1.2 Marine and coastal biodiversity in the region

Straddling the southern and eastern Africa mainland and the Indian Ocean islands, the Western Indian Ocean (WIO) region boasts diverse marine and coastal ecosystems, and unique coastal cultures. The high rate of endemism ranks the island states' land and seascapes among the most globally important priority areas for conservation (Myers *et al.* 2000). The WIO is a marine biodiversity hotspot, with high abundance and diversity of marine species, with over 200 coral species, 1500 reef fish (WWF 2003), as well as important cetacean (Ballance and Pitman 1998), turtle (Lauret-Stepler *et al.* 2007), tuna and billfish (Worm *et al.* 2005) and seabird populations (Le Corre and Jaquemet 2005; Le Corre *et al.* 2012).

In eastern Africa, biodiversity is generally high, but the northern and southern waters have contrasting patterns of biodiversity. The southern section of the East African coast is characterised by low nutrient waters, so the biodiversity there is dominated by coral reefs and high benthic productivity (McClanahan 1988). The northern section is characterised by cool, nutrient-rich waters and high planktonic activity (McClanahan 1988). About 15% of all the species in the WIO are endemic to the region (WWF 2003). The WIO supports populations of the endangered dugong and is the region where living coelacanths were first discovered. There are a wide variety of ecosystem types which support this high diversity. Mangroves, coral reefs and seagrass meadows are important and productive areas which support a diversity of life and provide food and other resources to coastal communities (UNEP *et al.*1998). Coral reefs occur at the margins of fringing platforms on the outer seaward facing slopes (UNEP *et al.* 1998). Mangroves are important as nursery areas for fish and crustaceans as well as for the stabilisation of sediments (UNEP *et al.* 1998). They are also important foraging and nesting sites for birds, such as the Greater Frigatebird *(Fregata minor*) and Lesser Frigatebirds (*Fregata ariel*) in Seychelles (Taylor *et al.* 2003).

The waters of southern Africa are cold and nutrient-rich, with high plankton levels; they support marine mammals and a unique diversity of seabirds.

1.3 Marine and coastal bird diversity in the region

Seabirds are grouped together by habitat and morphological characteristics rather than relatedness; the definition of seabirds by BirdLife International is provided in Croxall *et al.* (2012). Seabirds derive all or most of their food from the marine environment and spend the majority of their time at sea (except when breeding, which occurs on land). Generally the seabird families are considered to be penguins (Spheniscidae), albatrosses (Diomedeidae), petrels and allies (Procellariidae), storm-petrels (Hydrobatidae), diving-petrels (Pelecanoididae), tropicbirds (Phaethonidae), gannets and boobies (Sulidae), frigatebirds (Fregatidae), skuas (Stercorariidae), as well as some species of cormorants (Phalacrocoracidae), gulls and terns (Laridae). Shorebirds derive varying amounts of energy from the marine environment but may spend much of their time in terrestrial, freshwater and estuarine environments. Generally shorebirds are considered to be groups such as herons and egrets (Ardeidae), ibises (Threskiornithidae), plovers (Charadriidae) and sandpipers (Scolopacidae).

Coastal bird diversity is high in the Nairobi Convention area, mainly due to the high numbers of migrants from Europe and Asia that spend the northern winter/austral summer feeding on mudflats and estuaries (WWF n.d.). The region has been identified as part of the East Asia/East Africa Flyway, one of the migration routes identified by BirdLife International (BirdLife International 2010). In the northern winter/austral summer, many hundreds of thousands of migrant birds travel from Europe and Asia to such sites as the Tana River Delta in Kenya (UNEP 2004). Other important areas for these migrants are the Lamu archipelago (Kenya), Rufiji River (Tanzania) and Zambezi Delta (Mozambique; WWF n.d.). There are several other important sites for coastal wading birds, such as Inhaca Island in Mozambique (UNEP 2004).

Seabird diversity is high in the WIO but endemism is low (Wanless 2015). There are four seabirds that are endemic to the Nairobi Convention area and seven near endemic species (Table 1; Wanless 2015).

Table 1: Endemic and near-endemic seabirds in the Western Indian Ocean

Species	IUCN Status	Breeding islands
Endemic Species		
Barau's Petrel *Pterodroma baraui*	EN	Réunion and Rodrigues
Jouanin's Petrel *Bulweria fallax*	NT	Socotra archipelago and islands off Oman
Réunion/Mascarene Petrel *Pseudobulweria aterrima*	CR	Réunion, possibly Mauritius
Socotra Cormorant *Phalacrocorax nigrogularis*	VU	Islands in Persian Gulf and Arabian Sea
Near Endemic Species		
African penguin *Spheniscus demersus*	EN	Islands off coast of South Africa and Namibia
Cape gannet *Morus capensis*	VU	Islands off coast of South Africa and Namibia
Cape cormorant *Phalacrocorax capensis*	LC	Islands off coast of South Africa and Namibia
Bank cormorant *Phalacrocorax neglectus*	EN	Islands off coast of South Africa and Namibia
Crowned cormorant *Phalacrocorax coronatus*	NT	Islands off coast of South Africa and Namibia
Hartlaub's gull *Larus hartlaubi*	LC	Islands off coast of South Africa and Namibia
Damara tern *Sterna baleanarum*	NT	Islands off coast of South Africa and Namibia

The Western Indian Ocean can be divided into three broad scale zones or ecoregions based on the seabird species they contain:

- Tropical waters (north of ~25°S): This zone is dominated numerically by tropicbirds (2 spp), boobies (3 spp), frigatebirds (2 spp) and terns (>10 spp; Wanless 2015). There are 7.4 million pairs of breeding seabirds of 31 different species in this zone (Le Corre *et al.* 2012). Most of the breeding colonies are on remote oceanic islands in the Seychelles area (3.4 million pairs), the Mozambique Channel (3 million pairs) and the Mascarene Archipelago (0.7 million pairs) (Le Corre *et al.* 2012). The coasts of Madagascar and East Africa have relatively few seabird colonies (Le Corre and Jaquemet 2005; Le Corre *et al.* 2012), probably due to a lack of isolated islands. Thirteen species of seabirds breed on islets off the west coast of Madagascar, while on the Mozambique coast only two sites are known (Le Corre and Jaquemet 2005). Important foraging areas for seabirds that breed in the WIO are thought to be south of Madagascar (the continental shelf and the Walters Shoals) and the central Indian Ocean (Le Corre and Jaquemet 2005).
- Neritic waters of South Africa (30°-38°S): This zone houses a set of near endemic seabirds, the African penguin (*Spheniscus demersus)*, Cape gannet (*Morus capensis)*, three cormorant species, Hartlaub's gull (*Larus hartlaubi*) and the Damara tern (*Sterna baleanarum*;(Crawford *et al.* 2006) . These waters are also important for non-endemic coastal species such as Kelp gulls (*Larus dominicanus*) and several tern species as well as northern hemisphere larids and other migratory seabirds (e.g. Cory's shearwater *Calonectris diomedea)* that migrate there in the austral summer (Wanless 2015).
- Temperate and Sub-Antarctic (south of ~25°S): The pelagic waters, Sub-Antarctic and cool-temperate islands and highly productive South African continental shelf are dominated by procellariiform seabirds (albatrosses, petrels and allies, storm-petrels and diving-petrels). Many of these do not breed in the region but spend the non-breeding season here, travelling many thousands of kilometres to reach these productive waters.

Indian Yellow-nosed albatross (© Ross Wanless)

Fairy Tern, Seychelles (© Ross Wanless)

2. Project Overview and Implementation

2.1 Aim of this report

The report compiles known information on birds for the purpose of conserving birds and the wider ecosystems in the WIO region. The report highlights species and habitats that are most in need of conservation to guide decision-makers and conservationists on where to distribute scarce funding and human capacity. Potential marine Important Bird Areas are also highlighted in this report to ensure they receive recognition as important sites for protection, as well as to stimulate the identification of more such areas.

2.2 Objectives of the regional report

The objectives of this regional synthesis report are to:

(a) Provide an objective and scientific basis for listing birds in the Protocol Concerning Endangered Wild Fauna and Flora in the East Africa Region
(b) Provide information on the status of birds and the key habitats in the region
(c) Use information on birds to extrapolate the status of the wider ecosystems in the WIO region.

2.3 The approach

2.3.1 Review of the protocol concerning protected areas and wild fauna and flora in the Eastern African Region

There are four Annexes to the protocol listing wild fauna and flora of ecological importance in the Convention area[1]. Annex II comprise endangered fauna species that the Contracting Parties should strictly safeguard from any adverse impact. Birds are listed in Annex II based on their threat status and ecological importance to the wider ecosystem; however the current list of birds is out of date and incomplete. For example, no seabird species are listed, some species are already extinct (i.e. Snail-eating Coua *Coua delalandei*, Aldabra Brush Warbler *Nesillas aldabrana* and Alaotra Grebe *Tachybaptus rufolavatus*), while a few are outside the geographical range of the Nairobi Convention area or are not threatened in their entire population range. Therefore a complete review of the birds listed on Annex II was deemed necessary (see Appendix 1 for the current IUCN Red List status of the birds in the Annex II species list).

2.3.2 National onsultations

The regional synthesis report was prepared in two phases. The first phase involved the establishment of a National Task Force (NTF) in each country, where appropriate. The NTFs were composed of the Nairobi Convention Focal Points, government representatives, conservation NGOs, researchers and scientists. Each NTF was given access to preliminary bird data for their respective countries which was derived from BirdLife International's Data Zone[2]. The database indicates each species' threat status and the state of their habitats and presents the status of their habitats in the form of digital maps, tables and graphics. The NTF reviewed and updated the national bird lists with information from national databases, expert knowledge, publications and grey literature. NTF engagements were coordinated by the organisations tasked with writing the national report. These organisations were BirdLife International partners (in the case of the Madagascar, Tanzanian, Kenyan and South African reports), conservation NGOs (Comorian and Mauritian reports) or research institutions (Réunion and Mozambique).

1 See http://www.unep.org/NairobiConvention/The_Convention/Protocols/index.asp for the full Protocol
2 BirdLife Datazone is a global database for birds. The database can be queried for information on species, sites and publications http://www.birdlife.org/datazone

BirdLife International, using its full range of experts, partners and information published from Seychelles and Somalia, compiled a report for these two countries. Following the first draft of the national reports, the members of each NTF were asked to provide comments and additional information. This was followed by consultative processes for a broad spectrum of stakeholders to comment on the draft national reports, either through physical meetings or via electronic communications.

2.3.3 Regional synthesis

In the second phase, the national reports were synthesized by BirdLife International in collaboration with the Nairobi Convention Secretariat into a regional synthesis report, that also includes marine Important Bird Areas (IBAs) in Areas Beyond National Jurisdictions (ABNJ). Information on marine IBAs in the synthesis report was fed into the CBD process for describing Ecologically or Biologically Significant Areas (EBSAs) to identify critical sites for biodiversity conservation in ABNJ. For this report, ABNJ is classified as areas beyond the Exclusive Economic Zones (i.e. 200 nautical miles limit) of countries.

The regional synthesis identifies important species and habitats as well as their conservation status. It also makes a first attempt at identifying marine IBAs in the region. The synthesis also investigates the effects and projected impacts of climate change on the birds and their habitats in the WIO region. It also creates possible links with other Multilateral Environmental Agreements such as the African Convention on the Conservation of Nature and Natural Resources (Algiers Convention) and Convention on Migratory Species (CMS).

2.3.4 Nairobi Convention Cearinghouse Mechanism

The national and regional bird lists were compiled and uploaded on Nairobi Convention Clearing House Mechanism (CHM). Each of the species in these lists is linked to a downloadable species factsheet. The CHM is also linked to the BirdLife Africa Climate Exchange initiative[3].

3 http://www.africa-climate-exchange.org/

Trawler, South Africa (© Ross Wanless)

Masked booby (© Ross Wanless)

3. General Information

3.1 Location and physical features[4]

The areas of focus of this report are the marine and coastal zones of the Nairobi Convention Member States, namely: Somalia, Kenya, Tanzania, Mozambique, South Africa, Seychelles, the Republic of Mauritius, Réunion (France), Madagascar and Comoros.

The biodiversity in the coastal and marine environments of the WIO countries forms a rich natural resource base important for livelihood, tourism and development. The mainland coastlines span about 13,000 km from Somalia in the north to South Africa in the south. A further coastline of 6,360 km borders the Island States with more than 400 islands and islets. The WIO region has a surface area of about 30 million km^2 (FAO 2011).

Several important ocean currents influence the east coast of Africa. At the equator the South Equatorial Current (SEC) flows westwards and part of the flow is diverted along the eastern Madagascar coast as the Madagascar current. The westward flowing portion splits at the border between Tanzania and Mozambique into the northward flowing Somali Current (East African Coastal Current) and the southward flowing Mozambique Current. The Mozambique and Madagascar currents join south of Madagascar to form the Agulhas current, which flows down the east coast of South Africa. The Somali current flows rapidly northwards during the southeast monsoon (April to October) but reverses direction during the northeast monsoon (November to March). The strong currents create a downwelling force off the coasts of Tanzania and southern Kenya, creating low nutrient conditions (McClanahan 1998).Upwelling occurs off the coast of Somalia during the southeast monsoon season due to strong offshore winds, creating the conditions for a highly productive marine system.

There are several important island groupings in the region. The most northerly is the Seychelles groups, which consists of a series of 92 granitic and coralline islands and atolls. The granitic islands are rocky and hilly with a narrow coastal strip while the coralline islands are generally flat with elevated coral reefs. The Comoros archipelago is a set of four islands in the middle of the Mozambique Channel which were formed through volcanic activity between 15 and 0.5 million years ago (Harris and Rocha 2009). The Mascarene Islands consist of the volcanic islands of Mauritius, Réunion, Rodrigues and a group of small coralline islands, the Cargados Carajos Shoals, east of Madagascar. The shoals are 400 km north of the other islands and sit on a volcanic submarine bank. The island of Réunion is still volcanically active, while Mauritius is not. Rodrigues has nearly continuous fringing reefs; Mauritius has a discontinuous fringing reef and small barrier reef. Réunion has short stretches of narrow fringing reefs on west and south western coasts. Cargados Carajos Shoals have an extensive fringing reef which accounts for 30% of the reefs in the Mascarenes (Thébaud *et al.* 2009)

The tidal ranges across the ten Member States varies, with the mainland coast experiencing spring tidal ranges of between 2 and 6 m while islands such as Mauritius and Réunion experience negligible tides.

The region has a varied geology with formations ranging from 200 million years old to very recent deposits. The mainland countries have a coastal plain which is generally less than 100 m above sea level and is variable in width. Along the border between Mozambique and Tanzania as well as northern Somalia, the plain is less than 10 km wide, while in central Somalia southwards to Mombasa (Kenya), central Tanzania and southern Mozambique the plain is about 20 km wide. The volcanic islands of the Comoros and the Mascarenes, the granitic islands of the Seychelles and much of the east coast of Madagascar have an almost non-existent coastal plain. On the west coast of Madagascar, the plain is extensive due to deposition by the many rivers flowing to the ocean. Rodrigues has a fairly large coastal plain in the west (<5km wide) and south (c. 8-10km), which is fairly substantial considering the island itself is only 109 km^2 (18.5 km by 6 km). Mauritius has a small coastal plain, rising to a central plateau ringed by mountains.

4 For further information see IUCN/UNEP 1985 and UNEP et al. 1998

The continental shelf along the mainland states is relatively narrow, only 15 to 25 km wide, due to fragments of the east African coast separating from the continent (e.g. Madagascar and the Seychelles Bank), although off the Bight of Sofala in Mozambique it is about 145 km wide. The sea bed drops off sharply to over 2000 m below sea level at the continental shelf break, extending to an average of 4000 m further offshore, except around the submerged platforms and islets of the island countries such as the Seychelles Ridge.

3.2 Climate[5]

The climate of the WIO region ranges from arid and desert-like climates in the north (Somalia, northern Kenya) through tropical and humid tropical climates (Kenya, Tanzania, Mozambique and north eastern South Africa). Further south, South Africa is subtropical to temperate. Temperatures range accordingly, but are generally moderated by the ocean along the coast. The islands of the Seychelles and Comoros have a tropical marine climate with a rainy season from November to May and are dominated by the southeast monsoon from May to September. Mauritius and Réunion also have a tropical climate, with little seasonal variation, but one that is more highly influenced by the southeast trade winds.

There are two prevailing wind regimes in the WIO; the monsoon regime that dominates the Somali Current Large Marine Ecosystem (SCLME) and the subtropical high-pressure system that dominates the Agulhas Current Large Marine Ecosystem (ACLME). The monsoon winds are influenced by the inter-tropical convergence zone (ITCZ) which moves north and south of the equator according to the seasons. The south east monsoon blows from April to October and has the greatest impact on the WIO region as it picks up moisture from the Indian Ocean. The central and southern countries receive most of this rain, with northern Kenya and Somalia receiving very little. From October to March, the northeast monsoon blows from across the continent and is consequently relatively dry. This rain generally falls over Kenya, north eastern Tanzania and the Seychelles islands. The areas close to the equator have one short and one long rainy season, while those further away have one long rainy season of about six months. Rainfall decreases northwards from Mozambique to Somalia and increases inland.

The southern part of the region experiences frequent tropical cyclones as a result of the movement of a high pressure cell southwards (below 30° S) in the austral summer. The east coast of Madagascar as well as the other Island States are hardest hit, experiencing about 10 tropical storms or cyclones between November and May each year (UNEP 2002).

3.3 Important habitat types

The WIO region comprises the western extremity of the tropical Indo-West Pacific, the world's largest marine biogeographic province (Ekman 1953; Sheppard 1987; 2000). There is a diverse range of habitats that are important to birds, which are summarised in Table 2.

5 For further information see IUCN/UNEP 1985 and UNEP et al. 1998

Table 2: Important habitat types in the Western Indian Ocean (WIO (continued)

Habitat type	Definition	Distribution (and important sites)	Economic value/ ecosystem services	Importance for birds	Main references for region
Coastal areas					
Coastal forests	Forests found up to 200 km from the coast to a maximum altitude of 1100 m above sea level and excluding mangroves. A broad term used to define a mosaic of forest types including the typical semi-evergreen and evergreen dry forest, variant type and sub-type (scrub forest, Brachystegia forest) and transitional vegetation formations (e.g. riverine, swamp, Afromontane transition forests)	Extend along coastal plain from southern **Somalia** to northern **Mozambique** but important sites are in **Kenya** (Arabuko-Sokoke Forest, Shimba Hills) and **Tanzania** (Jozani Forest, Pugu and Kazimzumbwi Forest Reserves, Matumbi and Kichi Hills)	Source of raw materials (e.g. timber, charcoal etc.) Non-timber forest products (e.g. hunting, gathering plants, honey) Cultural values Carbon sequestration and storage Watersheds and regulation of water flows Erosion and sedimentation control Climate moderation and other ecosystem services	Nesting, foraging and roosting sites Many endemic species occur in the forests of Kenya and Tanzania	UNEP and Nairobi Convention Secretariat 2009; Azeria *et al.* 2007; Burgess and Clarke 2000; http://coastalforests.tfcg.org/index.html
Wetlands	Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres	**Kenya:** Tana River Delta, Sabaki Estuary, Mida Creek **Tanzania**: Rufiji-Mafia-Kilwa Marine Ramsar Site **Mozambique:** Marromeu Complex **South Africa:** Kosi Bay, Lake Sibaya, Turtle Beaches/Coral Reefs of Tongaland **Madagascar:** Complexe des lacs de Manambolomaty, Zones humides de Bedo, Lac Tsimanampetsotsa **Mauritius:** Rivulet Terre Rouge Estuary Bird Sanctuary	Flood control Shoreline stabilisation Storm protection Carbon storage Regulation of water flows Erosion and sedimentation control	Feeding grounds Many are staging areas for migratory birds	

Habitat type	Definition	Distribution (and important sites)	Economic value/ ecosystem services	Importance for birds	Main references for region
Estuaries	A semi-enclosed coastal embayment at the mouth of a river where fresh water and seawater meet and mix.	**Tanzania:** Rufiji Delta **Kenya:** Sabaki Estuary**,** Mida Creek, Lamu Archipelago **South Africa**: St Lucia	Source of food (fish and crustaceans) Sediment capture and prevention of erosion tourism potential	Feeding grounds Many are staging areas for migratory birds	McClanahan and Young 1996
Mangroves	Vegetation growing in sheltered estuaries and along coastlines in brackish or salt water	**Mozambique** Zambezi Delta **Madagascar** West coast at Mahajanga bay, Nosy Be, and Hahavavy **Tanzania:** Rufiji Delta, Tanga, Kilwa, Pangani **Kenya** Lamu Archipelago, Tana Delta	Nursery grounds for fish and crustaceans Source of raw materials (poles, building materials, charcoal) Source of food (fish and crustaceans) Sediment capture and prevention of erosion Carbon sequestration and storage Tsunami protection	Feeding grounds at low tide Roosting and nesting sites	Saenger 2002; Levin *et al.* 2001; Dahdouh-Guebas *et al.* 2000; Furukawa *et al.*1997
Seagrass beds	A benthic habitat consisting predominantly of grass-like marine flowering plants that grow and reproduce while submerged in seawater, such as eelgrass and turtle grass.	**Kenya** (Gazi Bay, Diani-Chale Lagoon) **Tanzania** Chaka Bay **Mozambique** Inhaca Island and Maputo Bay, Mecuifi-Pemba, Quirimbas Archipelago, **Seychelles** Platte and Coetivy and Aldabra **South Africa** St. Lucia estuary	Collection of invertebrates Enhancement of biodiversity (nursery for fish, food for dugongs and marine turtles) Control of erosion	Feeding grounds at low tide	Bandeira and Bjork 2001; Gulström *et al.*2002;Ochieng and Erftermeijer 2003
Rocky shores	Intertidal shore composed predominantly of consolidated rock or boulders limestone, sandstone and granite	All countries	Stabilise inshore sediments Tsunami protection	Feeding and roosting sites	Richmond 1997
Beaches	Intertidal shore composed predominantly of sandy sediments	All countries	Tourism	Feeding sites Roosting sites Nesting sites (especially for terns)	
Marine areas					

Habitat type	Definition	Distribution (and important sites)	Economic value/ ecosystem services	Importance for birds	Main references for region
Islands and outcrops		**Seychelles** and **Mascarene Islands** and **Mozambique Channel**	Various but the value can be specific to each island Tourism is often important	Breeding sites Feeding sites Roosting sites	
Continental shelf	The expanded perimeter of each continent, which is gently sloping and covered by relatively shallow seas (typically limited to a depth of around 200 m) or embayments. The shelf usually ends at a point of increasing slope (called the shelf break)	All countries but important areas in **Mozambique** St Lazarus Bank, Nazareth Bank and Saya da Malha	Feeding and nursery grounds for commercially important fish species and several species of large marine mammals such as Humpback whales and dugongs	Feeding grounds	IUCN/UNEP 1985
Seamounts	Extinct volcano or steep-sided formation that rises abruptly from the deep sea floor but does not reach the surface.	Scattered throughout the WIO, especially around volcanic islands such as Comoros, Mauritius and Réunion and at the mid-Indian Ridge.	Fishing	Feeding, as birds follow favourable foraging areas for tuna schools	Wiemerskirsch *et al.* 2005; Guinotte 2011
Upwelling	Displaced surface water is replaced by cold, nutrient-rich water from below, often wind driven	Coastline of **Somalia** (April to October) West coast of **South Africa**	Nutrient rich waters result in highly productive fishing grounds	Foraging	
Eddies	Occur when a current doubles back on itself. In water,formed when currents pass obstructions. Oceanic eddies are usually large (~100 km) and long-lived (months)	Variable occurrence but often in the Mozambique Channel	Unknown	Can be important foraging areas for birds as they are thought to concentrate prey	Hyrenbach *et al.* 2006; Weimerskirch *et al.* 2004;Nel *et al.* 2001

Sooty Albatross, Prince Edward Island, South Africa (© Ross Wanless)

4. Ornithological Importance

4.1 Categories and criteria

4.1.1 IUCN threat categories

BirdLife International is the International Union for the Conservation of Nature (IUCN) Red List authority for birds and the threat status of all species was taken from BirdLife International's assessments for the 2011 IUCN Red List[6]. Species are assigned to categories of extinction risk based on population size and trends and species distribution[7] (IUCN 2001).

Critically Endangered (CR)
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the thresholds based on population size and trends and species distribution for Critically Endangered and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN)
A taxon is Endangered when the best available evidence indicates that it meets any of the thresholds based on population size and trends and species distribution for Endangered and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU)
A taxon is Vulnerable when the best available evidence indicates that it meets any of the thresholds based on population size and trends and species distribution for Vulnerable and it is therefore considered to be facing a high risk of extinction in the wild.

Near Threatened (NT)
A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least Concern (LC)
A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

Data Deficient (DD)
A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

4.1.2 Birdlife international's IBA guidelines

Criteria for identifying Important Bird Areas (IBAs) have been developed by BirdLife International. They are based on quantitative information on the presence of IUCN-listed threatened and or irreplaceable bird species at a particular site[8].

Globally threatened species
The site is known or thought to regularly hold significant numbers of a globally threatened (Critically Endangered, Endangered or Vulnerable) species, or other species of global conservation concern.

6 Available from www.birdlife.org/datazone/species or www.iucnredlist.org
7 For a full description of the criteria see http://www.iucnredlist.org/technical-documents/categories-and-criteria
8 The full criteria can be found at http://www.birdlife.org/datazone/info/ibacritglob

Restricted-range species
The site is known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA; less than 50,000 km2).

Biome-restricted species
The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome.

Congregations
A site is listed if it is known or thought to hold

(i) 1% of a biogeographic population of congregatory waterbird species,
(ii) 1% of the global population of a congregatory seabird,
(iii) >20,000 waterbirds or 10,000 pairs of seabirds, or
(iv) is a migration 'bottleneck'.

4.1.3 Criteria for habitat selection

BirdLife International has defined criteria for defining marine Important Bird Areas (IBAs) similar to those to identify terrestrial ones (BirdLife International 2008a). In addition to those terrestrial IBAs which qualified on the basis of seabirds, these include:

Foraging areas around seabird breeding colonies:
These include coastal foraging and maintenance areas and are contiguous with existing IBAs - identified for the breeding colonies themselves - and, as a result of extending boundaries seaward, are likely to be integrated with them. These seaward extensions are, where possible, colony- and/or species-specific, based on known or estimated foraging and maintenance ranges.

Coastal congregations of non-breeding seabirds:
These include areas of shallow water used, for example, by foraging and/or moulting sea-ducks.

Migration bottlenecks:
These include places through or around which more than threshold numbers of seabirds pass regularly, such as straits, headlands etc.

Pelagic concentrations:
These cover foraging areas where pelagic species concentrate, such as over shelf-breaks areas and on eddies and upwellings; such areas are often remote from breeding colonies.

Many of the sites identified in the ten national reports and this regional synthesis fall into the seaward extension category as the data required to identify sites based on the other three criteria are lacking.

4.2 Species selection and review

BirdLife International is the IUCN Red List authority for birds and holds a range of global and regional datasets on bird distributions, abundance, habitat preferences, threat status and conservation actions. In addition, BirdLife International coordinates the Important Bird Areas (IBA) programme, which aims to define areas that can be used

in site-based conservation initiatives using consistent and comparable criteria and thresholds. All of BirdLife's data is housed in its Datazone[9].

BirdLife International provided the NTF in each country with a national list of species that occur within 100 km of the coast, generated from BirdLife Datazone. These species lists were then reviewed by each NTF. Species were selected for inclusion in the National Reports based on their IUCN Red List status and if they triggered any of the IBA criteria. In some cases species were also selected based on their reliance on the marine and coastal environment. Biome- or range-restricted species were also chosen by some countries (e.g. certain Kenyan and Tanzanian coastal forest birds). Some species of national conservation concern were also added to their respective country lists.

In order to develop candidate species lists it was necessary to define the coastal zones in each country so that the relevant species found in these areas could be extracted from the BirdLife databases. The Convention does not include a definition of the coastal zone so the legal definitions from each country (if available) were used, or a default of 1 km inland. These were as follows:

- Comoros - entire islands
- Kenya - 150 km inland from High Water Mark (HWM)
- Madagascar - intertidal zone plus 2 km inland from HWM
- Mauritius – on the main islands of Mauritius and Rodrigues 1km inland from the HWM, and all offshore islets
- Mozambique - 100 m inland from HWM, 25 km inland at estuaries
- Réunion - 50 geometric steps (81.2 m) from HWM
- South Africa - 1 km inland from HWM
- Seychelles - 1 km inland from HWM
- Somalia - 1 km inland from HWM
- Tanzania - no distances given; band of dry land and adjacent ocean space (water and submerged land) in which terrestrial processes and land uses directly affect oceanic processes and uses, and vice versa (Ketchum 1972)

In addition to the coastal delineation as defined, the marine area for each country was delimited by the Exclusive Economic Zone (EEZ), that is, 200 nautical miles seaward.

When combined, the list from all ten countries contained 187 species but many of these were species of Least Concern with marginal reliance on the marine and coastal environment. The combined species list was scaled down to 108 high priority species for regional conservation action. Species selected by the ten participating countries were scored according to the criteria below. Scores were assigned to the criteria to ensure that species that are the most highly threatened and that are also heavily reliant on the marine and coastal environment were given higher priority.

1. IUCN status
   - Globally threatened species (CR, EN and VU) = 5
   - NT = 3 (unless the species uses the marine environment, 4)
   - LC = 0

2. IBA criteria
   - Triggers any of the A4 criteria (see section 4.1.3) = 2
   - Triggers criteria A1-A3 = 1
   - Not an IBA trigger = 0

9 http://www.birdlife.org/datazone/home

3. Regional importance
   - Listed by more than 4 countries = 2
   - Listed by 2-3 countries = 1
   - Listed by 1 country = 0

4. Habitat use
   - Marine and coastal = 2
   - Non-marine habitats only = 0

5. Population trend
   - Declining = 2
   - Stable = 0
   - Unknown = 0
   - Increasing = 0

The scores for each criterion were combined and species which scored 5 or more were chosen for inclusion on the priority list. This threshold was chosen because in order for a species that is Near Threatened or Least Concern to qualify, it would have to meet several of the criteria at the same time. Globally threatened species automatically qualify as priority species.

4.3: Results of species prioritisation

A total of 187 species from 50 families were listed in the ten national reports (See Appendix 2: Species list from the National Reports for the full lists of species). The ten countries on average listed 30 species, with the most being 60 (Madagascar) and the least being 6 (France - Réunion). These large differences are a result of the different sizes of the countries, the habitats present there, and the differing definitions of the coastal environment.

Of the 187 species, 29% are Globally Threatened, 13% Near Threatened and 57% are of Least Concern (LC) (Figure 2a). Of the Globally Threatened species 15% listed are Critically Endangered (CR). Approximately equal numbers of Endangered (EN) and Vulnerable (VU) species were listed (45 and 40% respectively) (Figure 2b)

Based on the regional prioritisation scoring undertaken in above, the species list was further refined to 108 priority species (see section 8.2 and Appendix 4). Habitat and trends summaries for these species were produced.

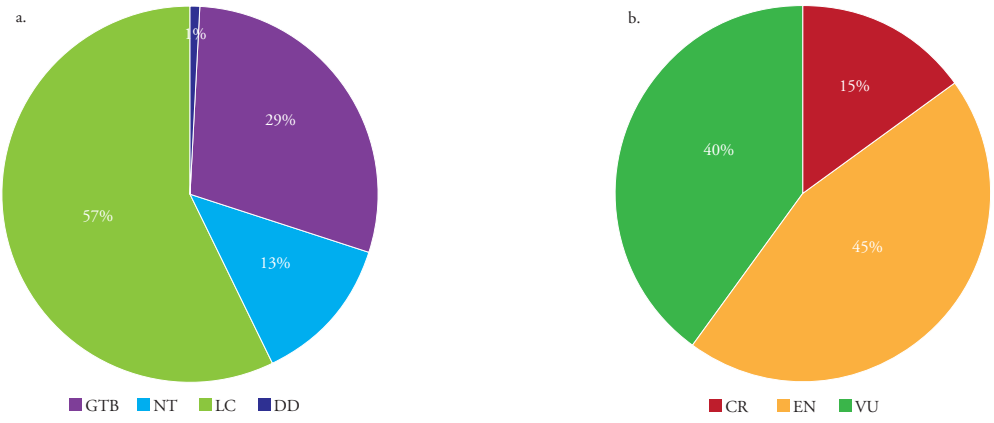


Figure 2: Summary of threat status of species listed in the national reports. IUCN Red List status for a) all birds listed in the national reports and b) for globally threatened birds. GTB= Globally Threatened Birds, NT = Near Threatened, LC = Least Concern, CR = Critically Endangered, DD = Data Deficient; EN = Endangered, VU= Vulnerable.

Half of the species chosen for the regional priority list are globally threatened (Figure 3a). Of these globally threatened species, about equal proportions are Endangered and Vulnerable (45% and 40% respectively); while 15% are Critically Endangered (Figure 3b).

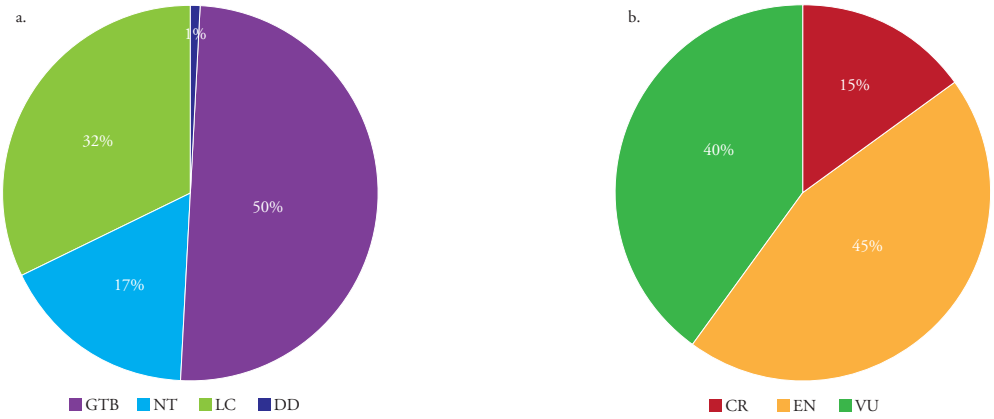


Figure 3: Summary of the threat status of species listed on the priority list. IUCN Red List status for (a) all birds chosen for the regional priority list and (b) for globally threatened birds. GTB= Globally Threatened Birds, NT= Near Threatened, LC= Least Concern, DD= Data Deficient; CR= Critically Endangered, EN= Endangered, VU= Vulnerable.

Most of the listed species use marine coastal habitats, followed by forests and marine oceanic habitats (Figure 4; see Appendix 3 for descriptions of the habitat categories). Those that use marine intertidal habitats are also well represented. Forest habitats are used by the highest number of threatened species, although a high proportion of species listed as using the marine oceanic and coastal habitats are also threatened (Figure 4).

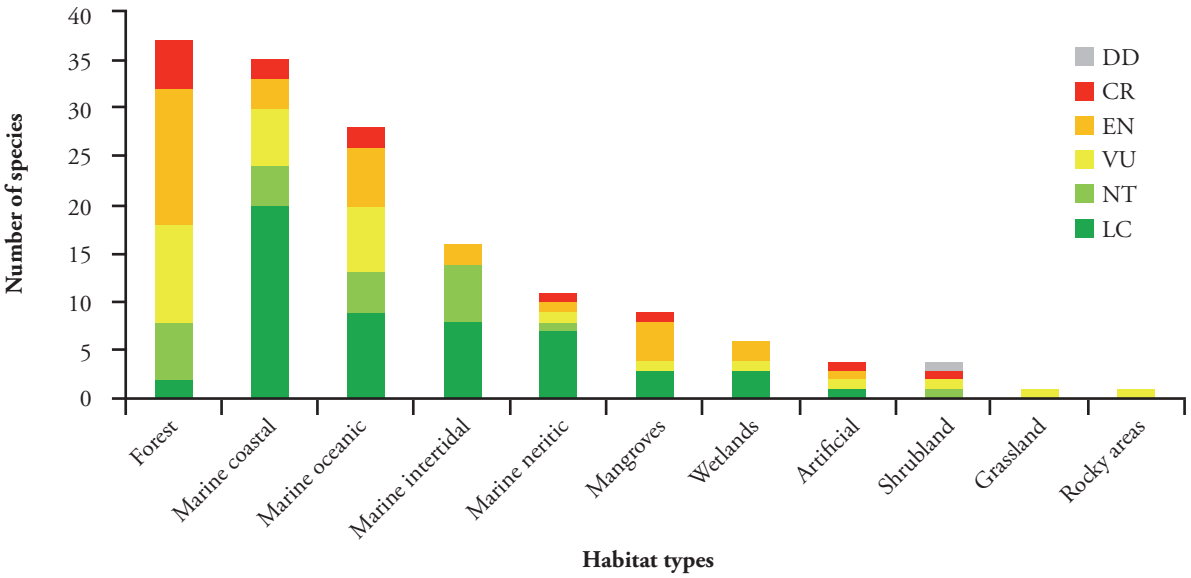


Figure 4: Habitat use of priority species. The number of species categorised by IUCN Red List status in the important habitats of the region. Note that species which use more than one habitat will be counted more than once. See Appendix 3 for a description of the habitat types. LC= Least Concern, NT= Near Threatened, VU= Vulnerable, EN= Endangered, CR= Critically Endangered and DD= Data Deficient

Over half of the species listed have declining population trends, while 26% have stable or increasing trends. Most of the species with declining trends use forests, marine oceanic or coastal habitats (Figure 5).

A high proportion of the Globally Threatened species also have declining population trends. However, so do many of the species of Least Concern, which indicates that some conservation action should be taken soon, before they also become threatened (Figure 6).

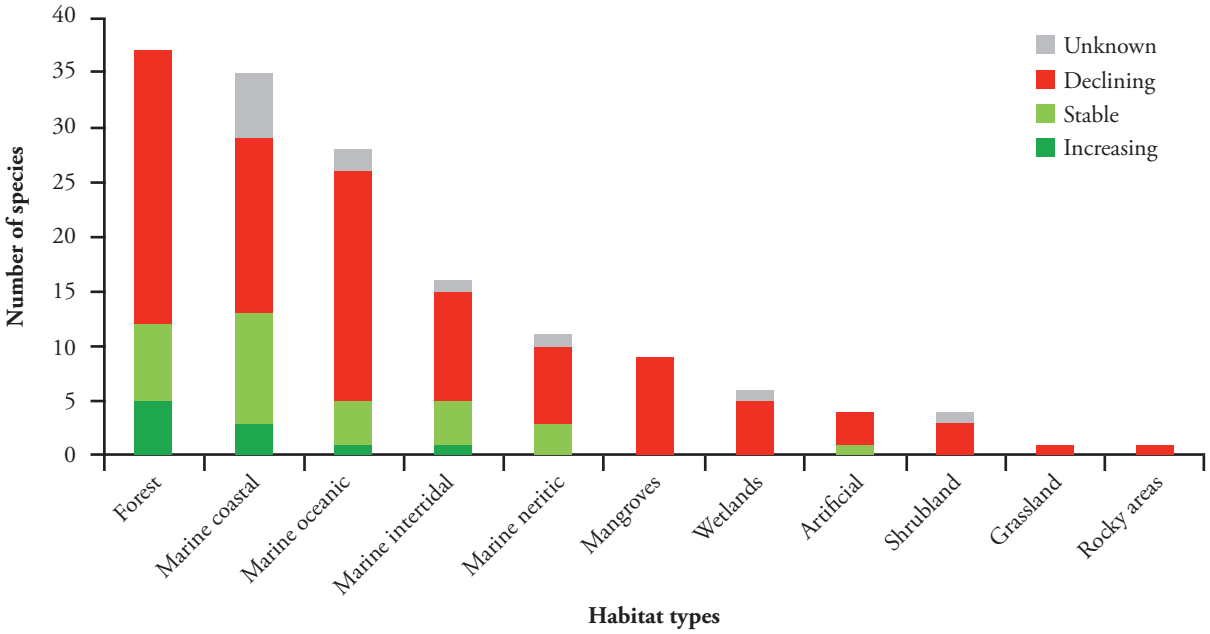


Figure 5: Population trends of species on the priority list. The number of species in each habitat type, classified according to population trend. Species that use more than one habitat were counted more than once. Population trend information taken from the BirdLife International Datazone.

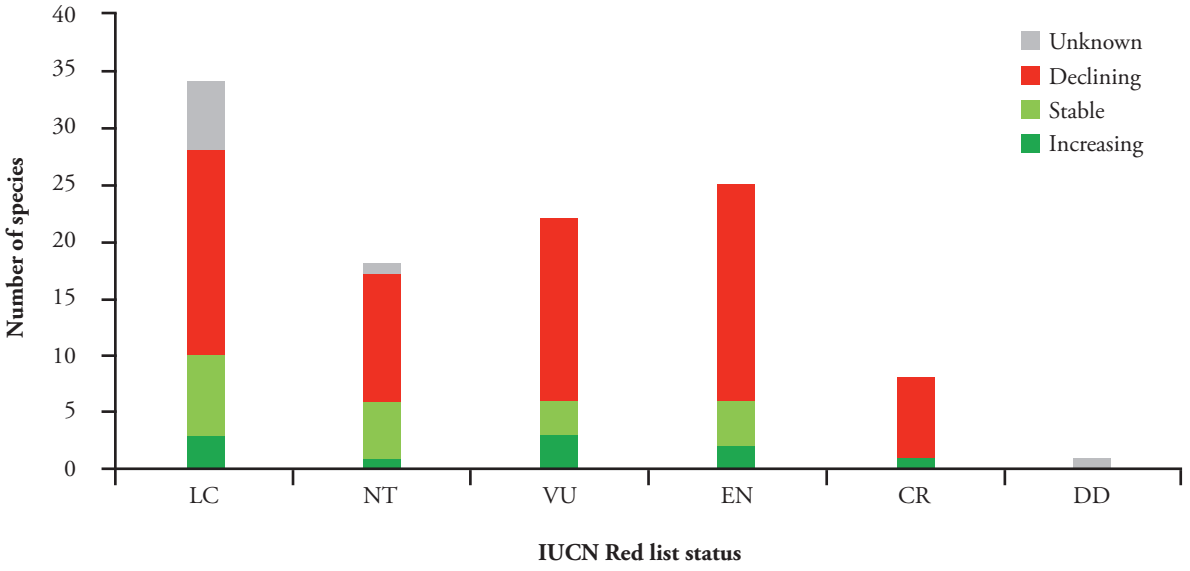


Figure 6: Population trend by IUCN status. The population trends and number of species listed in each of the IUCN categories. Population trend information taken from the BirdLife International Datazone.

It is difficult to compare the number of species from each country because the species listed here represent a subset of all the bird species in the countries as well as a subset of species listed by in the National Reports. While Madagascar has the most species included in the priority list, South Africa, Mauritius, Comoros and Réunion have the highest proportion of GTB species on the priority list.

The Red List Index (RLI) measures overall trends in extinction risk for sets of species, based on genuine status changes in their Red List categories (as opposed to changes caused by improved knowledge or taxonomic changes; Butchart *et al.* 2007). The index value relates to the proportion of species expected to go extinct in the near future. A value of 1 means that all species are Least Concern and none are likely to go extinct, while a value of 0 indicates that all the species in the group are extinct. The RLI was calculated for the species on the priority list (Figure 8). For the calculation, the genuine status change of two species of albatross (Tristan Albatross *Diomedea dabbenena*

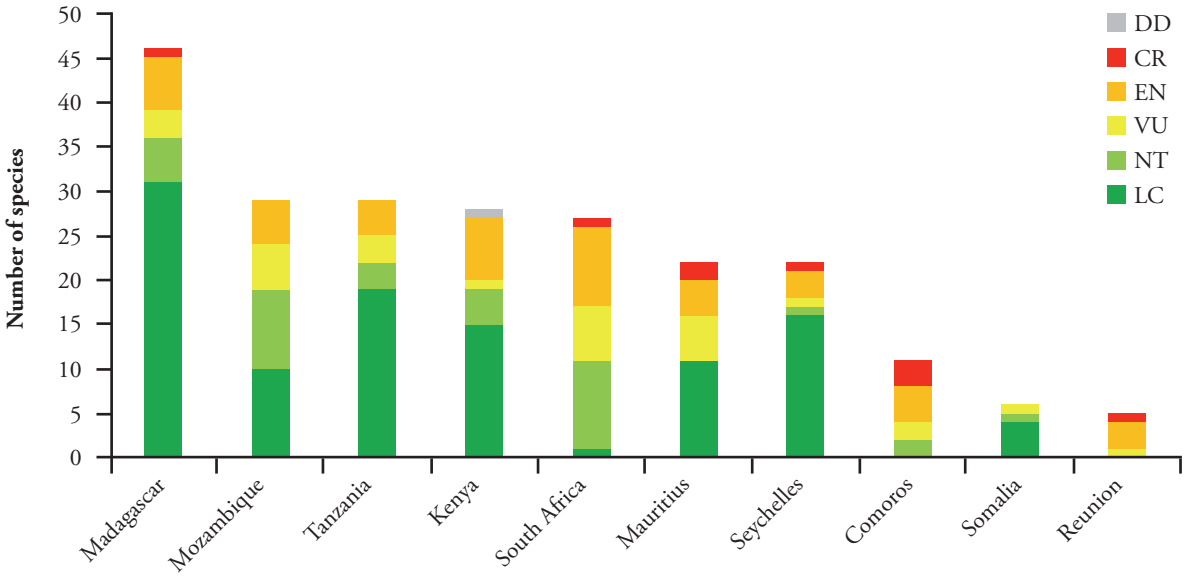


Figure 7: Numbers of threatened species per country The number of species categorised by IUCN Red List status in each country. Species that use more than one habitat were counted more than once. See Appendix 3 for a description of the habitat types. LC= Least Concern, NT= Near Threatened, VU= Vulnerable, EN= Endangered, CR= Critically Endangered and DD= Data Deficient

and Sooty albatross *Phoebetria fusca*) was ignored. This is because the change in population numbers is driven by bycatch of these two species outside of the WIO (R. Wanless, pers. comm.).

A total of 13 status changes occurred over the period from 1988 to 2004, affecting 12 species (Table 3: The species on the priority list that changed IUCN categories over the period 1988 to 2012). Seven of the status changes were in a positive direction indicating an increase in population size. The RLI for the priority species has remained relatively stable over several years at about 0.68 (Figure 8). The increasing trend in RLI from 1988 to 1994 is a result of the improved population trends of a number of species from Mauritius (Mauritius Kestrel *Falco puncatus*, Pink Pigeon *Neosoenas mayeri* and Rodrigues Fody *Foudia flavicans*). The decrease in RLI in 2000 is a result of two seabirds (Black-browed Albatross *Thalassarche melanophrys* and Bank Cormorant *Phalacrocorax neglectus*) being classified as Endangered (from Near Threatened and Vulnerable, respectively). The stable RLI values since 2000 is due to the positive changes in the conservation status of species from Mauritius and Seychelles cancelling out the negative changes of species such as the Sokoke Pipit (*Anthus sokokensis*) and African Penguin (*Spheniscus demersus*).

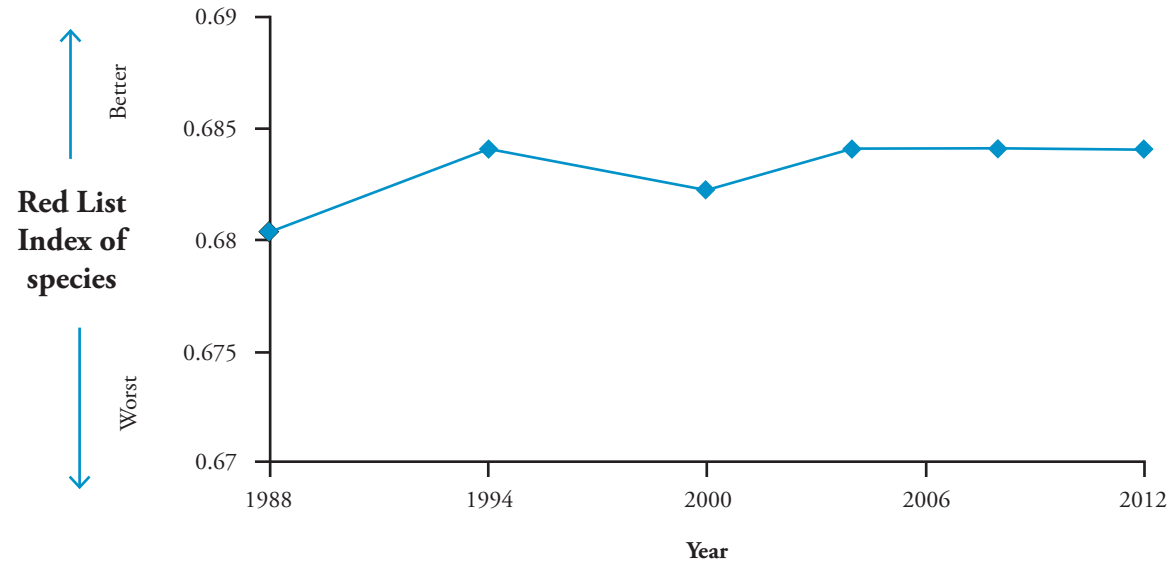


Figure 8: The change in RLI for species on the priority list from 1988 to 2012.

Table 3: The species on the priority list that changed IUCN categories over the period 1988 to 2012

Common name	Species name	Category at start of period (year)	Category at end of period (year)	Justification notes
Madagascar Pond-heron	*Ardeola idae*	VU (1988)	EN (1994)	This species' population has been in long-term decline owing primarily to exploitation for eggs and young.
Mauritius Kestrel	*Falco punctatus*	CR (1988)	EN (1994)	The population increased from 8 pairs in 1987/1988 to 56-68 pairs in 1994 as a result of intensive conservation action.
Pink Pigeon	*Nesoenas mayeri*	CR (1988)	EN (1994)	Intensive management of this species since 1990 has reversed the previous population decline and led to increasing numbers; these exceeded 50 mature individuals in 1993.
Rodrigues Fody	*Foudia flavicans*	EN(1988)	VU (1994)	The population of this species increased from 190 individuals in 1989 to 350 in 1991 owing to habitat protection and reforestation.
Black-browed Albatross	*Thalassarche melanophrys*	NT (1994)	EN (2000)	The rate at which the population of this species is declining is suspected to have exceeded 50% over three generations (65 years) by 2000 owing to increased mortality as incidental bycatch on longline fisheries, qualifying the species for uplisting from Near Threatened to Endangered under criterion A4 by 2000.
Bank Cormorant	*Phalacrocorax neglectus*	VU (1994)	EN (2000)	The rate at which the population of this species is declining is suspected to have exceeded 50% over three generations (22 years) during 1994-2000 owing to a number of threats (e.g. steep declines were recorded on Mercury and Ichaboe Islands owing to a decreased abundance of goby off central Namibia from 1994 onwards), qualifying the species for uplisting from Vulnerable to Endangered under criterion A2 by 2000.
Mauritius Kestrel	*Falco punctatus*	EN (1994)	VU (2000)	Population increases owing to continued conservation efforts, and numbers exceeded 250 mature individuals by 2000.
Rodrigues Warbler	*Acrocephalus rodericanus*	CR (1994)	EN (2000)	The population size of this species has been increasing since 1982 owing to conservation efforts, reaching 150 individuals in 1999.
Mauritius Fody	*Foudia rubra*	CR (1994)	EN (2000)	The population stabilised in the late 1990s as a consequence of intensive conservation action including predator control and rehabilitation of native vegetation. The population has since increased and exceeded 250 mature individuals in 2006-2007 after a re-introduced population became established on Ille aux Aigrettes.
Sokoke Pipit	*Anthus sokokensis*	VU (1994)	EN (2000)	The Extent of Occurrence of this species is suspected to have fallen below the threshold of 2,500 km2 during 1994-2000 owing to continuing habitat loss and disturbance causing reductions and likely extinctions from some sites.
African Penguin	*Spheniscus demersus*	VU (2000)	EN (2004)	The rate of decline experienced by this species increased above 50% over three generations (31 years) in 2007, owing to commercial fishing and shifts in prey populations.
Mauritius Parakeet	*Psittacula eques*	CR (2000)	EN (2004)	The population increased from 10 birds in the mid-1980s to 170-190 birds in the wild in January 2003 and 280-300 birds in February 2005 owing to intensive conservation action.
Seychelles Magpie-robin	*Copsychus sechellarum*	CR (2000)	EN (2004)	The population increased above 50 mature individuals in 2000 owing to intensive conservation action.

It is important to note that the RLI measures the rate of biodiversity loss and does not indicate the state of biodiversity (Butchart *et al.* 2007). While the trend in RLI is encouraging as it suggests that many species are not in danger of extinction, it should be noted that RLI has a low level of temporal sensitivity. Species could be decreasing in population and/or range size at a rate too slow to cross the thresholds that would trigger a change of Red List category (Butchart *et al.* 2004). This is why it is important to continue monitoring apparently common species in order to detect possible changes in the environment as they happen. This is also why many Least Concern species with decreasing population trends were included on the priority species list.

Lesser Noddy, Seychelles (© Ross Wanless)

5. Projected Climate Change Impacts

The populations and breeding success of marine and coastal birds are influenced by various climate-related factors, which make them good indicators of ecosystem change[10]. The impacts of climate change on these species are likely to be direct (e.g. extreme weather, flooding of low-lying colonies from sea level rise); and/or indirect (e.g. sea-surface temperature affecting plankton biomass and prey stock distributions). However, marine systems are so variable that making predictions about future events, such as annual fish stocks, is extremely fraught. There is very little reliability in predicting future climate change impacts on marine ecosystems, with a few exceptions (sea-level rises, storm surge impacts). Thus this section represents as much a gap in our knowledge and understanding of likely climate change impacts on seabirds as it is a statement of facts. Furthermore, there are no solutions to projected impacts that appear to be feasible. The status quo remains to monitor and evaluate, and establish baseline information as soon as possible so that changes can be detected. These changes may provide early warnings of related changes to other components of the marine system, and should thus be prioritised.

Seabirds are generally long-lived and can usually survive adverse short-term environmental events. However, small populations tied to restricted habitat, such as the African Penguin in South Africa, may be threatened by long-term climate warming due to their sensitivity to the distribution patterns of their prey. Small changes in the ocean environment resulting from climate changes could affect food availability and therefore seabird reproductive success. If this occurs over extended periods of time then population declines are likely.

The behavioural, social and life history traits of seabirds may make them more susceptible to climate change (Grémillet and Boulinier 2009). Many seabirds have specialised diets, which leave them vulnerable if the distribution or abundance of their prey decreases. Many species are also highly philopatric, returning to the same site to breed even if conditions become unfavourable (Grémillet *et al.* 2008). Several groups of seabirds have been identified as being particularly vulnerable to climate change (Foden *et al.* 2008). These include the Diomedeidae (albatrosses), Spheniscidae (penguins), Procellariidae, Pelecanoididae and Hydrobatidae (petrels and shearwaters) families. By contrast, the Ardeidae family (herons and egrets) have a low susceptibility to climate change. Climate change could also affect the long-range migrants that frequent the East African coast. No studies have yet been done in the region but migratory birds in other regions have already been affected. In Australia, arrival dates of migrants have advanced by 3.5 days per decade since 1960 (Beaumont *et al.* 2006).

There are a number of secondary effects related to changes in key habitats that are also likely to impact marine and coastal species. According to the Stern review, deforestation accounts for approximately 18%[11] of world annual Greenhouse Gas (GHG) emissions. Understanding the changes in status of the coastal forests, including biodiversity responses to effects of climate change, enables appropriate planning to minimize and offset anticipated losses, and reduce threats to development and human safety (Gilman *et al.* 2006).

The incidence of climatic hazards such as floods and droughts are predicted to increase and rainfall intensity is predicted to increase over tropical oceans (Meehl *et al.* 2005). This could lead to higher mortality of trees due to nutrient leaching and water stress. It will affect the growth, composition and regeneration capacity of forests resulting in reduced biodiversity and capacity to deliver important forest goods and services. This will manifest in desertification, deforestation and forest and land degradation as communities strive to derive their livelihoods from declining forest resources. Existing forested areas will undergo changes in vegetation types and species composition and new assemblages may be established.

In addition, many Invasive Alien Species (IAS) are predicted to spread and more species invasions are projected to occur (Dukes and Mooney 1999). Many invasive species share characteristics that allow them to respond to and take advantage of many aspects of global change. Alien and native diseases and their vectors will also benefit from changing conditions due to climate change. In Hawaii, the mosquitos carrying avian malaria have been restricted to the lowlands, creating a refuge in the cooler, higher elevation forests. As temperatures rise, the mosquitos will

10 http://www.sahfos.ac.uk/climate%20encyclopaedia/seabirds.html
11 http://www.hm-treasury.gov.uk/d/Executive_Summary.pdf

be able to penetrate higher up the mountains and affect the previously malaria-free populations there (BirdLife International 2004b). Monitoring studies on bird populations in the Nairobi Convention area need to be conducted to determine the levels of risk in the region.

The likely impacts of climate change on marine and coastal birds and their key habitats can be broadly broken down into the following areas, which are often interlinked:

5.1 Extreme weather

Extreme weather events are predicted to increase in frequency and intensity due to global warming (Alley 2003) and will have immediate direct impacts on seabirds including death during cyclones or storms. The growing frequency and ferocity of tropical storms and hurricanes in coastal regions such as the Caribbean and South East Asia could be a precursor of similarly devastating extreme weather events on the East African coast. Eggs and chicks are most likely to be harmed during a major storm, with the nest providing limited protection, particularly when located on the ground. Due to this reduced productivity, populations may take some time to re-establish following extreme weather events, particularly when food availability is reduced and/or their nesting habitats have been destroyed[12]. Smaller population sizes will leave some species even more vulnerable to further catastrophic events (Crane and Auman 2008).

The El Niño-Southern Oscillation (ENSO) is a large-scale oceano-climatic fluctuation, characterised by unusually warm waters in the tropical Pacific Ocean caused by a lessening of the offshore winds along the South American coast. This phenomenon has implications for weather worldwide and usually results in extremes of rain or drought in East Africa. The effects of climate change on this phenomenon are difficult to predict but Timmerman *et al.* (1999) suggest that there may be more frequent and intense El Niño events. During El Niño years, ocean productivity is reduced leading to declines in fish stocks, which will affect seabirds as well as humans.

While high rainfall supports high mangrove diversity and productivity due to higher supply of fluvial sediment and nutrients, as well as reduced exposure to sulphate and reduced salinity (Snedaker 1995; Ellison 2000), abnormally high rainfall has caused flooding and massive sedimentation which have led to mangrove die-backs (Kitheka *et al.* 2002, Bosire *et al.* 2006). Mangrove diebacks impact bird roosting sites and the functioning of mangrove ecosystems, which are hugely important foraging grounds many migratory and resident shorebirds and waders. Sedimentation also severely affects coral reefs, by smothering reef organisms and reducing light for photosynthesis (Rogers 1990).

5.2 Sea level rise

The current rate of sea level increase is estimated to be at 0.003 m per year (Church and White 2006). Sea level is predicted to rise by between 0.5 and 1.4 m by 2100 (Rahmstrof *et al.* 2007). This will lead to the inundation and erosion of low-lying, coastal zones including coastal habitats, cities and infrastructure. Approximately 10% of the world's population live in coastal regions less than 10m above sea level (McGranahan *et al.* 2007). For example 17% of the port city of Mombasa could be submerged with a sea level rise of 0.3 meters, with a larger area rendered un-usable for habitation (Awuor *et al.* 2008). Rising sea levels will push the high water mark landwards while many coastal habitats will be prevented from migrating inland due to natural and man-made barriers. This will result in the loss of habitats such as mudflats and marshes (Galbraith *et al.* 2002, Hughes 2004, Le V. dit Durell *et al.* 2006). Islands, reefs and atolls are also vulnerable to sea level rise; Island states such as the Seychelles will be negatively affected (Figure 10).

12 http://www.gbrmpa.gov.au/outlook-for-the-reef/climate-change/what-does-this-mean-for-species/seabirds

Figure 9: Mangrove die-back due to massive sedimentation at Mwache Creek, Kenya

Figure 10: Areas of the Seychelles potentially impacted by sea level rise of 3.5 m (Weiss et al. 2011).

Loss of nesting habitats to sea level rise is likely to have significant impacts on where marine and coastal birds can breed, particularly for species that nest in low lying areas or on the ground. Shore-nesting birds, such as terns, will be particularly affected (Bennet *et al.* 2007). If alternative nesting habitats cannot be found then the overall population impacts could be significant. Many areas where alternative habitats might be available have already been occupied by human settlements and/or infrastructure thus potentially rendering them unsuitable. Coralline atolls such as the Aldabra Group, Bird Island (both in Seychelles) and the islands in the Mozambique Channel are very low-lying (~2 m above sea level). They are critical nesting sites for a huge diversity and proportion of the tropical WIO seabirds, and extreme sea-level rises (>1 m) would cause catastrophic submergence of these sites.

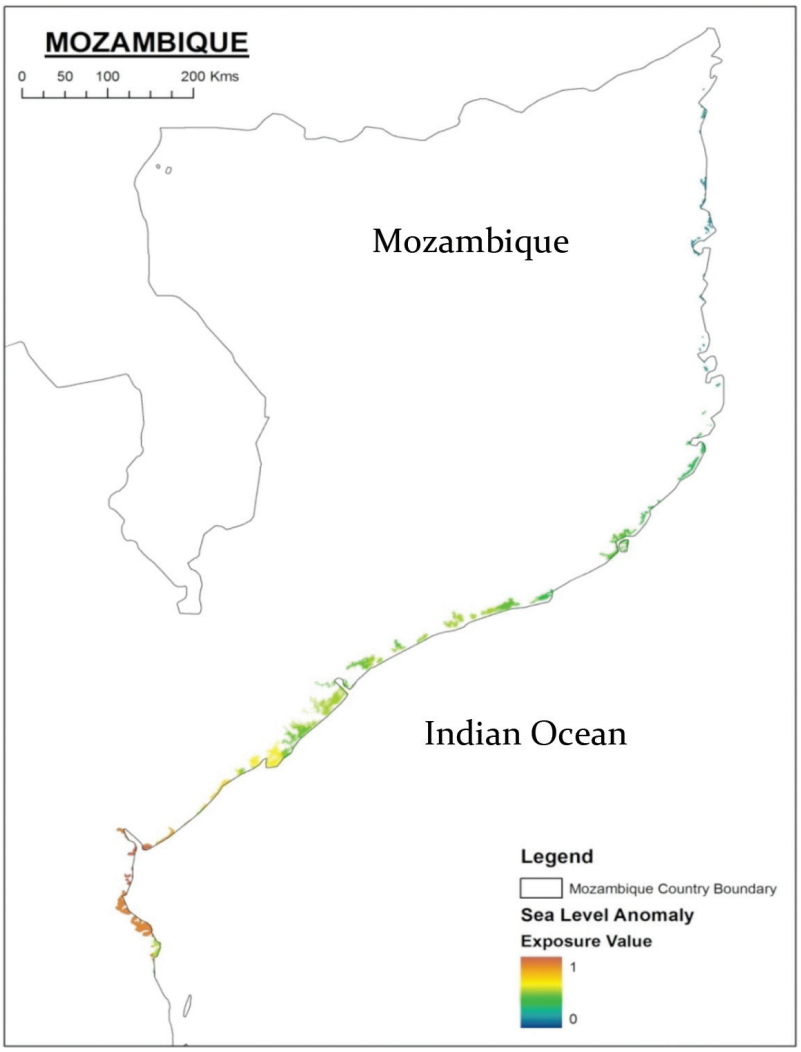


Figure 11: Sea level rise vulnerability
An exposure model analysis showing variation in sea level rise vulnerability along the Mozambique coastline (Bosire unpublished). Models such as this can be used to assess which coastal habitats are most threatened, and where alternatives may

Habitats used by marine and coastal birds for feeding and roosting are also likely to be impacted by sea-level rise. For example, relative sea-level rise is a substantial cause of recent and predicted reductions in the area and health of mangroves and other tidal wetlands (McLeod and Salm 2006, Gilman *et al.* 2008). Since coastal areas where mangroves occur are low lying land, a small increase in sea level will mean that mangroves will be submerged and lost unless they can re-establish in new areas. Recently analysed data show that sea-level rise vulnerability has an increasing north south gradient (Figure 11), suggesting that habitats and associated biodiversity further south are more at risk than those within the north of the Convention Area (Bosire unpublished data). Some vulnerable countries, such as Panama, Samoa and Palau, are beginning to mitigate against possible effects of sea level rises by restoring or protecting mangrove forests to create a buffer zone of forested areas along the coast to prevent coastal erosion and minimise the impacts of saltwater intrusion (BirdLife International 2009).

Associated with an increase in sea level could be increased wave intensity and abnormal tidal ranges, which will have major impacts on rocky shores and coastal mudflats with a likely loss of entire communities of organisms. In Comoros and Seychelles, several beaches have been eroded because of this (Payet *et al.* 2004). Poor shoreline management will make mudflats and rocky shores even more vulnerable. Birds will be significantly impacted due to loss of critical nesting, feeding and roosting grounds.

5.3 Changes in prey availability

Seabirds depend primarily on fish and crustacean resources for food. Evidence suggests that in most cases seabirds' main prey species will become less abundant or shift their seasonal availability and distribution because changes in wind patterns and SST will affect the abundance and distribution of plankton (Crane and Auman 2008 and references therein). Species that have restricted ranges (such as penguins in tropical zones and species in Polar Regions) or specialised prey requirements will be more severely affected (Crane and Auman 2008 and references therein). Other species with more flexible life histories and diets may thrive. How climate change affects seabirds is therefore to a large extent determined by how sensitive their preferred prey is to changes in temperature, salinity and other factors, and whether alternative prey is, or will become, available. Many of the economies of the countries in the Nairobi Convention have a high or moderate vulnerability to the impacts of climate change on their fisheries (Figure 12: Relative vulnerabilities of national economies to potential impacts of climate change on fisheries (Allison et al. 2009).12), which is as a result in part of their dependence on the fisheries and of the impact of climate change on the fish.

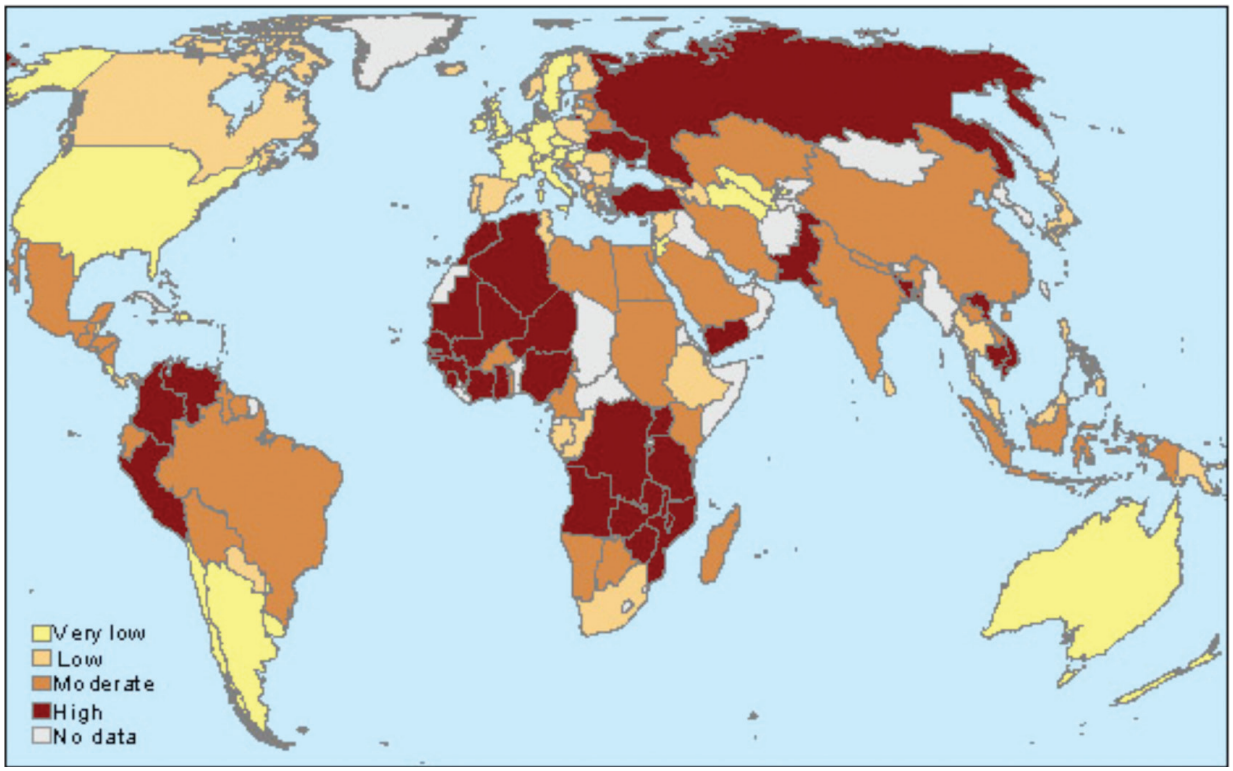


Figure 12: Relative vulnerabilities of national economies to potential impacts of climate change on fisheries (Allison et al. 2009).

Climate change also threatens the functioning of coral reef ecosystems, associated biodiversity and the livelihoods of millions of people across the tropics who depend on those ecosystems for food, income and shoreline protection (Donner 2009). Corals support rich food sources for many bird species. Seagrasses are also under threat from increasing sea surface temperatures (SST) and increases in sea level (Edwards 1995; Short and Neckles 1999), which will also reduce the availability of fish in these areas. Changes in food availability for humans may precipitate new anthropogenic harvesting strategies/target species, including the increased targeting of birds for human consumption.

5.4 Temperature changes at sea and on land

It is becoming clear that marine ecosystems are sensitive to even modest sea surface temperatures (SST) increases, which can disrupt oceanic cycles and alter the abundance and distribution of marine organisms (BirdLife International 2008b). SST increases will also impact heavily on climate patterns elsewhere, e.g. through the El Niño. These changes will have knock-on effects on terrestrial habitats, such as coastal forests. Temperature increases on the Californian coast led to a decrease in the plankton biomass, in turn affecting seabirds, such that cold-water taxa have decreased dramatically (BirdLife International 2008b). In recent warmer years, birds have struggled to find sufficient food for their chicks, because the prey have been either scarce, too small, too lean, or have not been available at the right time (Wanless *et al.* 2005). Several studies of tropical seabirds suggest that foraging success decreases with increasing sea temperature (Sooty tern *Sterna fuscata* Erwin and Congdon 2007; Wedge-tailed shearwater *Puffinus pacificus* Peck *et al.* 2004). Evidence indicates that during frequent or intense ENSO (El Niño/La Niña-Southern Oscillation) events in tropical waters, seabirds have fewer breeding cycles, slower chick development and decreased breeding success (Peck *et al.* 2004). This is because the sea temperatures during ENSO events disrupt the nutrient cycling of the ecosystem, affecting the availability of food for seabirds[13]. As a result several species of seabirds now breed later (Frederiksen *et al.* 2004) and less successfully, and survival of adult birds is also lower in warmer years.

Ocean surface temperatures are increasing, which reduces the amount of vertical mixing in the water column. This will slow the upwelling of cool, nutrient-rich water from depths, which provides the nutrients for the growth of phytoplankton (Behrenfeld *et al.* 2006). This will affect upwelling cells in Somalia and on the west coast of South Africa, both of which are highly productive areas currently.

Coral bleaching, defined as the loss of symbiotic algae from animals normally possessing them, is a response of tropical symbiotic corals, related cnidarians and molluscs to a variety of environmental stresses including increased sea temperatures (Lough and van Oppen 2009). Corals and their symbiotic algae are vulnerable to several environmental threats that can disrupt the symbiotic relationship. If the stress is severe and prolonged, most of the corals on a reef may bleach, and many may die (Hughes *et al.* 2003) thus causing the loss of habitat for many fish species that seabirds prey on.

On land, increasing temperatures will affect breeding birds. As temperatures increase, certain species will be more likely to abandon their nests or have shorter incubation bouts (Grant 1982). High temperatures will also increase the failure of nests at the incubation stage, as for most bird species the optimal temperatures for embryonic development are between 36 and 38° C, although most eggs are more tolerant of falling below these temperatures than going above (Webb 1987).

13 http://www.gbrmpa.gov.au/outlook-for-the-reef/climate-change/what-does-this-mean-for-species/seabirds

Wedge-tailed Shearwater, Seychelles (© Ross Wanless)

Lesser Noddy, Seychelles (© Ross Wanless)

6. Conservation Issues

6.1 Global and regional threats to birds and their habitats

Worldwide, seabirds are the most threatened group of birds (Croxall *et al.* 2012, BirdLife International 2008c). The most pervasive threat facing seabirds is Invasive Alien Species (IAS), which affects 75% of all threatened seabirds (Croxall *et al.* 2012). Other terrestrial threats include disturbance by humans (affecting 27% of threatened seabirds) and habitat degradation (14%; Croxall *et al.* 2012). At sea the biggest threats are from fishing through bycatch (41%) and overfishing (10%) and pollution (31%; Croxall *et al.* 2012). The threats in the WIO region are consistent with these worldwide trends, with IAS affecting many island species and coastal development affecting seabirds on the mainland.

The combination of expanding coastal populations and widespread poverty is a major threat to coastal birds in the WIO region (Francis and Torell 2004). Most of the poorest households in the region depend on natural resources for their livelihoods and in order to survive they can destroy the very resources on which they depend (WWF 2001).This growing population translates into increased habitat modification and destruction from agriculture, urban and tourism developments and increasing marine and land-based sources of pollution. There is also a lack of alternative sources of livelihoods available to poorer households, which can result in further environmental degradation. For example, people will continue fishing, using increasingly environmentally unsound methods simply because there are no other options (WWF 2001).

National capacity and regional cooperation to enforce environmental regulations are inadequate. Many countries have policies which are based around control and prohibition of activities but have poor governance and lack the capacity to enforce them (WWF 2001). Biodiversity is often undervalued which leads to conflict between economic development and environmental protection, which are seen as opposing goals.

Terrestrial threats

One of the main threats to coastal birds is degradation of the environment due to the pressures of economic development, where economic gains are made at the expense of ecosystem functioning (UNEP 2006). Coastal development brings with it numerous problems such as increasing waste production and an increased demand on marine fisheries (UNEP *et al.* 1998). Industrial activity and the construction of new ports and harbours without transparent and comprehensive Environmental Impact Assessments (EIA) and Strategic Environmental Assessments (SEA) is also an issue.

Unsustainable development is a major concern to conservation of birds and their habitats in the marine and coastal environment of the WIO. Most of the Contracting Parties have fragile economies and are highly dependent on natural resources for food and income. Coastal developments, chiefly tourism, coastal agriculture, industrial development and capture fisheries are fast degrading the habitats and food resources that birds rely on. These challenges are exacerbated by climate change. Estuaries and lagoons, important feeding areas for many coastal migrants, are impacted by activities in river catchments (deforestation, agriculture, damming and irrigation; UNEP 2006).

Invasive alien species (IAS) are organisms that are introduced intentionally or accidentally into a new habitat out of their natural range, without the natural checks on their populations, which allows them to spread and have detrimental impacts on the ecology of the new environment. Many invasive plant species have been introduced intentionally for horticulture or agriculture (Lowe *et al.* 2000). Some invasive animal species, such as rats, have been introduced unintentionally, while others such as the Small Indian Mongoose (*Herpestes javanicus (auropunctatus)*) were introduced to control other invasive species (Lowe *et al.* 2000). Islands are particularly vulnerable to IAS because island ecosystems tend to be less complex than mainland ones and many animal species have evolved in the absence of predators. It is estimated that 90% of historic bird extinctions have occurred on islands (Whittaker and Fernandez-Palacios 2007). Multi-island states such as those in the WIO are even more at risk of invasions because

of a lack of inter-island quarantine procedures for islands within the same state (Mauremootoo 2003). Invasive species are the top ranking threat affecting seabirds globally and have the biggest effect at breeding colonies (Croxall *et al.* 2012).

The mainland states in the WIO are affected by IAS, such as the Indian House Crow (*Corvus splendens*) population in Tanzania and the coastal regions of Kenya. However the numbers of invasive species present and their effects on the islands of the WIO is much greater. Ten invasive species present on the WIO islands are listed by the IUCN Invasive Species Specialist Group (ISSG) in the top 100 of the world's worst invaders (Lowe *et al.* 2000). These ten species include two plants (Strawberry guava *Psidium cattleianum* and the prickly lantana *Lantana camara*), one bird (Indian Myna *Acridotheres tristis*) and seven mammals (domestic cat *Felis domesticus*, house mouse *Mus musculus*, rat *Rattus rattus*, pig *Sus scrofa*, rabbit *Oryctolagus cuniculus*, long-tailed crab-eating macaque *Macaca fascicularis*, and the small Indian mongoose *Herpestes javanicus*).

The use of seabirds (particularly larid/tern species) and their eggs as a protein source is also a threat in some areas. In Madagascar and Mozambique, poaching is a problem (Le Corre and Jaquemet 2005) and is likely to be unsustainable, especially the harvesting of adults and collection of eggs. Some colonies (e.g. in Seychelles and Madagascar) are sustainably managed but this can only be achieved through rigorous monitoring of seabird breeding success and harvest levels (Feare and Doherty 2004).

Marine threats

Capture fisheries are a major threat to seabirds in the region. Although historically fisheries in the WIO have had less impact than those in other oceans (Le Corre *et al.* 2012), the impacts have increased recently; annual catches of tuna have increased massively over the last 50 years and tuna now makes up 17% of the total catch throughout the WIO (FAO 2011). In the tropical WIO there is thought to be little bycatch of seabirds as they are not generally attracted to fishing vessels (Anderson 2011). The tuna fisheries in the tropical WIO do not compete directly with seabirds for fish, because seabirds target epipelagic fish while the fisheries target predatory tuna and billfish (Le Corre *et al.* 2012). However, most tropical seabirds feed in association with predatory fish, which force their prey species to the surface. If the abundance of the large tunas and billfish is decreased by overfishing, seabirds might find it hard to locate and catch their prey (Le Corre *et al.* 2012). Bycatch of albatrosses and petrels in the longline and trawl fisheries is however a major threat in latitudes south of 25˚S (Petersen *et al.* 2008, Watkins *et al.* 2008).

Oil pollution is also a major threat to biodiversity in the marine and coastal zone of the WIO. A large proportion (30-40%) of the world's oil is produced in the Middle East (World Factbook 2009) and most of this is exported across the Indian Ocean. This increases the risk of low-level chronic oil pollution and catastrophic spills (Vethamony *et al.* 2007). The movement patterns of birds in southern Mozambique Channel, the south of Madagascar and the Mascarene Archipelago have high overlap with maritime traffic and are at the highest risk of oil spills (Le Corre *et al.* 2012)

6.2 Priority threats

In the national reports, each country identified the most important threats to birds and potential actions that could be taken against these threats. They also assigned a priority to the actions based on the severity and extent of the threat and the practicality and achievability of the potential actions. All countries relied on expert opinion to decide on the threats and prioritise them, many using information from the BirdLife International Data Zone as a baseline.

Two main, cross-cutting threats (i.e. those that featured in multiple national reports) were IAS and issues related to human settlement and activities. Invasive alien species were listed as a threat in all countries except Kenya, although

the island nations listed more invasive species and gave the conservation actions higher priority than the mainland countries. Rats, mice, domestic cats and introduced birds (such as the Indian House Crow *Corvus splendens*) were some of the species listed as the highest priority threats. Agriculture and aquaculture, specifically expansion and intensification, were also listed by most countries as high priority threats. Residential and commercial development through urban expansion was also listed as high priority by most countries. A third cross-cutting issue is climate change, but its impacts on seabirds in the region are not well described and mitigation actions are even more poorly understood.

The impact of the threats was calculated from information listed in the BirdLife International Data Zone Species Factsheets. The impact is calculated by scoring the timing (the time period the threat acts over), severity (the speed of the projected decrease in population size) and scope (what proportion of the population is affected) of the threat[14]. The overall score is then classified as High, Medium, Low, No Impact or Past threat. Threats with a high impact score are those that are currently acting on the population, affect the majority of the population and cause very rapid population decreases.

Invasive Alien Species (IAS) threaten the largest number of species and have the largest impact (Figure 13). Some species are threatened by more than one IAS. Biological resource use also has a relatively large impact on the priority species. Climate change is the threat about which the least is known. While IAS threaten a large number of species, agriculture and aquaculture have a medium level impact on a greater proportion of species that are affected by this threat. Biological resource use affects birds either directly, through the use of birds themselves, or indirectly through habitat destruction due to logging and bycatch of seabirds due to fishing activities.

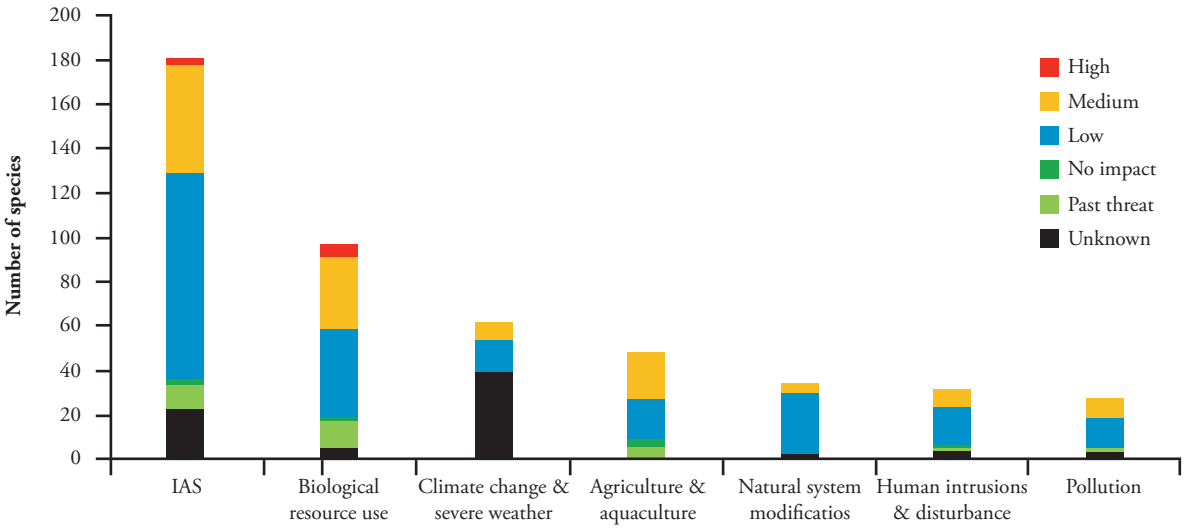


Figure 13: Impact of threats to birds on the priority list. IAS = Invasive Alien Species. The severity of threats is based on the scope (how much of the population is affected), timing and severity (how quickly the threat will affect the species).

Country accounts:

Comoros

The biggest issue facing birds in the Comoros is habitat destruction through vegetation clearance for agriculture and logging. Invasive rats and the common myna are also problems for forest-dwelling birds as they predate nests and compete for nesting cavities. Waste management, both solid household waste as well as agricultural runoff entering the ocean, is a major threat to coastal birds. This will affect the birds' feeding grounds and prey base.

14 See http://www.birdlife.org/datazone/info/spcthreat for full details of how to calculate the threat impact score.

Kenya
Population growth and rising demand for goods and services are increasing pressure on the coastal and marine environment. These are manifested in escalating demand for arable lands, ranching, urban infrastructure, tourism, and increasing pollution and waste management problems. Rapid population growth leads to high demand for fuel wood, unplanned settlement and infrastructure resulting to unsustainable use of coastal forests.

Madagascar
Coastal birds are threatened by the conversion of natural habitats into rice paddies as well as the clearing of mangroves for aquaculture development. Seabirds, especially terns, are hunted on northeastern islands for protein and income.

Mauritius
The major impacts on bird species in Mauritius stem from past ecological mistakes, such as the deliberate introduction of IAS. Many of these species are still present and are spreading between islands. Another major threat is the loss of habitat (forests and wetlands) to development.

Mozambique
Many of the threats to coastal birds stem from the growing coastal population, which leads to increased development and land clearing for agriculture. Marine species are threatened by overexploitation of marine resources and illegal fishing methods (dynamite and poison) as well as by bycatch in longline fishing.

Réunion
In Réunion, coastal development due to limited building space, IAS and artificial light at night causing light pollution are the main threats to marine and coastal birds. In Mayotte, the major threats to birds are a lack of law enforcement capacity and a lack of educational campaigns about the environment and how to protect it, allowing unfettered resource use and disturbance at important sites.

Seychelles
Most threats to birds in the Seychelles are traceable to past activities (e.g. conversion of lowland forests to agriculture and the introduction of IAS) and are largely under control through large-scale monitoring and reintroduction programmes. However, these depend on stable financial and political conditions in the Seychelles. The main threat to seabirds at sea is the loss of access to food through the overfishing of tuna stocks and the effects of climate change.

South Africa
The major threat to seabirds in South Africa is the incidental mortality and bycatch in fisheries. It originates from lack of capacity to enforce permit conditions at sea, but this is being addressed. Coastal seabird species are threatened by a reduction in food availability through a combination of climate change and overfishing. Coastal forest-dependent species are threatened by the development of many coastal forest areas.

Somalia
The ultimate cause of the threats to birds in the marine and coastal zone, and indeed all biodiversity, is the lack of a stable government in the country. This means that there is no legislation regarding biodiversity protection and existing laws are not enforced. In addition to this the magnitude of many of the direct threats to biodiversity are unknown and thus cannot be addressed.

Tanzania
There is a lack of integration of environmental policies into economic plans in Tanzania. Thus agricultural expansion and tourism development in the coastal zone proceed without taking into account important environmental issues.

6.3 Socio-economic attributes

There are a wide range of economic and social systems in the Contracting Parties. Most African countries are experiencing high population growth rates and high rates of urbanisation (UNEP 2006). By 2030 it is predicted that 53% of Africa's population will live in urban areas (UNEP 2006). In the Nairobi Convention area, this is no different. Currently, the coastal area is inhabited by over 40 million people who depend on its ecosystems for food and income (UNEP and Nairobi Convention Secretariat 2009). About 34% of the countries' population live within 100km of the coast, ranging from the entire population in the case of the island nations to 8% in Kenya (Table 4: Human populations in the coastal zones.4; WRI 2003).

Table 4: Human populations in the coastal zones.

Country			Coastal population (%)1					
	Area (km^2)	Population (millions)	<25 km	<75 km	<100 km	Population density (people per km^2)		GDP (US$ billions)
Comoros	1 860	0.74	100	100	100	395.2	2.6	0.54
Kenya	569 140	40.51	6.1	7.5	8	71.2	2.6	32.20
Madagascar	581 540	20.71	23.2	45	55	35.6	2.9	8.72
Mauritius (main island only)	2 030	1.28	100	100	100	631.0	0.5	9.72
Réunion	370	0.20	100	100	100	551.4	3.1	
	786 380	23.39	32.7	52.1	59	29.7	2.3	9.59
Seychelles	460	0.09	100	100	100	189.1	-0.9	0.94
Somalia	627 340	9.33	30.5	52.7	55	14.9	2.3	
South Africa	1 214 470	49.99	23.4	35.9	39	41.2	1.4	363.91
Tanzania	885 800	44.84	13.6	17.3	21	50.6	3.0	22.92
Total	**4 669 390**	**191.09**	**20.1**	**30.4**	**34.3**			

Sources: World Bank 2010 except 1UNEP/Nairobi Convention Secretariat and WIOMSA 2009

Traditional coastal activities focused on artisanal fishing, agriculture, tourism and trading. Now the focus has switched to rapid urban and industrial growth, oil and gas development and industrial-scale fisheries (UNEP 2006). Fishing is an important part of the economies of all the states in the Nairobi Convention area as fishing, fish processing and transhipment provides additional jobs and revenue (UNEP 2006).

The population distribution is uneven across the landscape, with factors such as soil fertility, climate and the presence of disease vectors (mosquito and tsetse fly) determining where people have settled (IUCN/UNEP 1985).

African Penguin, South Africa (© Ross Wanless)

7. Current Conservation Efforts

7.1 Marine protected areas

Marine Protected Areas (MPAs) are marine areas that are protected from some or all extractive or damaging activities (Rocliffe 2010). They have become the focus of many approaches to conservation in the marine environment, with over 5 000 worldwide; but this represents only 0.78% of the world's oceans (Rocliffe 2010). The formation of MPAs has been recommended in several international environmental conventions, including the Convention on Biodiversity (CBD), United Nations Convention on the Law of the Sea, the United Nations Conference on Development and Environment as well as the Nairobi Convention (Francis *et al.* 2002). The first MPA in the region was the Ilhas da Inhaca e dos Portugueses Faunal Reserve, which was gazetted in Mozambique in 1965 (Rocliffe 2010).

MPAs are created for a variety of reasons, including conserving representative samples of natural ecosystems, conserving endangered species, recreation, education and research (Francis *et al.* 2002) and to rebuild fish stocks (Rocliffe 2010). The first MPAs were small and designed to protect specific habitats such as areas around turtle nesting sites (Wells *et al.* 2007). By the 1990s the MPAs were larger, multiple-use sites (Wells *et al.* 2007). Some MPAs in the WIO region have been developed by private companies or non-governmental organisations (NGOs) (Francis *et al.* 2002). For example, Cousin Island Special Reserve in Seychelles is managed by Nature Seychelles and the Chumbe Island Coral Park in Zanzibar is managed by the Chumbe Island Coral Park Ltd. (Francis *et al.* 2002). Community-based MPAs are also starting to be declared, such as the Moheli Marine Park in Comoros. It is likely that more such MPAs will be declared as communities become empowered to care for their marine and coastal resources (Francis *et al.* 2002).

Many MPAs around the world are declared for fish stock recovery purposes and are often based on human considerations (Francis *et al.* 2002). This means that there are many gaps in the MPA networks. MPAs can have varying degrees of protection, from strict no-take zones to areas where sustainable fishing is allowed.

Each country in the WIO region has afforded differing degrees of protection to the marine and coastal environment (Table 5: Marine Protected Areas (MPAs) in the Western Indian Ocean (WIO) region.5). South Africa has a large number of MPAs, with 23 sites gazetted (0.42% of South Africa's mainland marine territory) (Sink et al. 2012), although only 5 of these occur within the Indian Ocean boundary. Kenya and Tanzania are the only countries which have protected 10% of their territorial waters (Rocliffe 2010), while Mozambique has some of the largest MPAs (UNEP-WCMC 2008). By contrast, Somalia has not declared any MPAs and Comoros only one. Even for countries with many MPAs there is still room for improvement as much of the EEZs of most countries remain unprotected (Table 5: Marine Protected Areas (MPAs) in the Western Indian Ocean (WIO) region.5).

The number of MPAs and the area of territorial water protected in each of the countries in the WIO region. Territorial waters are defined as the area from the low water mark to 12 nautical miles (22km) seawards. Information for South Africa is given for both the portion of the coastline in the Indian Ocean as well as the entire coastline (in brackets).

The countries in the region have various types of MPAs. For example, in Mauritius there are two MPAs that are marine reserves designed to protect marine species in a particular area of the sea, while the remaining six are fishing reserves which are protected as fish nurseries or spawning grounds (Francis *et al.* 2002).

There are several key areas of biodiversity that remain unprotected in the WIO. Most MPAs in the region and worldwide tend to be in the coastal waters and continental shelf, and offshore and deep-sea habitats are underrepresented (UNEP-WCMC 2008). Worldwide, coral reefs and mangroves are well protected, a trend which is followed in the WIO (UNEP-WCMC 2008). In Kenya, Tanzania and Mozambique, the existing MPAs correlate closely with existing Important Bird Areas (IBAs), though their size and shape do not necessarily correspond, suggesting that these will be a good start for developing the MPA network further (UNEP-WCMC 2008).

Table 5: Marine Protected Areas (MPAs) in the Western Indian Ocean (WIO) region.

Country	Number of MPAs	Total area of MPAs (km^2)	Territorial waters (km^2)[1]	MPA percentage of territorial waters	EEZ (million km^2)[1]	MPA percentage of EEZ
Comoros	1[2]	404[2]	12684	3.2	0.161	0.25
Kenya	11[2]	1631[2]	13337	12.2	0.104	0.8
Madagascar	8[3]	1502[3]	124938	1.2	1.079	0.14
Mauritius	8[2]	72[2]	16840	0.4	1.274	0.01
Mozambique	5[3]	3263[3]	70894	4.6	0.493	0.66
Réunion	10[2]	-	5703	-	0.31	-
Seychelles	11[3]	336[3]	45411	0.7	1.29	0.03
Somalia	0	0	69622	0	0.83	0
South Africa	5 (23)[4]	3351[3]	74699	6.5 (0.42)[4]	1.068	
Tanzania	9[3]	3907[3]	36578	10.7	0.204	1.48

[1] *World Resources Institute 2003*
[2] *IUCN 2004*
[3] *Rocliffe 2010*

There are several key projects in the region, working on establishing MPAs. One of these is the World Wide Fund for Nature's (WWF) East African Marine Ecoregion (EAME) programme, which has set a target of having 10% of each country's marine environment protected (UNEP-WCMC 2008). WWF, the International Coral Reef Action Network (ICRAN) and the International Union for the Conservation of Nature (IUCN) have also been involved in several other MPA projects in Kenya, Tanzania and Mozambique (Rocliffe 2010) while the Global Environment Facility (GEF) has provided funding (Rocliffe 2010).

7.2 Marine important bird areas

BirdLife International has developed a very successful terrestrial and freshwater IBA programme for over 25 years and which is now being extended to the marine environment (BirdLife International 2010). There are substantial difficulties in identifying marine IBAs compared to terrestrial IBAs as the marine environment is vast and many seabirds are highly mobile, often travelling thousands of kilometres at sea (BirdLife International 2010). The types of sites that are likely to be identified as marine IBAs are: seaward extensions from breeding colonies, coastal congregations of non-breeding seabirds, migration bottlenecks and pelagic foraging areas (more details are given in section 4.1.3).

Designation of marine IBAs does not necessarily imply advocating bans on extractive or recreational activities, but shows sites where potential negative impacts on seabirds might occur and best practice management measures of potential threats should be considered. In future, threats and associated conservation actions that might reduce at-sea pressures to trigger species in marine IBAs can be identified and provided to the Nairobi Convention and others as appropriate.

Although over 2000 candidate marine IBAs have been identified so far worldwide, site identification is ongoing, especially for pelagic areas (BirdLife International 2010). The most common type identified so far are seaward extensions around breeding colonies which capture near colony behaviours and feeding areas. The marine IBAs

suggested in this report were developed in a workshop held at the Western Indian Ocean Marine Science Association (WIOMSA) symposium held in October 2011. Experts at the workshop identified important sites and gave an indication of what size would be necessary to protect a significant proportion of the relevant seabird population.

Using extensive published data on foraging ranges for key seabird species ('trigger species' for existing, terrestrial IBAs where seabirds breed), this report presents a first attempt at seaward extension marine IBAs. In the absence of better information these seaward extensions can be considered as identifying marine IBAs using the best available current data. They can be regarded as simple "foraging habitat suitability models" which show all suitable foraging habitat within normally reachable distances from the breeding colony IBA. It should be noted that not all of an area is likely to be equally important and/or used at the same time, and as such marine IBA boundaries are open to refinement in the future once site specific data and capacity becomes available.

Seaward extensions at 53 different sites for 32 species were identified throughout the region (Figure 14 and Appendix 5). Most of the sites were in Seychelles and South Africa, as this is where there are many breeding colonies. None were identified in Mozambique as there are no major seabird breeding colonies.

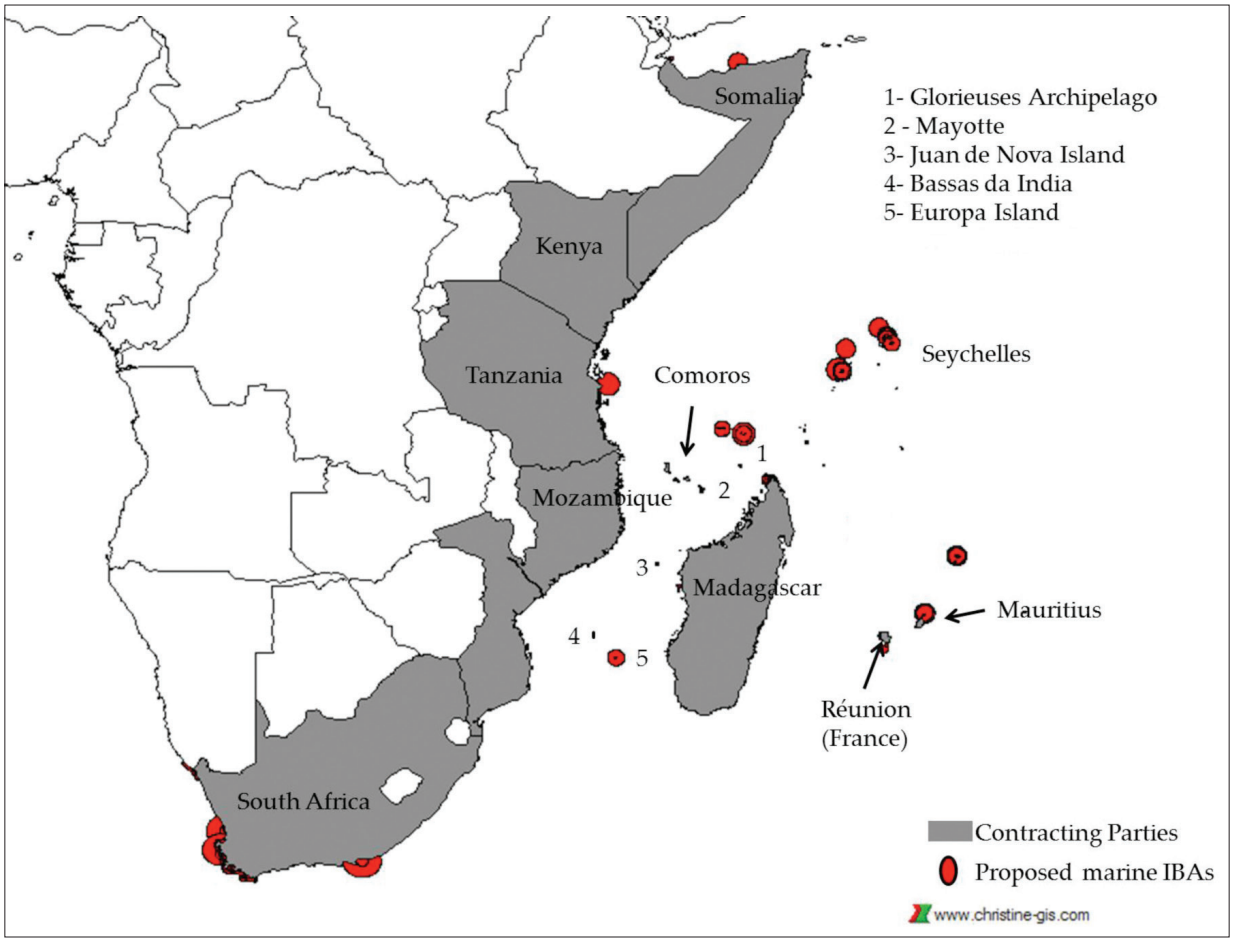


Figure 14: Proposed marine IBAs in the region. See Appendix 5 for detailed country maps.

7.3 Links to other policy mechanisms

There are several regional and international agreements that could work in tandem with the Nairobi Convention.

Convention on Biological Diversity (CBD)

The Convention on Biological Diversity is an international agreement on the protection and sustainable use of biodiversity. The Contracting Parties are required to develop biodiversity strategies and action plans. The Convention covers a wide range of issues relevant to the WIO region, such as enhancing the implementation of integrated marine and coastal area management and conservation, sustainable use of deep seabed genetic resources beyond the limits of national jurisdiction, establishment of protected areas, preventing the spread of IAS, rehabilitating and restoring degraded ecosystems and education[15] about biodiversity, and sets out targets which need to be met such as the proportion of a country's area which should be protected.

Of particular relevance to prioritisation of areas in the marine and coastal environment, in 2008 the CBD approved a set of seven criteria for identifying Ecologically or Biologically Significant Marine Areas (EBSAs) in need of protection. Parties to the CBD have since committed to facilitate the description of areas meeting the scientific criteria for EBSAs, both within and beyond national jurisdiction. This has been advanced through a series of regional workshops that have brought together relevant datasets for review by nationally nominated marine experts, and to describe sites meeting the criteria. A workshop was held for the wider Indian Ocean in August 2012 and described over 50 sites that meet the EBSA criteria. Seabird data compiled and provided by BirdLife have been an integral part of these workshops and the IBA approach has been widely adopted within the EBSA framework by attending Parties.

Also worth noting is the need to mainstream coastal biodiversity considerations into Regional and National Biodiversity Strategies and Action Plans (RSAPs and NBSAPs), essentially to forge sustainable development that improves ecosystem health and functioning in the coastal environment.

Convention on Migratory Species (CMS)

This intergovernmental agreement aims to conserve all migratory species throughout their range. There are two Appendices to the Convention; Appendix I lists species that are at risk of extinction throughout all or most of their range, while Appendix II lists species that have an unfavourable conservation status and would benefit from a regional agreement between countries. Four species on the regional priority list are also on CMS Appendix I and 25 species are on Appendix II. Most of those on Appendix II are albatrosses and petrels[16].

CMS also functions as a framework agreement from which independent agreements can be developed. One such agreement that is relevant to the Nairobi Convention area is the African-Eurasian Waterbird Agreement (AEWA). AEWA focuses on migratory waterbirds and aims to identify and address all threats they face on their migrations through a "flyway" approach. Kenya, Madagascar, Mauritius, Reunion, South Africa and Tanzania are signatories to this Agreement. Of species on the regional priority list, 43 are also listed on Annex II of the agreement[17].

Convention on Wetlands of International Importance (Ramsar)

The Ramsar Convention aims to conserve and promote the "wise use" of wetlands through local and national actions and international cooperation. Signatories to the Convention agree to designate, protect and manage

15 For more, see http://www.cbd.int/
16 For the full list, see http://www.cms.int
17 For the full list, see http://www.unep-aewa.org

important wetlands and work towards the wise use of such wetlands. Wetlands are important areas for many birds throughout the Nairobi Convention area, especially as feeding grounds for migratory birds. By working in tandem with the Ramsar Convention and using systems already established by that Convention, the Nairobi Convention could help to promote the conservation of birds in wetlands.

Integrated Coastal Management (ICM)

Coastal management in the WIO has shifted from a sectoral approach to an integrated one and the welfare of coastal communities has become more important (Francis and Torell 2004). Integrated Coastal Management (ICM) became prominent in the 1990s, as managers turned away from the fragmented system of the past (Francis and Torell 2004). ICM is seen as a way to implement the objectives of the Convention on Biological Diversity (CBD). The Tanga Coastal Zone Conservation and Development Programme in Tanzania was one of the first ICM systems set up to address overfishing and use of destructive fishing practices such as dynamite fishing, small mesh-nets and beach seining as well as coral mining (Francis and Torell 2004). It is important that birds and biodiversity consideration is mainstreamed in the nearly completed Nairobi Convention Protocol Concerning Integrated Coastal Zone Management (ICZM).

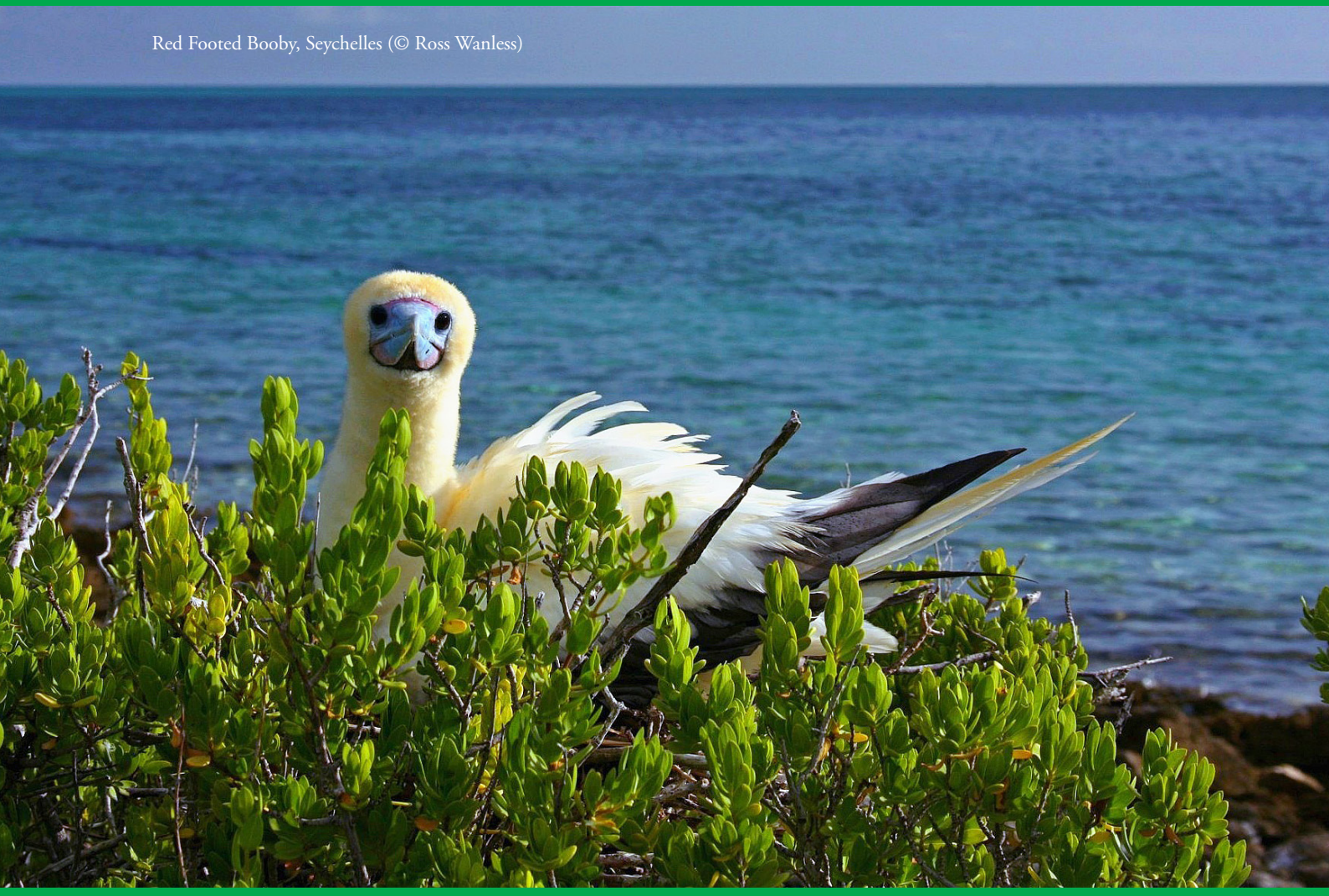
Regional Fisheries Management Organisations (RFMO)

Regional Fisheries Management Organisations (RFMOs) are multilateral agreements to regulate fishing on the high seas and stocks that straddle international borders. The Indian Ocean Tuna Commission (IOTC) and South West Indian Ocean Fisheries Commission (SWIOFC) operate in the WIO.

The IOTC is the relevant tuna RFMO in the region. It manages the pelagic longline, purse seine and artisanal gillnet fisheries for tuna and tuna-like species. The reporting of seabirds as bycatch only began in 2006. Key issues in IOTC fisheries are from direct mortality in longline fisheries south of 25˚S, direct mortality in gillnet fisheries (which are as-yet unquantified but the effort levels and likely seabird taxa at risk are cause for significant concern) and overfishing in tropical waters. In 2012 the Commission agreed to a strong set of measures that, if implemented, will reduce appreciably the numbers of seabirds killed during longline fishing effort south of 25˚S. However, the measures are set to come into force only in July 2014. The risks to seabirds from the huge gillnet effort, especially in northern coastal states, is unknown. Direct mortality from longline and purse seine fishing activities in subtropical and tropical waters poses little risk to the seabird assemblages there. However, overfishing of tunas is a concern, because the majority of tropical seabirds form strong feeding associations with tunas (they follow schools of tuna and feed on baitfish that the tunas drive to the surface).

The South West Indian Ocean Fisheries Commission (SWIOFC) is an RFMO that manages non-tuna catches in much of the Nairobi Convention area. It is a relatively young RFMO, coming into force in November 2004.

RFMOs are directly or indirectly mandated to manage relevant fishing impacts on all affected species, including bycatch, not just the target species. However, their overwhelming focus until very recently has been on managing individual target species, despite mounting pressure to develop more holistic, multi-species and ecosystem-based management approaches. RFMOs are key institutions to include in any regional plans for marine biodiversity protection, especially if they involve recommendations for management actions that might involve or affect fishing activities. Reporting, compliance and surveillance issues remain key weaknesses in most RFMOs. Without strong and independent monitoring, and with incomplete or inadequate options to enforce measures and censure transgressions, levels of compliance with key resolutions remain uncertain, but are probably very low. The consequences for biodiversity conservation are important. Non-Governmental Organisations' efforts and multilateral efforts to address these concerns should be supported by inter-governmental organisations and instruments such as the Nairobi Convention. A specific policy intervention framework would need to be developed to inform the Nairobi Convention secretariat and member states of how best to engage with RFMOs.



Red Footed Booby, Seychelles (© Ross Wanless)

8. Conclusions and Recommendations

8.1 Recommended actions

This concluding chapter gives a synthesis analysis of the threats to birds, their habitats and the wider ecosystems in the Nairobi Convention area. It also recommends a suite of interventions to safeguard priority sites within the region. In the course of drafting this report, the list of birds in Annex II of the Protocol Concerning Protected Areas and Endangered Wild Fauna and Flora (Appendix 1) on species of wild fauna requiring special protection was reviewed, based on current status of birds within the region. The updated bird list is presented in this chapter for consideration of the Contracting Parties to replace the bird list in the Protocol Concerning Protected Areas and Endangered Wild Fauna and Flora.

Some key actions that the Convention could take to improve the status of birds in the marine and coastal environments regionally, in addition to the specific actions listed in Appendix 6, are recommended as follows:

1. **Replace bird species listed in Annex II** of the Protocol Concerning Protected Areas and Endangered Wild Fauna and Flora (Appendix 1) with the updated bird list in Section 8.2.
2. **Review the species list of other taxa** listed in the protocol. Findings from review of the bird list suggest possibility of gaps in the species list for other taxa in the protocol.
3. **Prioritise conservation efforts on the 108 species** proposed in the revised list (See section 8.2 and Appendix 4) and their habitats. Many of these species are migratory and cross national boundaries both on land and at sea. Regional cooperation is required to conserve them adequately.
4. Encourage the Contracting Parties to **strengthen the protection of species proposed in section 8.2 and candidate marine IBAs proposed in section 8.3**, nationally and at site level. This will contribute to attainment of Aichi Biodiversity Target 11[18].
5. **Review regional conservation actions and policies to encompass the High Seas**, also known as Areas Beyond National Jurisdiction (ABNJ). Many species listed on the priority list spend most of their time in the open ocean (e.g. albatrosses, petrels and shearwaters), beyond the EEZs of the Contracting Parties.
6. **Establish clear links** between the Nairobi Convention and the complementary Multilateral Environmental Agreements (MEAs) such as CBD, CMS and Ramsar Convention, and regional fisheries bodies discussed in section 7.3.
7. **Establish a network of bird experts** in the region to advise on bird protection.

There are some threats that are common to all contracting parties and also go beyond national boundaries. Regional cooperation to address such threats is vital.

1. Invasive alien species are major threats to birds in all countries, especially the Island States. Better cooperation on biosecurity, through the enforcement of quarantine procedures at ports of arrival and of departure will reduce significantly the spread of invasive species. Resources for this can be accessed through the Global Invasive Species Programme (www.gisp.org)
2. The region has become the focus of offshore oil and gas exploration. There is a need for a set of guidelines for environmental impact assessments for oil and gas and other developments in the coastal and marine environment. Sensitive areas should be identified (ideally as part of national and regional marine spatial planning initiatives), and attempts made to mitigate against any detrimental activities occurring in these areas, including development of contingency plans for spills, regular training and inspection to ensure disaster-readiness and early warning systems. If necessary, the Nairobi Convention "Protocol Concerning Cooperation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region" could be amended to include oil and gas exploration and drilling and mineral extraction.

18 By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

3. The region is a major oil transport route. In order to minimise the risk of oil spills, whether catastrophic (ship wrecks) or chronic (through the illegal washing of tanks at sea), Contracting Parties should work together and with the International Convention for the Prevention of Pollution From Ships (MARPOL) and the Nairobi Convention "Protocol Concerning Cooperation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region" to better enforce laws and develop cooperative procedures outlined in Point 2.
4. While overfishing is not thought to be a major threat to many seabird species because the fisheries and birds target different species, this is not the case for those seabirds specialising on lower trophic level forage fish (sardines, pilchards, anchovies) nor for many seabirds which feed in conjunction with large marine predators such as tuna. If tuna or forage fish stocks collapse, dependent seabird species will be unable to access their primary prey. Contracting Parties should work closely with Regional Fishing Management Organisations (RFMOs) such as the Indian Ocean Tuna Commission (IOTC) to ensure conservative models and catch estimates are used to set catch limits; target limits and reference points are adopted; and regular management strategy evaluations are conducted. A move towards multi-species management and stronger focus on ecosystem-based management approaches should also be strongly encouraged. Compliance, Monitoring and Surveillance systems need to be strengthened. The Nairobi Convention could assist in the development of systems of compliance monitoring for ports receiving catches from national and high seas vessels. This will ensure that relevant RFMO regulations, such as catch limits and bycatch mitigation techniques, are followed before catches are unloaded.
5. Conservation and economic development are often presented as conflicting activities. Efforts should be made towards integrating environmental and sustainability considerations into economic development, especially in the context of marine spatial planning. This could be achieved by creating regional plans, mapping hotspots and critical habitats, and making those products available to environmental impact assessors. Also, support for mechanisms to ensure adequate enforcement of existing environmental legislation. Research should also be done on the economic value of marine ecosystem services in order to compare the cost of potential damage to ecosystem services with the costs and benefits of planned developments.
6. Residential, commercial and agricultural development along the coast is a major cause of the loss and degradation of habitats such as mangroves and coastal dunes. While it is an issue that could be best managed nationally, it affects all countries in the region. The Nairobi Convention could create a set of coastal zone management guidelines to regulate coastal development and assist countries in managing developments so they have minimal impacts on sensitive habitats.
7. Climate change will likely have significant impacts on the marine environment. Although options for mitigating those impacts have not been well developed, the wider marine environment would benefit from concerted efforts to monitor seabirds in breeding colonies and at sea. They are sensitive indicators of change, and relatively low-cost monitoring programmes may well provide early warning of changes to other components of the marine environment, such as fish stock collapse or distribution shifts. Of course, efforts to prevent climate change itself would help to prevent negative impacts on seabirds and is strongly supported.

8.2 Revised bird list for Annex II (see Appendix 4 for a more detailed list)

The following species are proposed for the new Annex II list.

	Scientific name	Common name	IUCN status
1	*Diomedea dabbenena*	Tristan Albatross	CR
2	*Haliaeetus vociferoides*	Madagascar Fish-eagle	CR
3	*Otus capnodes*	Anjouan Scops-owl	CR
4	*Otus moheliensis*	Mohéli Scops-owl	CR
5	*Otus pauliani*	Grand Comoro Scops-owl	CR
6	*Pseudobulweria aterrima*	Mascarene Petrel	CR
7	*Terpsiphone corvine*	Seychelles Paradise-flycatcher	CR
8	*Zosterops chloronothus*	Mauritius Olive White-eye	CR
9	*Acrocephalus griseldis*	Basra Reed-warbler	EN
10	*Acrocephalus rodericanus*	Rodrigues Warbler	EN
11	*Anas bernieri*	Madagascar Teal	EN
12	*Anthreptes pallidigaster*	Amani Sunbird	EN
13	*Anthus sokokensis*	Sokoke Pipit	EN
14	*Ardea humbloti*	Madagascar Heron	EN
15	*Ardeola idae*	Madagascar Pond-heron	EN
16	*Copsychus sechellarum*	Seychelles Magpie-robin	EN
17	*Dicrurus fuscipennis*	Grand Comoro Drongo	EN
18	*Diomedea sanfordi*	Northern Royal Albatross	EN
19	*Foudia rubra*	Mauritius Fody	EN
20	*Humblotia flavirostris*	Grand Comoro Flycatcher	EN
21	*Hypsipetes olivaceus*	Mauritius Black Bulbul	EN
22	*Otus ireneae*	Sokoke Scops-owl	EN
23	*Phalacrocorax neglectus*	Bank Cormorant	EN
24	*Phoebetria fusca*	Sooty Albatross	EN
25	*Ploceus golandi*	Clarke's Weaver	EN
26	*Psittacula eques*	Echo Parakeet	EN
27	*Pterodroma baraui*	Barau's Petrel	EN
28	*Spheniscus demersus*	African Penguin	EN
29	*Thalassarche carteri*	Indian Yellow-nosed Albatross	EN
30	*Thalassarche chlororhynchos*	Atlantic Yellow-nosed Albatross	EN
31	*Thalassarche melanophrys*	Blackbrowed Albatross	EN
32	*Threskiornis bernieri*	Madagascar Sacred Ibis	EN
33	*Zoothera guttata*	Spotted Ground-thrush	EN
34	*Acrocephalus sechellensis*	Seychelles Warbler	VU
35	*Bugeranus carunculatus*	Wattled Crane	VU

	Scientific name	Common name	IUCN status
36	*Charadrius thoracicus*	Madagascar Plover	VU
37	*Circus macrosceles*	Madagascar Harrier	VU
38	*Coracina typica*	Mauritius Cuckoo-shrike	VU
39	*Dicrurus waldenii*	Mayotte's Drongo	VU
40	*Diomedea epomophora*	Southern Royal Albatross	VU
41	*Diomedea exulans*	Wandering Albatross	VU
42	*Egretta vinaceigula*	Slaty Egret	VU
43	*Falco punctatus*	Mauritius Kestrel	VU
44	*Foudia flavicans*	Rodrigues Fody	VU
45	*Glareola ocularis*	Madagascar Pratincole	VU
46	*Morus capensis*	Cape Gannet	VU
47	*Nesoenas mayeri*	Pink Pigeon	VU
48	*Otus pembaensis*	Pemba Scops-owl	VU
49	*Phalacrocorax nigrogularis*	Socotra Cormorant	VU
50	*Procellaria aequinoctialis*	Whitechinned Petrel	VU
51	*Procellaria conspicillata*	Spectacled Petrel	VU
52	*Pterodroma arminjoniana*	Round Island Petrel	VU
53	*Thalassarche chrysostoma*	Grey-headed Albatross	VU
54	*Treron pembaensis*	Pemba Green-pigeon	VU
55	*Zosterops mouroniensis*	Mount Karthala White-eye	VU
56	*Anthreptes reichenowi*	Plain-backed Sunbird	NT
57	*Campethera notata*	Knysna Woodpecker	NT
58	*Charadrius pallidus*	Chestnutbanded Plover	NT
59	*Circaetus fasciolatus*	Southern Banded Snake-eagle	NT
60	*Columba pollenii*	Comoro Olive-pigeon	NT
61	*Haematopus moquini*	African Black Oystercatcher	NT
62	*Larus leucophthalmus*	White-eyed Gull	NT
63	*Numenius arquata*	Eurasian Curlew	NT
64	*Phalacrocorax capensis*	Cape Cormorant	NT
65	*Phalacrocorax coronatus*	Crowned Cormorant	NT
66	*Phoeniconaias minor*	Lesser Flamingo	NT
67	*Procellaria cinerea*	Grey Petrel	NT
68	*Puffinus griseus*	Sooty Shearwater	NT
69	*Sheppardia gunningi*	East Coast Akalat	NT
70	*Sterna balaenarum*	Damara Tern	NT
71	*Tauraco fischeri*	Fischer's Turaco	NT
72	*Thalassarche cauta*	Shy Albatross	NT
73	*Thalassarche steadi*	White-capped Albatross	NT
74	*Cisticola restrictus*	Tana River Cisticola	DD
75	*Anous tenuirostris*	Lesser Noddy	LC

	Scientific name	Common name	IUCN status
76	*Arenaria interpres*	Ruddy Turnstone	LC
77	*Calidris ferruginea*	Curlew Sandpiper	LC
78	*Calidris minuta*	Little Stint	LC
79	*Charadrius leschenaultii*	Greater Sand Plover	LC
80	*Charadrius marginatus*	White-fronted Plover	LC
81	*Charadrius mongolus*	Lesser Sand Plover	LC
82	*Dromas ardeola*	Crab Plover	LC
83	*Fregata ariel*	Lesser Frigatebird	LC
84	*Fregata minor*	Greater Frigatebird	LC
85	*Halcyon senegaloides*	Mangrove Kingfisher	LC
86	*Larus hemprichii*	Sooty Gull	LC
87	*Numenius phaeopus*	Whimbrel	LC
88	*Phaethon lepturus*	White-tailed Tropicbird	LC
89	*Phaethon rubricauda*	Red-tailed Tropicbird	LC
90	*Phoenicopterus roseus*	Greater Flamingo	LC
91	*Platalea alba*	African Spoonbill	LC
92	*Pluvialis squatarola*	Grey Plover	LC
93	*Puffinus pacificus*	Wedge-tailed Shearwater	LC
94	*Sterna albifrons*	Little Tern	LC
95	*Sterna anaethetus*	Bridled Tern	LC
96	*Sterna bengalensis*	Lesser Crested Tern	LC
97	*Sterna bergii*	Great Crested Tern	LC
98	*Sterna caspia*	Caspian Tern	LC
99	*Sterna dougallii*	Roseate Tern	LC
100	*Sterna fuscata*	Sooty Tern	LC
101	*Sterna hirundo*	Common Tern	LC
102	*Sterna nilotica*	Gull-billed Tern	LC
103	*Sterna saundersi*	Saunders's Tern	LC
104	*Sterna sumatrana*	Black-naped Tern	LC
105	*Sula dactylatra*	Masked Booby	LC
106	*Sula leucogaster*	Brown Booby	LC
107	*Sula sula*	Red-footed Booby	LC
108	*Xenus cinereus*	Terek Sandpiper	LC

8.3 Priority sites for conservation

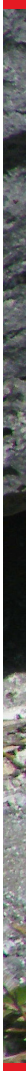
The following sites are suggested as regional priorities for designation as marine IBAs through seaward extensions around islands or from seabird breeding colonies. The terrestrial portions of some sites are already protected, and the others would benefit from some form of protection. All sites should be considered for designation as some form of Marine Protected Area (MPA) or managed area, although this does not necessarily mean that all forms of extractive and recreational use should be prohibited. By protecting these areas a significant proportion of the global population of the listed species as well as the wider ecosystem will be protected.

Table 6: Sites suggested as seaward extension marine IBAs.
Some form of protection should be considered for these sites. Shaded entries are sites that were also listed in the individual country reports. The area column reflects the area that would need to be protected, while the radius indicates the distance from the breeding colony that the birds are likely to use regularly, based on foraging ranges and resting areas of the species that breeds there. In the case of sites with more than one important species, the largest distance is used as the radius.

Country	Site	Species	Area (km^2)	Radius (km)
Comoros	Mwali highlands	*Puffinus lherminieri*	40	10
Kenya	Kisite island	*Sterna dougallii*	0.01	10
Kenya	Kiunga Marine National Reserve	*Sterna dougallii*	250	10
Kenya	Mida Creek, Whale Island and the Malindi - Watamu coast	*Sterna dougallii*	261	10
Madagascar	Cape Anorontany archipelago	*Sterna bengalensis, Sterna bergii, Sterna dougallii*	4.58	25
Madagascar	Iles Barren complex	*Sterna dougallii*	1.72	10
Mauritius	Cargados Carajos shoals (Saint Brandon)	*Anous stolidus, Anous tenuirostris, Gygis alba, Sterna dougallii, Sterna fuscata*	190	60
Mauritius	Round Island	*Phaethon lepturus, Phaethon rubricauda, Pterodroma arminjoniana, Puffinus pacificus*	1.69	25
Mauritius	Serpent Island	*Anous stolidus, Anous tenuirostrus, Sterna fuscata*	0.31	60
Réunion (to France)	Grand Bassin - Le Dimitile	*Pseudobulweria aterrima, Puffinus lherminieri*	30	25
Réunion (to France)	Grand Bénard - Tapcal	*Pterodroma baraui, Puffinus lherminieri*	15	25
Réunion (to France)	Mouth of the Cirque de Salazie	*Puffinus lherminieri*	17.8	10
Réunion (to France)	Piton des Neiges - Gros Morne	*Pterodroma baraui*	20	25
Réunion (to France)	Plaine des Chicots - Plaine d'Affouches	*Puffinus lherminieri*	36.88	10
Réunion (to France)	Rivière des Marsouins - Grand Etang	*Puffinus lherminieri*	18	10
Réunion (to France)	Rivière des Remparts - Rivière Langevin	*Puffinus lherminieri*	70	10
Seychelles	African Banks	*Anous stolidus, Sterna fuscata, Sterna sumatrana*	7.5	60
Seychelles	Aldabra atoll	*Fregata ariel, Fregata minor, Phaethon lepturus, Phaethon rubricauda, Sterna sumatrana, Sula sula*	331.8	50
Seychelles	Aride island	*Anous stolidus, Anous tenuirostris, Gygis alba, Phaethon lepturus, Puffinus lherminieri, Puffinus pacificus, Sterna dougallii, Sterna fuscata*	1.73	60
Seychelles	Bird Island	*Anous stolidus, Sterna fuscata*	1.01	60
Seychelles	Boudeuse island	*Sula dactylatra*	0.01	70
Seychelles	Cosmoledo atoll	*Phaethon rubricauda, Sterna bergii, Sterna fuscata, Sterna sumatrana, Sula dactylatra, Sula sula*	149.6	70
Seychelles	Cousin island	*Anous tenuirostris, Gygis alba, Phaethon lepturus, Puffinus pacificus*	1.32	50
Seychelles	Cousine island	*Anous tenuirostris, Gygis alba, Phaethon lepturus, Puffinus pacificus*	0.26	50

Country	Site	Species	Area (km^2)	Radius (km)
Seychelles	Desnoeufs island	*Sterna fuscata*	0.35	10
Seychelles	Etoile island	*Sterna dougallii*	0.01	10
Seychelles	Frégate island	*Anous tenuirostris, Gygis alba*	2.19	50
Seychelles	Islets of Farquhar atoll	*Sterna fuscata, Sterna sumatrana*	178.25	10
Seychelles	Marie Louise island	*Anous stolidus, Anous tenuirostris, Gygis alba*	0.52	60
Somalia	Jasiira Ceebaad and Jasiira Sacaada Diin	*Larus leucophthalmus, Sterna anaethetus*	6.9	15
Somalia	Jasiira lagoon and Muqdisho islets	*Sterna dougallii*	50	10
Somalia	Jasiira Maydh	*Anous stolidus*	0.45	60
South Africa	Alexandria coastal belt	*Sterna balaenarum*	154.6	1
South Africa	Algoa Bay Island Nature Reserve	*Larus dominicanus, Morus capensis, Spheniscus demersus, Sterna dougallii*	0.4	100
South Africa	Bird Island	*Morus capensis, Phalacrocorax coronatus, Spheniscus demersus*	0.03	100
South Africa	Boulders Bay	*Spheniscus demersus*	0.02	30
South Africa	Dassen Island	*Larus dominicanus, Larus hartlaubii, Phalacrocorax capensis, Phalacrocorax coronatus, Phalacrocorax neglectus, Spheniscus demersus, Sterna bergii*	2.73	30
South Africa	Dyer Island Nature Reserve	*Larus dominicanus, Larus hartlaubii, Phalacrocorax capensis, Phalacrocorax coronatus, Phalacrocorax neglectus, Spheniscus demersus, Sterna bergii*	0.2	30
South Africa	False Bay Park (proposed)	*Larus dominicanus, Larus hartlaubii, Phalacrocorax capensis, Podiceps cristatus*	30	15
South Africa	Heuningnes river and estuary system	*Larus dominicanus, Sterna balaenarum*	90	10
South Africa	Lake St Lucia and Mkuze swamps	*Larus cirrocephalus, Sterna caspia*	1677	16
South Africa	Lower Berg river wetlands	*Larus dominicanus, Larus hartlaubii, Sterna bergii, Sterna caspia*	66.21	25
South Africa	Orange river mouth wetlands	*Larus dominicanus, Phalacrocorax capensis, Sterna balaenarum*	96	15
South Africa	Rietvlei Wetland Reserve	*Larus hartlaubii*	5.27	3
South Africa	Robben Island National Historical Monument	*Larus hartlaubii, Phalacrocorax capensis, Phalacrocorax coronatus, Phalacrocorax neglectus, Spheniscus demersus, Sterna bergii*	5.74	30
South Africa	Swartkops estuary, Redhouse and Chatty saltpans	*Larus dominicanus*	9.26	10
South Africa	West Coast National Park and Saldanha Bay islands	*Larus dominicanus, Larus hartlaubii, Morus capensis, Phalacrocorax capensis, Phalacrocorax coronatus, Phalacrocorax neglectus, Spheniscus demersus, Sterna bergii*	276	100
Tanzania	Latham Island	*Anous stolidus, Sterna bergii, Sterna fuscata, Sula dactylatra*	0.03	70
Tanzania	Zanzibar Island: south coast	*Sterna dougallii*	40	10
Other Important Bird Areas				
	Europa	*Fregata ariel, Phaethon lepturus, Phaethon rubricauda, Sterna fuscata, Sula sula*	30	50

Country	Site	Species	Area (km^2)	Radius (km)
Tanzania	Zanzibar Island: south coast	*Sterna dougallii*	40	10
Other Important Bird Areas				
	Ile du Lys, Glorieuses Archipelago	*Sterna fuscata*	0.6	10
	Juan de Nova	*Sterna fuscata*	8.5	10



Red-tailed Tropicbird (© Vikash Tatayah)

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Red Footed Boobies, Seychelles (© Ross Wanless)

Red-tailed Tropicbird (© Vikash Tatayah)

10. Glossary

Biodiversity (Biological diversity): the variability in life on Earth and describes the number, variety and variability of living organisms. It includes diversity within species, between species, and of ecosystems.

Biome: a major ecological community of organisms adapted to a particular climatic or environmental condition on a large geographic area in which they occur.

Congregatory species: a species that gathers in large numbers at a particular site during some stage in their life cycle.

Ecosystem: a community of plants, animals and smaller organisms that live, feed, reproduce and interact in the same area or environment[19].

Endemic species: Only found in a particular country or region.

Endemic Bird Area (EBA): places where two or more species of restricted range, i.e. with world distributions of less than 50,000 km^2, occur together. More than 70% of such species are also globally threatened. (A Secondary Area supports one or more restricted-range species, but does not qualify as an EBA because less than two species are entirely confined to it.)

Globally threatened: A species that falls under one of the IUCN's categories of threatened species: Critically Endangered, Endangered or Vulnerable.

> **Critically Endangered (CR):** A species that is considered to be facing an extremely high risk of extinction in the wild based on trends in population size and distribution
>
> **Endangered (EN):** A species that is considered to be facing a very high risk of extinction in the wild based on trends in population size and distribution
>
> **Vulnerable (VU):** A species that is considered to be facing a high risk of extinction in the wild based on trends in population size and distribution
>
> Species of conservation concern that are not globally threatened may be:
>
> **Near Threatened (NT):** A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.
>
> **Least Concern (LC):** A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

Important Bird Area: IBAs are key sites for conservation of birds and other forms of biodiversity. Sites qualify because they: hold significant numbers of one or more globally threatened species; are one of a set of sites that together hold a suite of restricted-range species or biome-restricted species; and/or have exceptionally large numbers of migratory or congregatory species (see criteria in section 4.1.2).

19 http://www.iucn.org/what/tpas/biodiversity/about/?gclid=CPjgi9mRwbICFYTMtAodU3YAYA

Invasive Alien Species (IAS): organisms (non-indigenous or non-native) that are introduced intentionally or accidentally into a new habitat or bioregion out of their natural range, without the natural checks on their populations, which allows them to invade and have detrimental impacts on the economy and/or ecology of the new environment.

Migratory species: species that undertake regular journeys to take advantage of good breeding, foraging or wintering areas**.**

Neritic: a shallow part of the sea near a coast and the underlying continental shelf.

Pelagic: living in the open ocean for at least part of the year.

Range-restricted species: a species whose global geographical distribution is restricted to less than 50,000km^2 area.

Seabird: a species for which a large proportion of the total population rely on the marine environment for at least part of the year (Croxall et al. 2012).

Umbrella species: a wide-ranging species whose requirements include those of many other species (Groom et al. 2006), or species with large area requirements for which protection of the species offers protection to other species that share the same habitat[20].

20 http://www8.nos.noaa.gov/coris_glossary/index.aspx?letter=u

Seychelles (© Ross Wanless)

Fairy Tern, Seychelles (© Ross Wanless)

Appendices

Appendix 1: Original 1985 Annex II species list

Table A1: The 91 species listed in Annex II in 1985, with their current IUCN threat status. If the species name has changed or is different to the BirdLife International naming standard, the current name is indicated in brackets.

Scientific name	Common name	2011 IUCN status
Apalis argentea	Kungwe apalis	EN
Gyps coprotheres	Cape vulture	VU
Ardea humbloti	Madagascar heron	EN
Sheppardia gunningi gunningi	East coast akalat	NT
Turdus fisheri fisheri	Spotted ground thrush	EN
Bugeranus carunculatus	Wattled crane	VU
Apalis karamojae	Karamoja apalis	VU
Balaeniceps rex	Shoebill	VU
Chloropeta gracilirostris	Papyrus yellow warbler	VU
Swynnertonia swynnertoni	Swynnerton's forest robin	VU
Eremomela turneri	Turner's eremomela	EN
Muscicapa lendu	Chapin's flycatcher	VU
Heteromirafra archeri	Somali long-clawed lark (Archer's lark)	CR
Alethe choloensis	Thyolo alethe	EN
Apalis moreaui (Artisornis moreaui)	Long-billed apalis (Long-billed tailorbird)	CR
Anthreptes pallidigaster	Amani sunbird	EN
Anthus sokokensis	Sokoke pipit	EN
Otus ireneae	Sokoke scops owl	EN
Modulatrix orostruthus	Dappled mountain robin (Dapple throat)	VU
Otus pauliani	Grand Comoro scops owl	CR
Dicrurus fuscipennis	Grand Comoro drongo	EN
Humblotia flavirostris	Grand Comoro flycatcher	EN
Zosterops mouroniensis	Mount Karthala white-eye	VU
Turdus helleri	Taita thrush	CR
Cisticola restricta	Tana river cisticola	DD
Ploceus golandi	Clarke's weaver	EN
Turdoides hindei	Hinde's pied babbler	VU
Aythya innotata	Madagascar pochard	CR
Haliaeetus vociferoides	Madagascar fish eagle	CR
Amaurornis olivieri	Sakalava rail	EN
Anas bernieri	Madagascar teal	EN
Eutriorchis astur	Madagascar serpent eagle	EN
Sarothrura watersi	Slender-billed flufftail	EN
Xenopirostris damii	Van Dam's vanga	EN

Scientific name	Common name	2011 IUCN status
Coua delalandei	Snail-eating coua	EX
Tachybaptus rufolavatus	Alaotra grebe	EX
Atelornis crossleyi	Rufous-headed ground-roller	NT
Crossleyia xanthophrys	Madagascar yellowbrow	NT
Xenopirostris polleni	Pollen's vanga	NT
Phyllastrephus cinereiceps (Bernieria cinereiceps)	Grey-crowned greenbul (Grey-crowned tetraka)	NT
Brachypteracias leptosomus	Short-legged ground-roller	VU
Brachypteracias squamiger	Scaly ground-roller	VU
Charadrius thoracicus	Madagascar plover	VU
Mesoenas unicolor	Brown mesite	VU
Mesoenas variegata	White-breasted mesite	VU
Monias benschi	Subdesert mesite	VU
Newtonia fanovanae	Red-tailed newtonia	VU
Tachybaptus pelzelnii	Madagascar little grebe (Madagascar grebe)	VU
Tyto soumagnei	Madagascar red owl	VU
Uratelornis chimaera	Long-tailed ground-roller	VU
Neodrepanis hypoxantha	Yellow-bellied (sunbird-)asity	VU
Phyllastrephus apperti (Bernieria apperti)	Appert's greenbul (Appert's Tetraka)	VU
Phyllastrephus tenebrosus (Bernieria tenebrosa)	Dusky greenbul (Dusky Tetraka)	VU
Monticola bensoi (Monticola sharpei bensoi)	Benson's rockthrush (Forest rockthrush)	LC
Zosterops chloronothus	Mauritius olive white-eye	CR
Acrocephalus rodericanus	Rodrigues warbler	EN
Foudia flavicans	Rodriquez fody	EN
Foudia rubra	Mauritius fody	EN
Nesoenas mayeri	Pink pigeon	EN
Psittacula eques	Mauritius parakeet	EN
Coracina typica	Mauritius cuckoo-shrike	VU
Hypsipetes olivaceus	Mauritius black bulbul	VU
Falco punctatus	Mauritius kestrel	VU
Dicrurus waldeni	Mayotte drongo	VU
Coracina newtoni	Réunion cuckoo-shrike	CR
Pterodroma aterrima (Pseudobulweria aterrima)	Mascarene (black) petrel	CR
Terpsiphone corvina	Seychelles (black) paradise flycatcher	CR
Copsychus sechellarum	Seychelles magpie robin	EN
Otus insularis	Seychelles scops owl	EN
Zosterops modestus	Seychelles white-eye	EN
Nesillas aldabranus	Aldabra (brush) warbler	EX
Dryolimmas cuvieri aldabranus	Aldabra white-throated rail	LC

Scientific name	Common name	2011 IUCN status
Falco newtoni aldabranus	Aldabra kestrel (Malagasy kestrel)	LC
Foudia flavicans	Seychelles fody	NT
Acrocephalus sechellensis	Seychelles brush warbler	VU
Collocalia elaphra	Seychelles swiftlet	VU
Falco araea	Seychelles kestrel	VU
Streptopelia picturata rostrata (Nesoenas picturata)	Seychelles turtle dove (Madagascar Turtle-dove)	LC
Threskiornis aethiopica (Threskiornis bernieri abbotti)	Aldabra sacred ibis (Now considered a race of the Madagascar Sacred Ibis)	-
Columba oliviae	Somalia pigeon	DD
Acanthis johannis	Warsangli linnet	EN
Mirafra ashi	Ash's lark	EN
Malaconotus alius	Uluguru bush-shrike	CR
Ploceus nicolli	Tanzanian mountain weaver (Usambara weaver)	EN
Anthreptes rubritorques	Banded green sunbird (Banded sunbird)	VU
Bathmocercus winifredae	Mrs. Moreau's warbler	VU
Bubo vosseleri	Nduk eagle owl (Usambara Eagle-owl)	VU
Nectarinia rufipennis	Rufous-winged sunbird	VU
Otus rutilus pembaensis	Pemba scops owl	VU
Dryocichloides lowei (Sheppardia lowei)	Iringa ground robin (Iringa Akalat)	VU
Dryocichloides montanus (Sheppardia montana)	Usambara ground robin (Usambara akalat)	EN

Appendix 2: Species list from the National Reports

Table A1: Species listed by the Comoros, their IUCN Red List Status, habitats used, major threats and population trends.

Scientific name	Common name	IUCN status	Habitat	Habitat use	Major threats	
Otus capnodes	Anjouan Scops-owl	CR	Forest	Resident	Agriculture, timber extraction, introduced species	Declining
Otus moheliensis	Mohéli Scops-owl	CR	Forest, plantations	Resident	Timber extraction, hunting, introduced species	Declining
Otus pauliani	Grand Comoro Scops-owl	CR	Forest	Resident	Agriculture, timber extraction, introduced species	Declining
Ardea humbloti	Madagascar Heron	EN	Coastal	Resident	Extraction of sand and rocks, pollution, degradation of mangrove forests	Declining
Ardeola idae	Madagascar Pond-heron	EN	Coastal	Resident	Extraction of sand and rocks, pollution, degradation of mangrove forests	Declining
Dicrurus fuscipennis	Grand Comoro Drongo	EN	Forest, plantations	Resident	Agriculture, timber extraction, hunting, introduced species	Fluctuating
Humblotia flavirostris	Grand Comoro Flycatcher	EN	Forest	Resident	Agriculture, timber extraction, introduced species	Declining
Circus macrosceles	Madagascar Harrier	VU	Grassland, plantations	Foraging	Agriculture, hunting, pesticide use	Declining
Zosterops mouroniensis	Mount Karthala White-eye	VU	Forest, shrubland	Resident	Agriculture, timber extraction, introduced species	Declining
Columba pollenii	Comoro Olive-pigeon	NT	Forest	Resident	Agriculture, timber extraction, hunting, introduced species	Declining
Numenius arquata	Eurasian Curlew	NT	Coastal	Resident	Extraction of sand and rocks, pollution, degradation of mangrove forests	Declining
Accipiter francesiae	Frances's Sparrowhawk	LC	Forest	Resident	Agriculture, timber extraction, hunting, pesticide use	Stable
Agapornis canus	Gray-Headed Lovebird	LC	Grassland, plantations	Breeding, foraging	Hunting	Declining
Alectroenas sganzini	Comoro Blue-pigeon	LC	Forest	Resident	Agriculture, timber extraction, hunting, introduced species	Declining
Coracina cinerea	Ashy Cuckooshrike	LC	Forest	Resident	Agriculture, timber extraction	Declining
Coracopsis nigra	Black Parrot	LC	Forest	Resident	Agriculture, timber extraction, hunting	Stable
Coracopsis vasa	Vasa Parrot	LC	Forest	Resident	Agriculture, timber extraction, hunting	Stable
Cyanolanius madagascarinus	Blue Vanga	LC	Forest	Resident	Agriculture, timber extraction	Unknown
Dicrurus forficatus	Crested Drongo	LC	Forest, plantations	Resident		Unknown

Scientific name	Common name	IUCN status	Habitat	Habitat use	Major threats	
Foudia eminentissima	Red-headed Fody	LC	Forest, plantations, grasslands	Resident		Stable
Hypsipetes madagascariensis	Madagascar Black Bulbul	LC	Forest, plantations	Resident		Stable
Hypsipetes parvirostris	Comoro Bulbul	LC	Forest, plantations	Resident		Declining
Leptosomus discolor	Cuckoo-roller	LC	Forest, plantations	Resident	Agriculture, timber extraction	Declining
Nectarinia comorensis	Anjouan Sunbird	LC	Forest, plantations, grassland	Resident		Stable
Nectarinia humbloti	Humblot's Sunbird	LC	Forest, plantations, grassland	Resident		Stable
Nectarinia notata	Long-billed Green Sunbird	LC	Forest, plantations, grassland	Resident		Stable
Nesillas brevicaudata	Grand Comoro Brush-warbler	LC	Forest	Resident	Agriculture, timber extraction, introduced species	Stable
Nesillas longicaudata	Anjouan Brush-warbler	LC	Forest	Resident	Agriculture, timber extraction, introduced species	Stable
Nesillas mariae	Mohéli Warbler	LC	Forest	Resident	Agriculture, timber extraction, introduced species	Stable
Nesillas typica	Madagascar Brush-warbler	LC	Forest, plantations	Resident	Agriculture, timber extraction, introduced species	Stable
Otus mayottensis	Mayotte Scops-owl	LC	Forest, plantations	Resident	Timber extraction, hunting, introduced species	Stable
Puffinus lherminieri	Audubon's Shearwater	LC	Forest, open sea	Breeding	Agriculture, timber extraction, introduced species	Stable
Saxicola torquatus	Common Stonechat	LC	Plantations, grassland	Resident		Stable
Terpsiphone mutata	Madagascar Paradise-flycatcher	LC	Forest, plantations	Resident	Agriculture, timber extraction, introduced species	Declining
Treron australis	Madagascar Green-pigeon	LC	Forest, plantations, grassland	Resident	Hunting	Declining
Turdus bewsheri	Comoro Thrush	LC	Forest, shrubland	Resident	Agriculture, timber extraction, introduced species	Declining
Zoonavena grandidieri	Malagasy Spinetail	LC	Forest	Resident		Stable
Zosterops maderaspatanus	Madagascar White-eye	LC	Forest, plantations	Resident	Agriculture	Declining
Zosterops mayottensis	Mayotte White-eye	LC	Forest	Resident		Declining

Table A2: Species listed by Kenya, their IUCN Red List Status, habitats used, major threats and population trends

Species	Common Name	IUCN Red List Status	Habitat Type	Habitat use	Threats	Population trend
Anthreptes pallidigaster	Amani Sunbird	EN	Forest	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Acrocephalus griseldis	Basra Reed-warbler	EN	Savanna/shrubland / Fresh water Marshes / inland Deltas /water storage areas	Foraging and wintering	Loss of habitat: Conversion of natural wetlands, savanna and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production.	Declining
Ardeola idae	Madagascar Pond-heron	EN	Inland Wetlands	Foraging and wintering	Loss of habitat: Draining/Conversion of wetlands to human settlement and agriculture, and pollution. Lack of data for the species and improper identification of the species.	Declining
Anthus sokokensis	Sokoke Pipit	EN	Forest	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Otus ireneae	Sokoke Scops-owl	EN	Forest	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Ploceus golandi	Clarke's Weaver	EN	Forest, including *Brachystegia* woodland	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production and logging for firewood and timber.	Declining
Zoothera guttata	Spotted Ground-thrush	EN	Forest	Foraging and wintering	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Glareola ocularis	Madagascar Pratincole	VU	Inland Wetlands, Grassland and marine Intertidal	Foraging, wintering	Draining/Conversion of wetlands, grassland, sandbanks and mudflats to human settlement, agriculture and tourism facilities, and pollution.	Declining
Anthus melindae	Malindi Pipit	NT	Grassland	Foraging and breeding	Loss of habitat: Draining/Conversion of wetlands and grassland to human settlement and agriculture.	Declining

Species	Common Name	IUCN Red List Status	Habitat Type	Habitat use	Threats	Population trend
Anthreptes reichenowi	Plain-backed Sunbird	NT	Forest	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Circaetus fasciolatus	Southern Banded Snake-eagle	NT	Forest	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Sheppardia gunningi	East Coast Akalat	NT	Forest	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Tauraco fischeri	Fischer's Turaco	NT	Forest and thick shrubland	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Rynchops flavirostris	African Skimmer	NT	Inland rivers, Marine intertidal	Foraging	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution.	Declining
Cisticola restrictus	Tana River Cisticola	DD	Shrub land/Grassland	Foraging and breeding	Loss of habitat: Conversion of natural grassland, shrubland and thicket to agriculture, human settlement, roads, pipelines and electricity lines.	Data deficient
Anthreptes neglectus	Uluguru Violet-backed Sunbird	LC	Forest, Shrub land	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, logging for firewood and timber.	Declining
Calidris ferruginea	Curlew Sandpiper	LC	Marine Coastal/ intertidal/ inland wetlands	Foraging and wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Declining
Calidris minuta	Little Stint	LC	Marine Coastal/ Marine intertidal/ inland wetlands	Foraging and wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Declining
Campethera mombassica	Mombasa Woodpecker	LC	Forest and Savanna	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Stable
Charadrius leschenaultii	Greater Sand Plover	LC	Marine Coastal/ Marine intertidal/ inland wetlands	Foraging and wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Unknown

Species	Common Name	IUCN Red List Status	Habitat Type	Habitat use	Threats	Population trend
Charadrius marginatus	White-fronted Plover	LC	Marine coastal and inland rivers	Foraging and breeding	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution.	Declining
Charadrius mongolus	Lesser Sand Plover	LC	Marine Coastal/ Inland Wetlands/	Foraging and wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Unknown
Dromas ardeola	Crab Plover	LC	Marine Coastal/ intertidal	Foraging and wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture	Stable
Halcyon senegaloides	Mangrove Kingfisher	LC	Forest, Shrubland, mangroves	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland, thicket and mangroves to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production.	Declining
Lamprotornis corruscus	Black-bellied Glossy-starling	LC	Forest	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Declining
Larus hemprichii	Sooty Gull	LC	Marine Coastal/ Marine intertidal/ Marine Neritic	Foraging and breeding	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Declining

Species	Common Name	IUCN Red List Status	Habitat Type	Habitat use	Threats	Population trend
Limicola falcinellus	Broad-billed Sandpiper	LC	Marine/Inland Wetland, mudflats	Wintering Foraging	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture	Declining
Nectarinia chalcomelas	Violet-breasted Sunbird	LC	Savanna	Foraging and breeding	Loss of habitat: Conversion/change of natural savanna, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production.	Stable
Nectarinia veroxii	Mouse-coloured Sunbird	LC	Forest and Savanna/ shrubland	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, and logging for firewood and timber.	Stable
Phoenicopterus roseus	Greater Flamingo	LC	Brackish wetlands	Foraging	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Increasing at Coast
Phyllastrephus debilis	Tiny Greenbul	LC	Forest, Savanna and Shrubland	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, logging for firewood and timber.	Declining
Phyllastrephus fischeri	Fischer's Greenbul	LC	Forest/ shrubland	Foraging and breeding	Loss of habitat: Conversion of natural forest, woodland and thicket to agriculture, human settlement, roads, pipelines and electricity lines. Intensive and illegal charcoal production, logging for firewood and timber.	Declining
Ploceus bojeri	Golden Palm Weaver	LC	Savanna /Inland Wetland Artificial	Foraging and breeding	Loss of habitat: Conversion of natural wetlands, savanna and thicket to agriculture, human settlement, roads, pipelines and electricity lines.	Stable
Sterna bengalensis	Lesser Crested Tern	LC	Marine Intertidal and Marine Neritic	Foraging	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Stable
Sterna caspia	Caspian Tern	LC	Marine Coastal/ Inland Wetland	Foraging Wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture.	Increasing
Sterna dougallii	Roseate Tern	LC	Marine Coastal/ intertidal/ Marine Neritic	Foraging and breeding	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution,	Stable

Species	Common Name	IUCN Red List Status	Habitat Type	Habitat use	Threats	Population trend
Sterna nilotica	Gull-billed Tern	LC	Marine Coastal/ Marine Intertidal/ inland wetlands	Foraging and wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture	Declining
Sterna saundersi	Saunders's Tern	LC	Marine Coastal/ Marine intertidal/ Marine Neritic	Foraging and wintering	Draining/Conversion of wetlands, sandbanks and mudflats to human settlement and tourism facilities, pollution, conversion of mangroves to agriculture and industrial processes such as salt manufacture	Declining
Sula dactylatra	Masked Booby	LC	Marine Neritic	Foraging	Pollution, overfishing	Declining

Table A3: Species listed by Madagascar, their IUCN Red List Status, habitats used, major threats and population trends

Scientific name	Common name	IUCN status	Habitat type	Habitat Use	Major threats (* regional)	Population Trend
Haliaeetus vociferoides	Madagascar Fish-eagle	CR	Sea-cliffs and rocky offshore islands, mangroves	Breeding	Habitat degradation/ conversion, Hunting	Decreasing
Anas bernieri	Madagascar Teal	EN	Estuarine water, mangroves	Breeding	Habitat degradation/ conversion, Hunting	Decreasing
Ardea humbloti	Madagascar Heron	EN	Coastal areas, mangroves, fresh water, lakes, rivers, marshes	Breeding, Foraging, Roosting	Habitat degradation/ conversion, Hunting	Decreasing
Ardeola idae	Madagascar Pond-heron	EN	Fresh water lakes, fresh water marshes/pools, rivers	Breeding	Hunting, Ecosystem degradation, competition with others herons	Decreasing
Pterodroma baraui	Barau'sPetrel	EN	Coastal inshore water, pelagic deep water	Non-Breeding	*Hunting, Ecosystem degradation	Decreasing
Thalassarche carteri	Indian Yellow-nosed Albatross	EN	Coastal inshore water, pelagic deep water	Non-Breeding	Bycatch in longline fisheries	Decreasing
Threskiornis bernieri	Madagascar Sacred Ibis	EN	Estuarine water, mangroves, mudflats and salt flats	Breeding, Foraging	Hunting, Habitat degradation/ conversion	Decreasing
Charadrius thoracicus	Madagascar Plover	VU	Coastal marine	Breeding, Foraging	Aquaculture	Decreasing
Diomedea exulans	Wandering Albatross	VU	Pelagic deep water, pelagic continental shelf water	Non-Breeding	*Bycatch in longline fisheries	Decreasing

Scientific name	Common name	IUCN status	Habitat type	Habitat Use	Major threats (* regional)	Population Trend
Glareola ocularis	Madagascar Pratincole	VU	Rivers, streams, creeks - permanent, rocky shoreline	Breeding	Ecosystem degradation, Ecosystem conversion	Decreasing
Numenius arquata	Eurasian Curlew	NT	Mangrove, mudflats and salt flats, marshes, swamps	Foraging, Roosting	Ecosystem degradation, Ecosystem conversion	Decreasing
Phoeniconaias minor	Lesser Flamingo	NT	Saline, brackish/alkaline lakes - permanent, estuarine water	Non-Breeding	Ecosystem degradation, Ecosystem conversion	Decreasing
Puffinus griseus	Sooty Shearwater	NT	Coastal inshore water, pelagic continental shelf water, pelagic deep water	Foraging	*Harvesting, predation (rats)	Decreasing
Thalassarche cauta	Shy Albatross	NT	Marine intertidal, marine oceanic, marine neritic	Foraging	*Bycatch in longline fisheries	Unknown
Thalassarche steadi	White-capped Albatross	NT	Marine coastal, marine oceanic, marine neritic	Foraging	*Bycatch in longline fisheries	Decreasing
Actophilornis albinucha	Madagascar Jacana	LC	Freshwater marshes, lakes, rivers, streams	Foraging	Habitat degradation	Declining
Anous tenuirostris	Lesser Noddy	LC	Marine coastal, marine neritic	Foraging	Ecosystem degradation	Stable
Arenaria interpres	Ruddy Turnstone	LC	Costal beach, inland along dykes or on lake shores	Non-Breeding	Habitat degradation/ conversion	Declining
Calidris alba	Sanderling	LC	Sandy shoreline, sandbars, spits, permanent freshwater lakes	Foraging	Ecosystem degradation	Differing
Calidris ferruginea	CurlewSandpiper	LC	Mudflats and salt flats, estuarine, freshwater lake	Foraging	Ecosystem degradation, Ecosystem conversion	Increasing
Calidris minuta	Little Stint	LC	Mudflats and salt flats, freshwater lakes, marshes	Foraging	Ecosystem degradation	Declining
Casmerodius albus	Great Egret	LC	Mudflats and salt flats, bogs, marshes, swamps, fens, peatlands, freshwater lakes	Foraging, Roosting	Habitat degradation and loss	Differing
Charadrius hiaticula	Common Ringed Plover	LC	Marine coastal, marine intertidal, permanent freshwater lake, rivers	Foraging	Ecosystem degradation	Declining
Charadrius leschenaultii	Greater Sand Plover	LC	Mudflats and salt flats, sandy shoreline, sandbars, spits	Foraging	Ecosystem degradation, Ecosystem conversion	Unknown
Charadrius marginatus	White-fronted Plover	LC	Coastal beach	Foraging	Species disturbance, Ecosystem degradation, Ecosystem conversion	Declining
Charadrius mongolus	Lesser Sand Plover	LC	Mudflats and salt flats, sandy shoreline, sandbars, spits	Foraging	Habitat degradation	Declining

Scientific name	Common name	IUCN status	Habitat type	Habitat Use	Major threats (* regional)	Population Trend
Charadrius pecuarius	Kittlitz's Plover	LC	Lakes, reservoirs and rivers, small permanent and temporary pools, flood plains, dry sandy riverbeds, marshes	Foraging	Habitat degradation/ conversion, Hunting	Unknown
Charadrius tricollaris	Three-banded Plover	LC	Sand, mud or gravel shores of inland freshwater lakes, temporary or muddy pools, and rivers, streams with shingle banks, rice-paddies	Breeding, Foraging, Roosting	Habitat degradation/ conversion	Unknown
Dromas ardeola	Crab Plover	LC	Sandy shoreline, sandbars, spits, mudflats and salt flats	Foraging	Ecosystem degradation	Stable
Egretta garzetta	Little Egret	LC	Mangrove, mudflats and salt flats, marshes, swamps, estuarine water, freshwater lakes	Foraging, Roosting	Ecosystem degradation, Ecosystem conversion	Increasing
Fregata ariel	Lesser Frigatebird	LC	Coastal inshore water, pelagic deep water, mangrove, shrubland	Foraging	Habitat destruction	Declining
Fregata minor	Greater Frigatebird	LC	Coastal inshore water, pelagic deep water	Non-Breeding	Habitat destruction	Declining
Larus dominicanus	Kelp Gull	LC	Sea-cliffs and rocky offshore islands, coastal inshore water	Foraging	*Oil spills	Increasing
Larus hemprichii	Sooty Gull	LC	Sea-cliffs and rocky offshore islands, sandy shoreline, sandbars, spits, coral reefs, estuarine water	Foraging	*Ecosystem degradation, hunting	Declining
Limosa lapponica	Bar-tailed Godwit	LC	Estuarine water, freshwater lakes, rivers, streams	Foraging	Ecosystem degradation, Ecosystem conversion	Declining
Mycteria ibis	Yellow-billed Stork	LC	Mudflats and salt flats, bogs, marshes, swamps, fens, peatlands, freshwater lakes - permanent	Foraging	Ecosystem degradation, Ecosystem conversion	Declining
Numenius phaeopus	Whimbrel	LC	Marine coastal, marine intertidal, estuarine, fresh water lakes, rivers	Foraging	Ecosystem degradation, Ecosystem conversion	Declining
Oceanites oceanicus	Wilson's Storm-petrel	LC	Marin coastal, marine oceanic, marine neritic	Foraging	None in Madagascar	Stable
Phaethon lepturus	White-tailed Tropicbird	LC	Coastal inshore water, pelagic deep water	Foraging	Habitat destruction	Declining
Phaethon rubricauda	Red-tailed Tropicbird	LC	Coastal inshore water, pelagic deep water	Non-Breeding	None in Madagascar	Increasing
Phoenicopterus roseus	Greater Flamingo	LC	Estuarine water, saline, brackish/alkaline lakes - permanent	Foraging	Hunting, human disturbance, Ecosystem degradation, Ecosystem conversion	Increasing
Platalea alba	African Spoonbill	LC	Marine coastal, marine neritic, inland wetland	Foraging, Roosting	Ecosystem degradation	Stable

Scientific name	Common name	IUCN status	Habitat type	Habitat Use	Major threats (* regional)	Population Trend
Pluvialis fulva	Pacific Golden Plover	LC	Mangrove, mudflats and salt flats, marshes, swamps, freshwater lakes - permanent	Foraging	*Ecosystem degradation, Ecosystem conversion	Declining
Pluvialis squatarola	Grey Plover	LC	Mudflats and salt flats, marine coastal	Foraging	Ecosystem degradation	Declining
Puffinus carneipes	Flesh-footed Shearwater	LC	Pelagic deep water	Foraging	*Bycatch in longline fisheries	Stable
Puffinus pacificus	Wedge-tailed Shearwater	LC	Marine coastal, marine oceanic, marine neritic	Foraging	*Predation (rats), Ecosystem degradation	Declining
Sterna anaethetus	Bridled Tern	LC	Sea-cliffs and rocky offshore islands, sandy shoreline, sandbars, spits, coastal inshore water, pelagic deep water	Foraging	Harvested for subsistence	Differing
Sterna bengalensis	Lesser Crested Tern	LC	Coastal marine, sandy shoreline, sandbars, spits	Non-Breeding	Hunting, Recreational activities	Fluctuating
Sterna bergii	Great Crested Tern	LC	Coastal marine	Foraging	Hunting, Recreational activities	Stable
Sterna caspia	Caspian Tern	LC	Coastal marine	Foraging	Loss and deterioration of breeding habitat	Increasing
Sterna dougallii	Roseate Tern	LC	Coastal marine	Non-Breeding	Hunting, Recreational activities	Differing
Sterna fuscata	Sooty Tern	LC	Sea-cliffs and rocky offshore islands, sandy shoreline, sandbars, spits, coastal inshore water, pelagic deep water	Non-Breeding	*Predation (rats) , Harvested for subsistence	Differing
Sterna hirundo	Common Tern	LC	Pelagic continental shelf water, coastal inshore water	Foraging	*Human disturbance, Habitat loss	Declining
Sterna saundersi	Saunders's Tern	LC	Marine coastal and marine neritic	Foraging	Species disturbance, Ecosystem degradation	Declining
Sterna sumatrana	Black-naped Tern	LC	Sandy shoreline, sandbars, spits, sea-cliffs and rocky offshore islands, coastal inshore water,	Non-Breeding	Ecosystem degradation	Unknown
Sula dactylatra	Masked Booby	LC	Marine intertidal, marine oceanic, marine neritic	Unknown		Declining
Sula leucogaster	Brown Booby	LC	Sea-cliffs and rocky offshore islands, coastal inshore water, pelagic deep water, pelagic continental shelf water	Foraging	*Disturbance and unsustainable levels of exploitation.	Declining
Sula sula	Red-footed Booby	LC	Marine and largely pelagic	Non-Breeding	*Habitat loss	Declining
Tringa glareola	Wood Sandpiper	LC	Bogs, marshes, swamps, fens, peatlands, permanent freshwater lakes, rivers streams	Foraging	Ecosystem degradation, Ecosystem conversion	Stable
Xenus cinereus	Terek Sandpiper	LC	Sandy shoreline, sandbars, spits, mudflats and salt flats, freshwater lakes	Foraging	Ecosystem degradation	Stable

Table A4: Species listed by Mauritius, their IUCN Red List Status, habitats used, major threats and population trend. If the regional or island IUCN status of a species has been assessed separately, this is given in parentheses if different from the global status.

Scientific name	Common name	IUCN status	Habitat type	Habitat Use	Major threats	Population Trend
Pseudobulweria aterrima	Mascarene Petrel	CR	Forest	Breeding	Predators; lighting; climate change	Declining
Zosterops chloronothos	Mauritius Olive White-eye	CR	Forest; Islet (re-introduced)	Breeding	Habitat degradation; Predators; Competitors; diseases	Declining
Acrocephalus rodericanus	Rodrigues Warbler	EN	Forest	Breeding	Habitat degradation; Predators; competitors	Increasing
Foudia rubra	Mauritius Fody	EN	Forest; Islet (re-introduced)	Breeding	Habitat degradation; Predators; Competitors; diseases	Increasing
Hypsipetes olivaceus	Mauritius Black Bulbul	EN	Forest	Breeding	Predators; Habitat Degradation	Increasing
Psittacula eques	Echo Parakeet	EN	Forest	Breeding	Disease; Predators; Habitat degradation	Increasing
Coracina typica	Mauritius Cuckoo-shrike	VU	Forest	Breeding	Human intrusions & disturbance; Habitat degradation; Predators	Stable or Increasing
Falco punctatus	Mauritius Kestrel	VU	Forest	Breeding	Habitat degradation; Predators; climate change	Declining
Foudia flavicans	Rodrigues Fody	VU	Forest	Breeding	Habitat degradation; Predators; competitors	Increasing
Nesoenas mayeri	Pink Pigeon	VU	Forest	Breeding	Habitat degradation; Predators; diseases	Stable
Pterodroma arminjoniana	Barau's Petrel	VU (CR)	Forest; Marine; Islet	Breeding	Predators; lighting; climate change	Stable
Anous stolidus	Common Noddy	LC	Coastal; Islets; Marine	Breeding	Predators; poaching, climate change (AG, MU, RO, SB)	Increasing
Fregata ariel	Lesser Frigatebird	LC (CR)	Coastal; Islets; Marine	Breeding	Poaching; climate change	Increasing
Fregata minor	Greater Frigatebird	LC (CR)	Coastal; Islets; Marine	Breeding	Poaching; climate change	Increasing
Sterna dougallii	Roseate Tern	LC (CR)	Coastal; Islets; Marine	Breeding	Predators; climate change; military installations	Increasing
Phaethon lepturus	White-tailed Tropicbird	LC (CR/EN/NT)	Forest; islets; Marine; coastal	Breeding	Climate change; poaching; predators	Increasing
Puffinus pacificus	Wedge-tailed Shearwater	LC (CR/EN/NT)	Coastal; Islets; Marine	Breeding	Predators; poaching; climate change; military installations	Stable
Phaethon rubricuada	Red-tailed Tropicbird	LC (CR/EN/VU)	Coastal; Islets; Marine; Forest	Breeding	Poaching; predators	Stable

Scientific name	Common name	IUCN status	Habitat type	Habitat Use	Major threats	Population Trend
Sterna fuscata	Sooty Tern	LC (CR/VU)	Coastal; Islets; Marine	Breeding	Predators; poaching; climate change; military installations	Increasing
Sula dactylatra	Masked Booby	LC (CR/VU)	Coastal; Islet; Marine	Breeding	Human intrusions & disturbance; predators; climate change; military installations	Increasing
Sula sula	Red-footed Booby	LC (CR/VU)	Coastal; Islet; Marine	Breeding	Human intrusions & disturbance; predators; climate change	Declining
Anous tenuirostris	Lesser Noddy	LC (NT/VU)	Coastal; Islets; Marine	Breeding	Predators; poaching; climate change	Increasing?
Gygis alba	Fairy Tern	LC (NT/VU)	Coastal	Breeding	Climate change; predators	Stable?
Plegadis falcinellus	Glossy Ibis	LC (VU)	Coastal; Islets; Marine	Breeding	Climate change	Stable
Terpsiphone bourbonnensis ssp. desolata	Mauritius Paradise Flycatcher	LC (VU)	Forest; Coastal	Breeding	Habitat degradation; Predators	Increasing

Table A5: Species listed by Mozambique, their IUCN Red List Status, habitats used, major threats and population trends. If the regional IUCN status of a species has been assessed separately, this is given in parentheses if different from the global status.

Scientific name	Common name	IUCN status	Habitat type	Habitat use	Major threats	Population trend
Acrocephalus griseldis	Basra Reed Warbler	EN	Marshland	non-breeding, foraging, roosting	Habitat Loss	Decreasing
Ardeola idae	Malagasy Pond-Heron	EN	Freshwater floodplain	non-breeding, foraging, roosting	Habitat Loss	Decreasing
Spheniscus demersus	African Penguin	EN	Marine oceanic	breeding, non-breeding, foraging, roosting	Overfishing, Oil pollution	Decreasing
Thalassarche carteri	Indian Yellow-nosed Albatross	EN	Marine oceanic	Non-breeding, foraging	Longline fishing	Decreasing
Thalassarche melanophrys	Black-browed Albatross	EN	Marine oceanic	non-breeding, foraging	Longline fishing	Decreasing
Diomedea exulans	Wandering Albatross	VU	Marine oceanic	non-breeding, foraging	Longline fishing	Decreasing
Egretta vinaceigula	Slaty Egret	VU	Floodplain	non-breeding, foraging, roosting	Flood regulation, water abstraction, agriculture, reed-cutting, fire	Decreasing
Glareola ocularis	Madagascar Pratincole	VU	Coastal: estuary, coastal plain	breeding, non-breeding, foraging, roosting	Habitat modification	Decreasing
Grus carunculatus	Wattled Crane	VU	Coastal Floodplain	breeding, non-breeding, foraging, roosting	Habitat degradation and loss due to dam construction, hunting, fire, human disturbance	Decreasing
Procellaria aequinoctialis	White-chinned Petrel	VU	Marine oceanic	non-breeding, foraging	Longline and trawl fishing	Decreasing
Charadrius pallidus	Chestnut-banded Plover	NT	intertidal mud-flats, Mangrove	non-breeding, foraging, roosting	Habitat degradation and modification	Decreasing
Circaetus fasciolatus	Southern Banded Snake Eagle	NT	Forest, Riverine Woodland	breeding, non-breeding, foraging, roosting	Coatal forest degradation	Decreasing?
Numenius arquata	Eurasian Curlew	NT	tidal mudflats and sandflats close to mangroves on bays and estuaries	non-breeding, foraging, roosting	Change in river regime, habitat modification and human disturbance	Decreasing
Phoeniconaias minor	Lesser Flamingo	NT	Intertidal, saltpans	non-breeding, foraging, roosting	Hunting, coastal degradation	Decreasing
Procellaria cinerea	Grey Petrel	NT	Marine oceanic	non-breeding, foraging, roosting	Longline fishing	Decreasing
Pseudobulweria rostrata	Tahiti Petrel	NT	Marine oceanic	non-breeding, foraging, roosting		Decreasing

Scientific name	Common name	IUCN status	Habitat type	Habitat use	Major threats	Population trend
Puffinus griseus	Sooty Shearwater	NT	Marine oceanic	non-breeding, foraging	Trawl fishing	Decreasing
Sheppardia gunningi	East Coast Akalat	NT	Coastal Forest,	breeding, non-breeding, foraging, roosting	Deforestation	Decreasing
Thalassarche cauta	Shy Albatross	NT	Marine oceanic	non-breeding, foraging	Longline fishing	Unknown
Thalassarche steadi	White-capped Albatross	NT	Marine oceanic	non-breeding, foraging	Longline and trawl fisheries	Decreasing
Anastomus lamelligerus	Openbilled Stork	LC	Floodplain, swamp, marshes	breeding, non-breeding, foraging, roosting	Habitat loss, fishing line entanglement,	Decreasing
Charadrius mongolus	Lesser Sand Plover	LC	mudflats of coastal bays and estuaries and sandy beaches	non-breeding, foraging, roosting	Coastal habitat modification, human disturbance and river hydrological regime changes	Decreasing
Chlidonias hybrida	Whiskered Tern	LC	Saltmarshes	non-breeding, foraging, roosting	Habitat destruction	Fluctuating
Chlidonias leucopterus	White-winged Tern	LC	Mangrove swamps	non-breeding, foraging, roosting	Avian influenza	Stable
Dromas ardeola	Crab Plover	LC	Sandy coastlines, islands, intertidal zone, estuaries, exposed coral reefs	non-breeding, foraging, roosting	Coastal habitat modification, human disturbance, coastal erosion, mangrove degradation	Stable
Glareola pratincola	Collared Pratincole	LC (NT)	Estuary	breeding, non-breeding, foraging, roosting	Change in hydrological regime	Decreasing
Gypohierax angolensis	Palmnut Vulture	LC (NT)	Coastal Forest, Mangrove,	breeding, non-breeding, foraging, roosting	Habitat modification	Stable?
Halcyon senegaloides	Mangrove Kingfisher	LC	Mangrove	breeding, non-breeding, foraging, roosting	Mangrove destruction and degradation	Decreasing
Pelecanus onocrotalus	White Pelican	LC	Coastal bay and Estuary	breeding, non-breeding, foraging, roosting	Habitat modification, Power line collision, Hunting	Decreasing
Pelecanus rufescens	Pinkbacked Pelican	LC	Coastal bay and Estuary	breeding, non-breeding, foraging, roosting	habitat modification, Power line collision, hunting	Stable
Phoenicopter roseus	Greater flamingo	LC	Intertidal, saltpans	non-breeding, foraging, roosting	Hunting, coastal degradation	Increasing?
Pluvialis squatarola	Grey Plover	LC	Intertidal mudflats, saltmarshes of bays and estuaries	non-breeding, foraging, roosting	Habitat degradation and modification	Decreasing

Scientific name	Common name	IUCN status	Habitat type	Habitat use	Major threats	Population trend
Pterodroma mollis	Soft-plumaged Petrel	LC (VU)	Marine oceanic	non-breeding, foraging, roosting		Unknown
Puffinus carneipes	Flesh-footed Shearwater	LC	Marine oceanic	non-breeding, foraging, roosting	Longline fishing	Decreasing
Puffinus pacificus	Wedge-tailed Shearwater	LC	Marine oceanic & offshore	non-breeding, foraging	Trawl fishing	Decreasing
Sterna albifrons	Little Tern	LC	Saltpans, coastal lagoons	breeding, non-breeding, foraging, roosting	Human disturbance at nesting colonies, habitat loss due to development	Decreasing
Sterna anaethetus	Bridled Tern	LC	Marine oceanic	non-breeding, foraging, roosting	Human Disturbance	Decreasing
Sterna bengalensis	Lesser Crested Tern	LC	sandy and coral coasts and estuaries and offshore islands	breeding, non-breeding, foraging, roosting		Decreasing
Sterna fuscata	Sooty Tern	LC	Islands of sand, Open Ocean	breeding, non-breeding, foraging, roosting	Large scale egg-collecting, declining of tuna population	Decreasing
Sterna hirundo	Common Tern	LC	Inshore islands, sandy beaches, estuaries, mangroves, salt marshes and dunes	breeding, non-breeding, foraging, roosting	Human disturbance at nesting colonies, habitat loss due to development	Decreasing

Table A6: Species listed by Réunion (France), their IUCN Red List Status, habitats used, major threats and population trends

Scientific name	Common name	IUCN status	Habitat type	Habitat use	Major threats	Population trend
Pseudobulweria aterrima	Mascarene Petrel	CR	Marine oceanic, Marine neritic, Mountainous Shrubland	Foraging, Breeding	Invasive species (feral cats & rats), Collisions with urban structures, Pollution (Light)	Decreasing
Ardea humbloti	Humblot's Heron	EN	Mangroves, Wetlands (inland), Intertidal mudflats, Reef flats	Non-breeding?, foraging	Human intrusions and disturbances, Residential & Commercial development	Unknown
Ardeola idae	Madagascar Pond-heron	EN	Mangroves, Wetlands (inland), Intertidal mudflats	Resident	Water Pollution, Agriculture & aquaculture, Poaching & illegal logging, Residential & Commercial development, Human Intrusions and Disturbances, Invasive species (rats, crows)	Decreasing (Mayotte); Unknown (Europa)
Pterodroma baraui	Barau's Petrel	EN	Marine oceanic, Marine neritic, Mountainous Shrubland	Foraging, Breeding	Invasive species (feral cats & rats), Collisions with urban structures, Pollution (Light)	Decreasing
Dicrurus waldenii	Mayotte Drongo	VU	Forests, Mangroves, Artificial/ degraded forests	Resident	Illegal logging, Agriculture & Aquaculture, Residential & Commercial development, Invasive species (cats, rats, crows)	Stable?
Collocalia francica	Mascarene Swiftlet	NT	Caves and subterranean habitats, Forests, Shrublands, Grasslands, Artificial landscapes	Foraging, Breeding	Human intrusions and disturbances (recreational activities), Poaching, Use of insecticides, Transportation & services corridors	Stable?

Table A7: Species listed by Seychelles, their IUCN Red List Status, habitats used, major threats and population trends

Species	Common Name	IUCN status	Habitat type	Habitat use	Major threats (in-country)	Population trend
Terpsiphone corvina	Seychelles Paradise-flycatcher	CR	Coastal Forest	Resident	Urban development Invasive and other problematic species	Increasing
Ardeola idae	Madagascar Pond-heron	EN	Mangrove	Breeding	None in Seychelles	Decreasing
Threskiornis bernieri	Madagascar Sacred Ibis	EN	Coastal Forest	Breeding	Future climate change may alter habitat availability	Stable
			Mangrove	Feeding		
			Coastal Shoreline	Feeding		
Copsychus sechellarum	Seychelles Magpie-robin	EN	Coastal Forest	Resident	Invasive and other problematic species Vulnerable to habitat alteration through climate change	Stable
Zosterops modestus	Seychelles White-eye	EN	Coastal Forest	Resident	Invasive & other problematic species Habitat destruction /degradation	Increasing
Acrocephalus sechellensis	Seychelles Warbler	VU	Coastal Forest	Resident	Invasive and other problematic species Future climate change may alter habitat availability	Increasing
			Coastal Shoreline	Breeding		
Numenius arquata	Eurasian Curlew	NT	Coastal Shoreline	Feeding	Future climate change may alter habitat availability	Unknown, presumed stable
Dicrurus aldabranus	Aldabra Drongo	NT	Coastal Forest	Resident	None	Stable
Foudia sechellarum	Seychelles Fody	NT	Coastal Forest	Resident	Invasive and other problematic species, vulnerable to habitat alteration through climate change	Increasing
Puffinus pacificus	Wedge-tailed Shearwater	LC	Pelagic	Feeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Stable
			Coastal Forest	Breeding		
Puffinus lherminieri	Audubon's Shearwater	LC	Pelagic	Feeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Decreasing
			Coastal Forest	Breeding		
Egretta dimorpha	Dimorphic Egret	LC	Mangrove	Breeding	None in Seychelles, although climate change may alter habitat availability	Unknown, presumed stable
			Coastal Shoreline	Feeding		

Species	Common Name	IUCN status	Habitat type	Habitat use	Major threats (in-country)	Population trend
Phaethon rubricauda	Red-tailed Tropicbird	LC	Pelagic	Feeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Unknown, presumed stable
		LC	Coastal Shoreline	Breeding		
Phaethon lepturus	White-tailed Tropicbird	LC	Pelagic	Feeding	Future climate change may alter habitat availability	Stable
			Coastal Shoreline	Breeding		
Sula sula	Red-footed Booby	LC	Pelagic	Feeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Unknown, presumed stable
			Mangrove	Breeding		
			Coastal Forest	Breeding		
Sula leucogaster	Brown Booby	LC	Pelagic	Feeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Unknown, presumed stable
		LC	Coastal Shoreline	Breeding		
Sula dactylatra	Masked Booby	LC	Pelagic	Feeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Unknown, presumed stable
			Coastal Shoreline	Breeding		
Fregata minor	Greater Frigatebird	LC	Mangrove	Breeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Unknown, presumed stable
			Pelagic	Feeding		
Fregata ariel	Lesser Frigatebird	LC	Mangrove	Breeding	Future climate change may alter habitat availability Future overfishing may reduce food availability	Unknown, presumed stable
			Pelagic	Feeding		
Falco [newtoni] aldabranus	Malagasy Kestrel	LC	Coastal Forest	Resident	Future climate change may alter habitat availability	Stable
Arenaria interpres	Ruddy Turnstone	LC	Coastal Shoreline	Feeding	Future climate change may alter habitat availability	Stable
Dromas ardeola	Crab Plover	LC	Coastal Shoreline	Feeding	Future climate change may alter habitat availability	Stable
Sterna bergii	Great Crested Tern	LC	Coastal Shoreline	Breeding	Future climate change may alter habitat availability	Unknown, presumed stable
			Coastal Marine	Feeding		
Sterna dougallii	Roseate Tern	LC	Coastal Shoreline	Breeding	Invasive and other problematic species Future climate change may alter habitat availability	Unknown, presumed stable
			Coastal Marine	Feeding		

Species	Common Name	IUCN status	Habitat type	Habitat use	Major threats (in-country)	Population trend
Sterna sumatrana	Black-naped Tern	LC	Coastal Shoreline	Breeding	Future climate change may alter habitat availability	Unknown, presumed stable
			Coastal Marine	Feeding		
Sterna anaethetus	Bridled Tern	LC	Coastal Shoreline	Breeding	Future climate change may alter habitat availability	Stable
			Pelagic	Feeding		
Sterna fuscata	Sooty Tern	LC	Coastal Shoreline	Breeding	Future climate change may alter habitat availability	Stable
			Pelagic	Feeding		
Anous tenuirostris	Lesser Noddy	LC	Coastal Forest	Breeding	Future climate change may alter habitat availability	Decreasing
			Pelagic	Feeding		
Dryolimnas [cuvieri] aldabranus	Aldabra Rail	LC	Coastal Forest	Resident	Future climate change may alter habitat availability Invasive and other problematic species	Stable
			Mangrove	Resident		
			Coastal Shoreline	Feeding		
Nectarinia [sovimanga] aldabrensis	Souimanga Sunbird	LC	Coastal Forest	Resident	Future climate change may alter habitat availability	Stable
Nectarinia [sovimanga] abbotti	Abbott's Sunbird	LC	Coastal Forest	Resident	Future climate change may alter habitat availability	Stable
Foudia [eminentissima] aldabrana	Aldabra Forest Fody	LC	Coastal Forest	Resident	Future climate change may alter habitat availability Invasive and other problematic species	Stable

Table A8: Species listed by Somalia, their IUCN Red List Status, habitats used, major threats and population trends

Species	Common Name	IUCN status	Habitat type	Habitat use	Major threats	Population trend
Phalacrocorax nigrogularis	Socotra Cormorant	VU	Coastal shoreline	Roosting	Oil pollution, overexploitation of prey species, entanglement in fishing gear	Decreasing
			Coastal marine	Foraging		
Larus leucophthalmus	White-eyed Gull	NT	Coastal shoreline	Breeding	Introduced predators, egg- and chick-collecting, disturbance by fishermen and tourists	Stable
			Coastal marine	Resident	Oil pollution	
Bulweria fallax	Jouanin's Petrel	NT	Pelagic	Feeding	Unknown for Somalia	Unknown
			Coastal shoreline	Breeding (?)		
Halcyon senegaloides	Mangrove Kingfisher	LC	Mangroves	Resident		Unknown
Apus berliozi	Forbes-Watson's Swift	LC	Coastal shoreline	Breeding	Agricultural expansion	Unknown
Dromas ardeola	Crab Plover	LC	Coastal shoreline	Breeding and feeding	Introduced predators to breeding islands, collection of eggs and chicks, planting of mangroves reducing access to breeding sites, Oil pollution	Unknown
Sterna dougallii	Roseate Tern	LC	Coastal shoreline	Breeding and feeding	Egg collecting	Unknown
			Pelagic	Passage		
Sterna anaethetus	Bridled Tern	LC	Coastal shoreline	Breeding	Introduction of predators (esp. cats), oil pollution	Unknown
			Pelagic	Foraging		

Table A9: Species listed by South Africa, their IUCN Red List Status, habitats used, major threats and population trends

Scientific name	Common name	IUCN status	Habitat	Habitat use	Major threats	Status
	Terrestrial birds					
Zoothera guttata	Spotted Ground Thrush	EN	Coastal Forest	Winter migrant	Dune mining, agricultural expansion	Decreasing
Halcyon senegaloides	Mangrove Kingfisher	VU	Mangroves	Winter migrant	Habitat loss (harbour development) and degradation (industrial activities impacting the coast)	Decreasing
Campethera notata	Kynsna Woodpecker	NT	Coastal Forest	Resident	Urban and agricultural expansion	Decreasing
	Shorebirds					
Phoeniconaias minor	Lesser Flamingo	NT	Coastal Shoreline	Foraging	Habitat loss and degradation (water abstraction and industrial activities impacting estuaries), disturbance from recreational activities	Decreasing
Charadrius pallidus	Chestnut-banded Plover	NT	Coastal Shoreline	Migrant	Habitat loss and degradation (water abstraction and industrial activities impacting estuaries), disturbance from recreational activities	Decreasing
Numenius arquata	Eurasian Curlew	NT	Coastal Shoreline	Migrant	Habitat loss and degradation (water abstraction and industrial activities impacting estuaries), disturbance from recreational activities	Decreasing
Haematopus moquini	African Black Oystercatcher	NT	Coastal Shoreline	Resident	Disturbance on breeding/foraging beaches	
	Coastal seabirds					
Spheniscus demersus	African Penguin	EN	Coastal Marine	Resident	Food availability, invasive native species at breeding islands, disturbance at breeding colonies	Decreasing
Phalacrocorax neglectus	Bank Cormorant	EN	Coastal Marine	Resident	Food availability, invasive native species at breeding islands, disturbance at breeding colonies	Decreasing
Morus capensis	Cape Gannet	VU	Coastal Marine	Resident	Food availability, invasive native species at breeding islands	Decreasing
			Pelagic	Foraging		
Phalacrocorax capensis	Cape Cormorant	VU	Coastal Marine	Resident	Disease, food availability, invasive native species at breeding islands	Decreasing
Phalacrocorax coronatus	Crowned Cormorant	NT	Pelagic	Winter migrant	Bycatch in longline fisheries	Unknown, possibly decreasing

Scientific name	Common name	IUCN status	Habitat	Habitat use	Major threats	Status
	Terrestrial birds					
Sterna balaenarum	Damara Tern	NT	Coastal Marine	Foraging	Small colony sizes vulnerable to extinction from minor population fluctuations, disturbance on breeding beaches	Decreasing
			Coastal Shoreline	Breeding		
	Pelagic seabirds					
Diomedea dabbenena	Tristan Albatross	CR	Pelagic	Winter migrant	Bycatch in longline fisheries	Decreasing
Diomedea sanfordi	Northern Royal Albatross	EN	Pelagic	Winter migrant	Bycatch in longline fisheries	Decreasing
Phoebetria fusca	Sooty Albatross	EN	Pelagic	Winter migrant	Bycatch in longline fisheries	Decreasing
Thalassarche carteri	Indian Yellow-nosed Albatross	EN	Pelagic	Winter migrant	Bycatch in longline and trawl fisheries	Decreasing
Thalassarche chlororhynchos	Atlantic Yellow-nosed Albatross	EN	Pelagic	Winter migrant	Bycatch in longline and trawl fisheries	Decreasing
Thalassarche melanophrys	Black-browed Albatross	EN	Pelagic	Winter migrant	Bycatch in longline and trawl fisheries	Decreasing
Pterodroma baraui	Barau's Petrel	EN	Pelagic	Winter migrant	None in region	Unknown, presumed decreasing
Diomedea epomophora	Southern Royal Albatross	VU	Pelagic	Winter migrant	Bycatch in longline fisheries	Stable
Diomedea exulans	Wandering Albatross	VU	Pelagic	Winter migrant	Bycatch in longline fisheries	Stable/increasing
Thalassarche chrysostoma	Grey-headed Albatross	VU	Pelagic	Winter migrant	Bycatch in longline fisheries	Stable
Procellaria aequinoctialis	White-chinned Petrel	VU	Pelagic	Winter migrant	Bycatch in longline and trawl fisheries	Decreasing
Procellaria conspicillata	Spectacled Petrel	VU	Pelagic	Winter migrant	Bycatch in longline fisheries	Increasing
Thalassarche cauta	Shy Albatross	NT	Pelagic	Winter migrant	Bycatch in longline fisheries	Stable
Procellaria cinerea	Grey Petrel	NT	Pelagic	Winter migrant	Bycatch in longline fisheries	Unknown, possibly decreasing

Table A10: Species listed by Tanzania, their IUCN Red List Status, habitats used, major threats and population trends

Scientific name	Common name	IUCN status	Habitat type	Habitat use	Major threats	Population trend
Glareola ocularis	Madagascar Pratincole	VU	Coastal	Non-breeding	Natural system modification	Declining
Otus pembaensis	Pemba Scops Owl	VU	Forest	Resident	Agriculture	Declining
Treron pembaensis	Pemba Green Pigeon	VU	Forest	Resident	Agriculture	Declining
Calidris minuta	Little Stint	LC	Coastal	Non-breeding	-	Declining
Charadrius leschenaultii	Greater Sandplover	LC	Coastal	Non-breeding	Habitat degradation	Declining
Sterna dougallii	Roseate Tern	LC	Coastal	Non-breeding	Human disturbance	Declining
Sterna Fuscata	Sooty Tern	LC	Coastal	Non-breeding	Human disturbance	Declining
Sterna nilotica	Gull-billed Tern	LC	Coastal	Non-breeding	Habitat loss; pollution	Declining
Sterna saundersi	Saunder's Tern	LC	Coastal	Non-breeding	Human Disturbance	Declining
Xenus cinereus	Terek Sandpiper	LC	Coastal	Non-breeding	Human disturbance	Declining
Dromas Ardeola	Crab Plover	LC	Coastal	Non-breeding	Pollution	Stable
Sterna bengalensis	Lesser Crested Tern	LC	Coastal	Non-breeding	Habitat loss	Stable
Sterna bergii	Greater Crested Tern	LC	Coastal	Resident	Illegal hunting	Stable
Lamprotornis corruscus	Black-bellied Glossy Starling	LC	Forest	Resident	-	Declining
Nectarinia pembae	Pemba Sunbird	LC	Forest	Resident		Stable?
Phoenicopterus roseus	Greater Flamingo	LC	Coastal waters	Resident	Pollution	Increasing
Calidris ferruginea	Curlew Sandpiper	LC	Coastal	Non-breeding	Pollution	Increasing
Charadrius marginatus	White-fronted Plover	LC	Coastal	Resident	-	Declining
Charadrius mongolus	Lesser Sand Plover	LC	Coastal	Non-breeding	-	Unknown
Numenius phaeopus	Whimbrel	LC	Coastal	Non-breeding	-	Declining
Platalea alba	African Spoonbill	LC	Coastal lagoons	Resident	-	Stable?
Sterna caspia	Caspian Tern	LC	Coastal	Non-breeding	Habitat degradation	Increasing
Sterna hirundo	Common Tern	LC	Coastal	Non-breeding	Habitat loss	Declining
Sula dactylatra	Masked Booby	LC	Coastal	Breeding	-	Declining

Scientific name	Common name	IUCN status	Habitat type	Habitat use	Major threats	Population trend
Zosterops vaughani	Pemba White-eye	LC	Forest	Resident	Habitat shifting and alteration	Stable

Appendix 3: Habitat Types

A description of the habitat types used. Taken from IUCN http://www.iucnredlist.org/technical-documents/classification-schemes

1. Forest

- 1.1 Boreal Forest
- 1.2 Subarctic Forest
- 1.3 Subantarctic Forest
- 1.4 Temperate Forest
- 1.5 Subtropical/Tropical Dry Forest
- 1.6 Subtropical/Tropical Moist Lowland Forest
- 1.7 Subtropical/Tropical Mangrove Forest Vegetation Above High Tide Level
- 1.8 Subtropical/Tropical Swamp Forest
- 1.9 Subtropical/Tropical Moist Montane Forest

2. Savanna

- 2.1 Dry Savanna
- 2.2 Moist Savana

3. Shrubland

- 3.1 Subarctic Shrubland
- 3.2 Subantarctic Shrubland
- 3.3 Boreal Shrubland
- 3.4 Temperate Shrubland
- 3.5 Subtropical/Tropical Dry Shrubland
- 3.6 Subtropical/Tropical Moist Shrubland
- 3.7 Subtropical/Tropical High Altitude Shrubland
- 3.8 Mediterranean-type Shrubby Vegetation

4. Grassland

- 4.1 Tundra
- 4.2 Subarctic Grassland
- 4.3 Subantarctic Grassland
- 4.4 Temperate Grassland
- 4.5 Subtropical/Tropical Dry Lowland Grassland
- 4.6 Subtropical/Tropical Seasonally Wet/Flooded Lowland Grassland
- 4.7 Subtropical/Tropical High Altitude Grassland

5. Wetlands (inland)

- 5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]
- 5.2 Seasonal/Intermittent/Irregular Rivers, Streams, Creeks
- 5.3 Shrub Dominated Wetlands
- 5.4 Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha]
- 5.5 Permanent Freshwater Lakes [over 8 ha]
- 5.6 Seasonal/Intermittent Freshwater Lakes [over 8 ha]
- 5.7 Permanent Freshwater Marshes/Pools [under 8 ha]
- 5.8 Seasonal/Intermittent Freshwater Marshes/Pools [under 8 ha]
- 5.9 Freshwater Springs and Oases
- 5.10 Tundra Wetlands [includes pools and temporary waters from snowmelt]

5.11 Alpine Wetlands [includes temporary waters from snowmelt]
5.12 Geothermal Wetlands
5.13 Permanent Inland Deltas
5.14 Permanent Saline, Brackish or Alkaline Lakes
5.15 Seasonal/Intermittent Saline, Brackish or Alkaline Lakes and Flats
5.16 Permanent Saline, Brackish or Alkaline Marshes/Pools
5.17 Seasonal/Intermittent Saline, Brackish or Alkaline Marshes/Pools
5.18 Karst and Other Subterranean Inland Aquatic Systems

6. Rocky Areas [e.g. inland cliffs, mountain peaks]

7. Caves and Subterranean Habitats (non-aquatic)
7.1 Caves
7.2 Other Subterranean Habitats

8. Desert
8.1 Hot
8.2 Temperate
8.3 Cold

9. Marine Neritic (Submergent Nearshore Continental Shelf or Oceanic Island)
9.1 Pelagic
9.2 Subtidal Rock and Rocky Reefs
9.3 Subtidal Loose Rock/Pebble/Gravel
9.4 Subtidal Sandy
9.5 Subtidal Sandy-Mud
9.6 Subtidal Muddy
9.7 Macroalgal/Kelp
9.8 Coral Reef
9.8.1 Outer Reef Channel
9.8.2 Back Slope
9.8.3 Foreslope (Outer Reef Slope)
9.8.4 Lagoon
9.8.5 Inter-Reef Soft Substrate
9.8.6 Inter-Reef Rubble Substrate
9.9 Seagrass (Submerged)
9.10 Estuaries

10. Marine Oceanic
10.1 Epipelagic (0–200 m)
10.2 Mesopelagic (200–1,000 m)
10.3 Bathypelagic (1,000–4,000 m)
10.4 Abyssopelagic (4,000–6,000 m)

11. Marine Deep Ocean Floor (Benthic and Demersal)
11.1 Continental Slope/Bathyl Zone (200–4,000 m)
11.1.1 Hard Substrate
11.1.2 Soft Substrate
11.2 Abyssal Plain (4,000–6,000 m)
11.3 Abyssal Mountain/Hills (4,000–6,000 m)
11.4 Hadal/Deep Sea Trench (>6,000 m)

11.5 Seamount
11.6 Deep Sea Vents (Rifts/Seeps)

12. Marine Intertidal
12.1 Rocky Shoreline
12.2 Sandy Shoreline and/or Beaches, Sand Bars, Spits, etc.
12.3 Shingle and/or Pebble Shoreline and/or Beaches
12.4 Mud Shoreline and Intertidal Mud Flats
12.5 Salt Marshes (Emergent Grasses)
12.6 Tidepools
12.7 Mangrove Submerged Roots

13. Marine Coastal/Supratidal
13.1 Sea Cliffs and Rocky Offshore Islands
13.2 Coastal Caves/Karst
13.3 Coastal Sand Dunes
13.4 Coastal Brackish/Saline Lagoons/Marine Lakes
13.5 Coastal Freshwater Lakes

14. Artificial - Terrestrial
14.1 Arable Land
14.2 Pastureland
14.3 Plantations
14.4 Rural Gardens
14.5 Urban Areas
14.6 Subtropical/Tropical Heavily Degraded Former Forest

15. Artificial - Aquatic
15.1 Water Storage Areas [over 8 ha]
15.2 Ponds [below 8 ha]
15.3 Aquaculture Ponds
15.4 Salt Exploitation Sites
15.5 (open)
15.6 Wastewater Treatment Areas
15.7 Irrigated Land [includes irrigation channels]
15.8 Seasonally Flooded Agricultural Land
15.9 Canals and Drainage Channels, Ditches
15.10 Karst and Other Subterranean Hydrological Systems [human-made]
15.11 Marine Anthropogenic Structures
15.12 Mariculture Cages
15.13 Mari/Brackish-culture Ponds

16. Introduced Vegetation

17. Other

18. Unknown

Appendix 4: Proposed priority list for Annex II

Scientific name	Common name				Habitat	IBA trigger?	Country/ies for which the IBA is triggered		Listed by
Ardeola idae	Madagascar Pond-heron	13	EN	Declining	Wetlands, Mangroves	A1, A4i	Kenya, Madagascar, Tanzania, Seychelles		Comoros, Kenya, Madagascar, Mozambique, Reunion, Seychelles, Tanzania
Glareola ocularis	Madagascar Pratincole	13	VU	Declining	Marine coastal Wetlands, grasslands	A4i	Kenya, Tanzania, Madagascar		Kenya, Madagascar, Mozambique, Tanzania
Ardea humbloti	Madagascar Heron	12	EN	Declining	Mangroves , Marine intertidal, Wetlands	A1, A2, A3, A4i	Madagascar		Comoros, Madagascar, Reunion
Diomedea exulans	Wandering Albatross	12	VU	Declining	Marine oceanic	A1, A4ii	South Africa		Madagascar, Mozambique, South Africa
Procellaria aequinoctialis	Whitechinned Petrel	12	VU	Declining	Marine oceanic	A1, A4ii	South Africa		Mozambique, South Africa
Pterodroma baraui	Barau's Petrel	12	EN	Declining	Marine oceanic	A1, A4ii	Reunion		Madagascar, Reunion, South Africa
Spheniscus demersus	African Penguin	12	EN	Declining	Marine coastal	A1, A4ii	South Africa		Mozambique, South Africa
Thalassarche carteri	Indian Yellow-nosed Albatross	12	EN	Declining	Marine oceanic	A1, A4ii	South Africa		Madagascar, Mozambique, South Africa
Anas bernieri	Madagascar Teal	11	EN	Declining	Mangroves , Marine neritic	A1, A2, A3, A4i	Madagascar	Madagascar	Madagascar
Charadrius thoracicus	Madagascar Plover	11	VU	Declining	Marine coastal	A1, A2, A3, A4i	Madagascar	Madagascar	Madagascar
Morus capensis	Cape Gannet	11	VU	Declining	Marine coastal, Marine oceanic	A1, A4ii	South Africa		South Africa
Phalacrocorax neglectus	Bank Cormorant	11	EN	Declining	Marine coastal	A1, A4i	South Africa		South Africa
Phoebetria fusca	Sooty Albatross	11	EN	Declining	Marine oceanic	A1, A4ii	South Africa		South Africa
Pseudobulweria aterrima	Mascarene Petrel	11	CR	Declining	Marine neritic, Marine oceanic, Shrubland	A1	Reunion		Mauritius, Reunion

Scientific name	Common name				Habitat	IBA trigger?	Country/ies for which the IBA is triggered		Listed by
Haliaeetus vociferoides	Madagascar Fish-eagle	10	CR	Declining	Mangroves , Marine coastal	A1, A2, A3	Madagascar	Madagascar	Madagascar
Thalassarche melanophrys	Blackbrowed Albatross	10	EN	Declining	Marine oceanic				Mozambique, South Africa
Threskiornis bernieri	Madagascar Sacred Ibis	10	EN	Declining	Forest, Mangroves Marine intertidal				Madagascar, Seychelles
Acrocephalus griseldis	Basra Reed-warbler	9	EN	Declining	Wetlands	A1	Kenya, Somalia		Kenya, Mozambique, Tanzania
Anthus sokokensis	Sokoke Pipit	9	EN	Declining	Forest	A1, A2, A3	Kenya, Tanzania		Kenya, Tanzania
Bugeranus carunculatus	Wattled Crane	9	VU	Declining	Marine coastal				Mozambique
Dicrurus waldenii	Mayotte's Drongo	9	VU	Declining	Forest, Mangroves				Reunion
Diomedea dabbenena	Tristan Albatross	9	CR	Declining	Marine oceanic				South Africa
Diomedea sanfordi	Northern Royal Albatross	9	EN	Declining	Marine oceanic				South Africa
Phalacrocorax nigrogularis	Socotra Cormorant	9	VU	Declining	Marine coastal, Marine neritic, Rocky areas				Somalia
Procellaria cinerea	Grey Petrel	9	NT	Declining	Marine oceanic	A1, A4ii	South Africa		Mozambique, South Africa
Pterodroma arminjoniana	Round Island Petrel	9	VU	Stable	Forest, Marine oceanic, Marine coastal, Marine oceanic	A1, A4ii	Mauritius		Mauritius
Thalassarche chlororhynchos	Atlantic Yellow-nosed Albatross	9	EN	Declining	Marine oceanic				South Africa
Zoothera guttata	Spotted Ground-thrush	9	EN	Declining	Forest	A1	Kenya, South Africa, Tanzania		Kenya, South Africa, Tanzania
Anthreptes pallidigaster	Amani Sunbird	8	EN	Declining	Forest	A1, A2, A3	Kenya		Kenya
Circus macrosceles	Madagascar Harrier	8	VU	Declining	Artificial, Grassland	A1	Comoros, Madagascar		Comoros
Humblotia flavirostris	Grand Comoro Flycatcher	8	EN	Declining	Forest	A1, A2		Comoros	Comoros

Scientific name	Common name				Habitat	IBA trigger?	Country/ies for which the IBA is triggered		Listed by
Numenius arquata	Eurasian Curlew	8	NT	Declining	Marine intertidal				Comoros, Madagascar, Mozambique, South Africa, Seychelles
Otus capnodes	Anjouan Scops-owl	8	CR	Declining	Forest	A1, A2	Comoros	Comoros	Comoros
Otus ireneae	Sokoke Scops-owl	8	EN	Declining	Forest	A1, A2, A3	Kenya		Kenya
Otus moheliensis	Mohéli Scops-owl	8	CR	Declining	Artificial, Forest	A1, A2	Comoros	Comoros	Comoros
Otus pauliani	Grand Comoro Scops-owl	8	CR	Declining	Forest	A1, A2	Comoros	Comoros	Comoros
Otus pembaensis	Pemba Scops-owl	8	VU	Declining	Forest	A1, A2	Tanzania	Tanzania	Tanzania
Phoeniconaias minor	Lesser Flamingo	8	NT	Declining	Marine intertidal	A1	Madagascar, South Africa		Madagascar, Mozambique, South Africa
Ploceus golandi	Clarke's Weaver	8	EN	Declining	Forest	A1, A2, A3	Kenya	Kenya	Kenya
Puffinus pacificus	Wedge-tailed Shearwater	8	LC	Declining	Forest, Marine oceanic	A4ii	Mauritius, Seychelles		Madagascar, Mauritius, Mozambique, Seychelles
Sula dactylatra	Masked Booby	8	LC	Declining	Marine coastal	A4ii	Seychelles, Tanzania		Kenya, Madagascar, Mauritius, Seychelles, Tanzania
Treron pembaensis	Pemba Green-pigeon	8	VU	Declining	Forest	A1, A2	Tanzania	Tanzania	Tanzania
Zosterops mouroniensis	Mount Karthala White-eye	8	VU	Declining	Forest, Shrubland	A1, A2	Comoros	Comoros	Comoros
Arenaria interpres	Ruddy Turnstone	7	LC	Declining	Marine intertidal	A4i	Seychelles		Madagascar, Seychelles
Charadrius marginatus	White-fronted Plover	7	LC	Declining	Marine coastal	A4i	Kenya		Kenya, Madagascar, Tanzania
Circaetus fasciolatus	Southern Banded Snake-eagle	7	NT	Declining	Forest	A1, A3	Kenya, Mozambique, Somalia, South Africa, Tanzania		Kenya, Mozambique, Tanzania
Diomedea epomophora	Southern Royal Albatross	7	VU	Stable	Marine oceanic				South Africa
Egretta vinaceigula	Slaty Egret	7	VU	Declining	Wetlands				Mozambique

Scientific name	Common name				Habitat	IBA trigger?	Country/ies for which the IBA is triggered		Listed by
Fregata ariel	Lesser Frigatebird	7	LC	Declining	Mangroves , Marine oceanic	A4ii	Seychelles		Madagascar, Mauritius, Seychelles
Fregata minor	Greater Frigatebird	7	LC	Declining	Mangroves , Marine oceanic	A4ii	Seychelles		Madagascar, Mauritius, Seychelles
Halcyon senegaloides	Mangrove Kingfisher	7	LC	Declining	Mangroves, Forest	A3	Kenya, Somalia, Tanzania, Mozambique		Kenya, Mozambique, South Africa, Somalia
Larus hemprichii	Sooty Gull	7	LC	Declining	Marine coastal, Marine intertidal, Marine neritic	A4i	Kenya		Kenya, Madagascar
Phaethon lepturus	White-tailed Tropicbird	7	LC	Declining	Marine oceanic	A4ii	Mauritius, Seychelles		Madagascar, Mauritius, Seychelles
Procellaria conspicillata	Spectacled Petrel	7	VU	Increasing	Marine oceanic				South Africa
Puffinus griseus	Sooty Shearwater	7	NT	Declining	Marine oceanic				Madagascar, Mozambique
Sheppardia gunningi	East Coast Akalat	7	NT	Declining	Forest	A1, A3	Kenya, Tanzania		Kenya, Mozambique, Tanzania
Sterna hirundo	Common Tern	7	LC	Declining	Marine coastal	A4i	Mozambique		Madagascar, Mozambique, Tanzania
Sterna nilotica	Gull-billed Tern	7	LC	Declining	Artificial, Marine coastal, Marine intertidal, Marine neritic, wetlands	A4i	Kenya, Tanzania		Kenya, Tanzania
Sterna saundersi	Saunders's Tern	7	LC	Declining	Marine neritic	A4i	Kenya, Tanzania		Kenya, Madagascar, Tanzania

Appendix 5: Maps of proposed marine IBAs

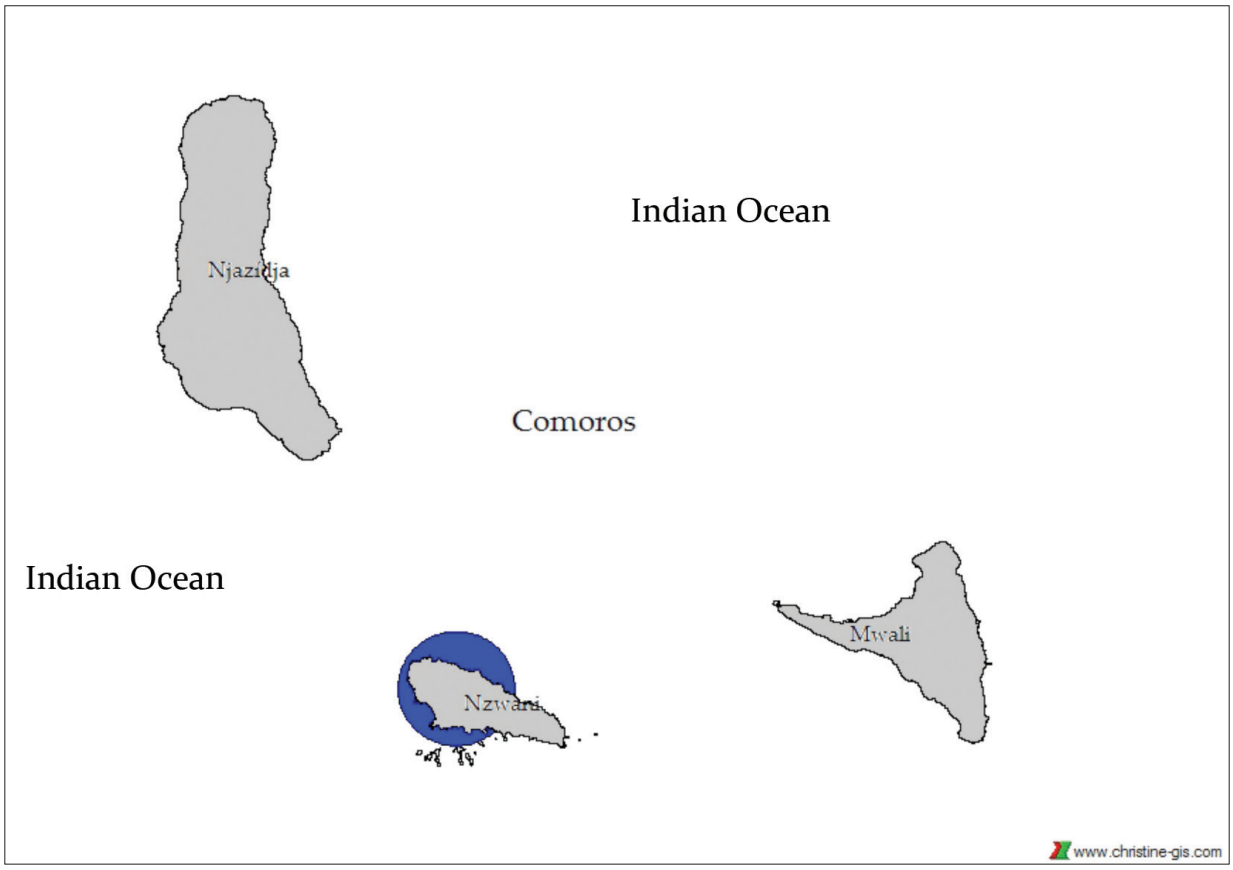

Figure A 1: The proposed marine IBA in the Comoros for Puffinus ilherminieri

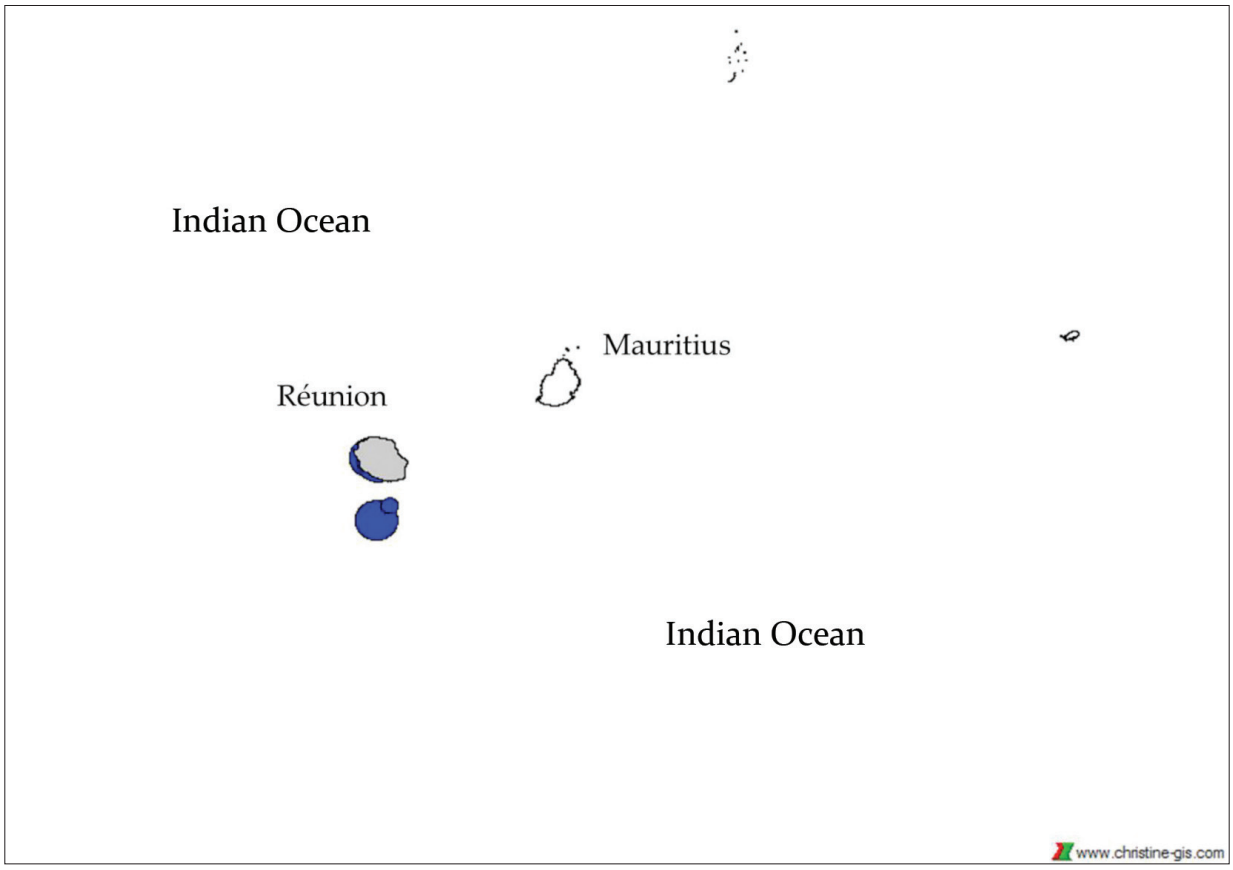

Figure A 2: The proposed marine IBAs in Réunion (France) for Pseudobulweria aterrima, Puffinus

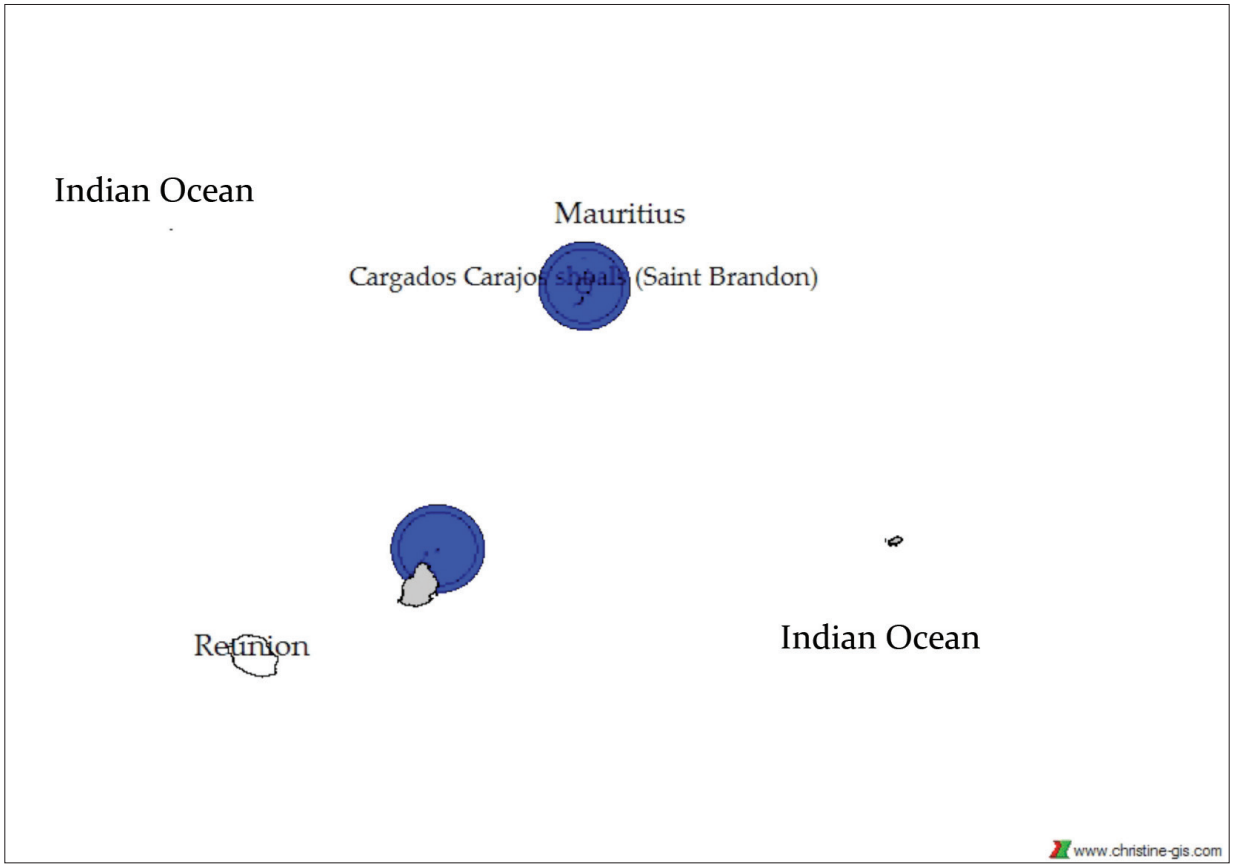

Figure A 3: The proposed marine IBAs in Mauritius for Anous stolidus, Anous tenuirostris, Gygis alba, Sterna dougallii, Sterna fuscata, Phaethon lepturus, Phaethon rubricauda, Pterodroma arminjoniana and Puffinus pacificus

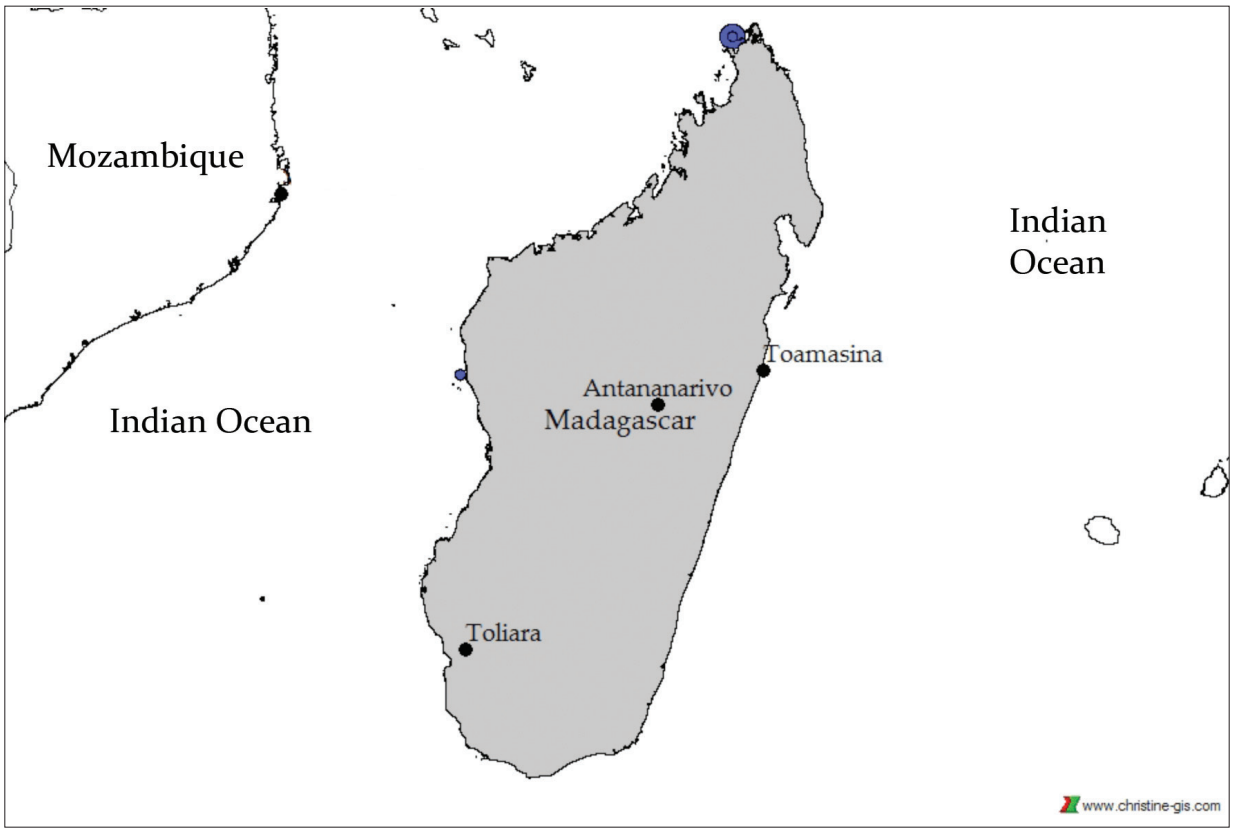

Figure A 4: The proposed marine IBAs in Madagascar for Sterna bengalensis, Sterna bergii and Sterna dougallii

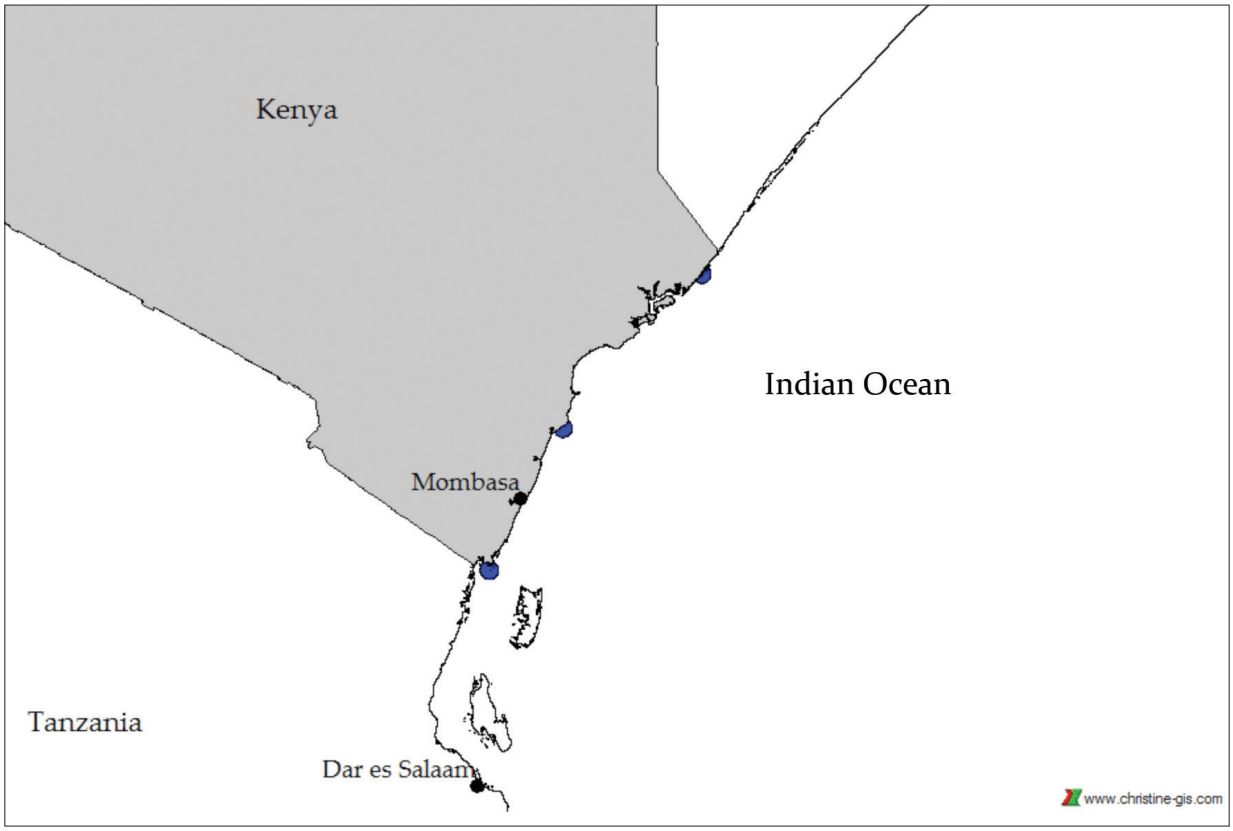

Figure A 5: The proposed marine IBAs in Kenya for Sterna dougallii

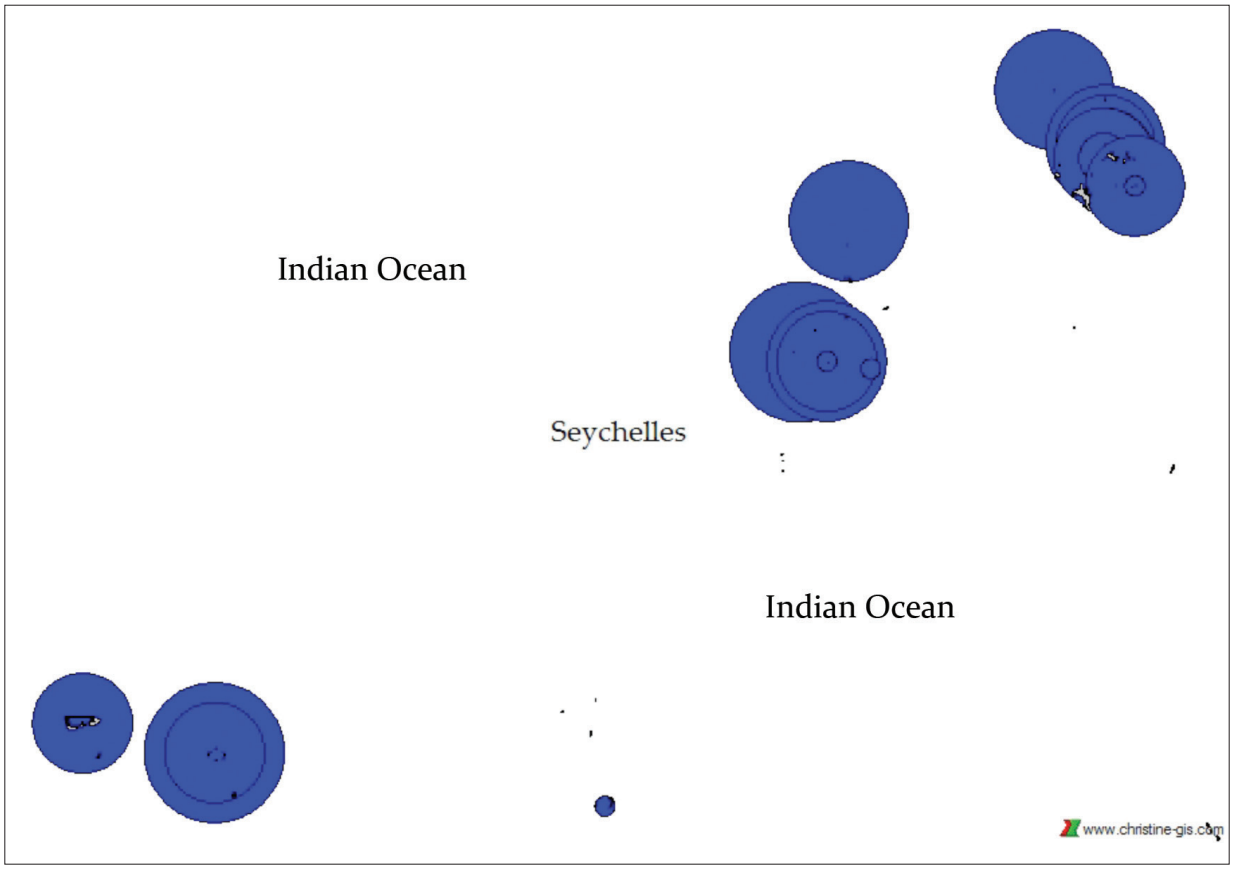

Figure A 6: The proposed marine IBAs in Seychelles.

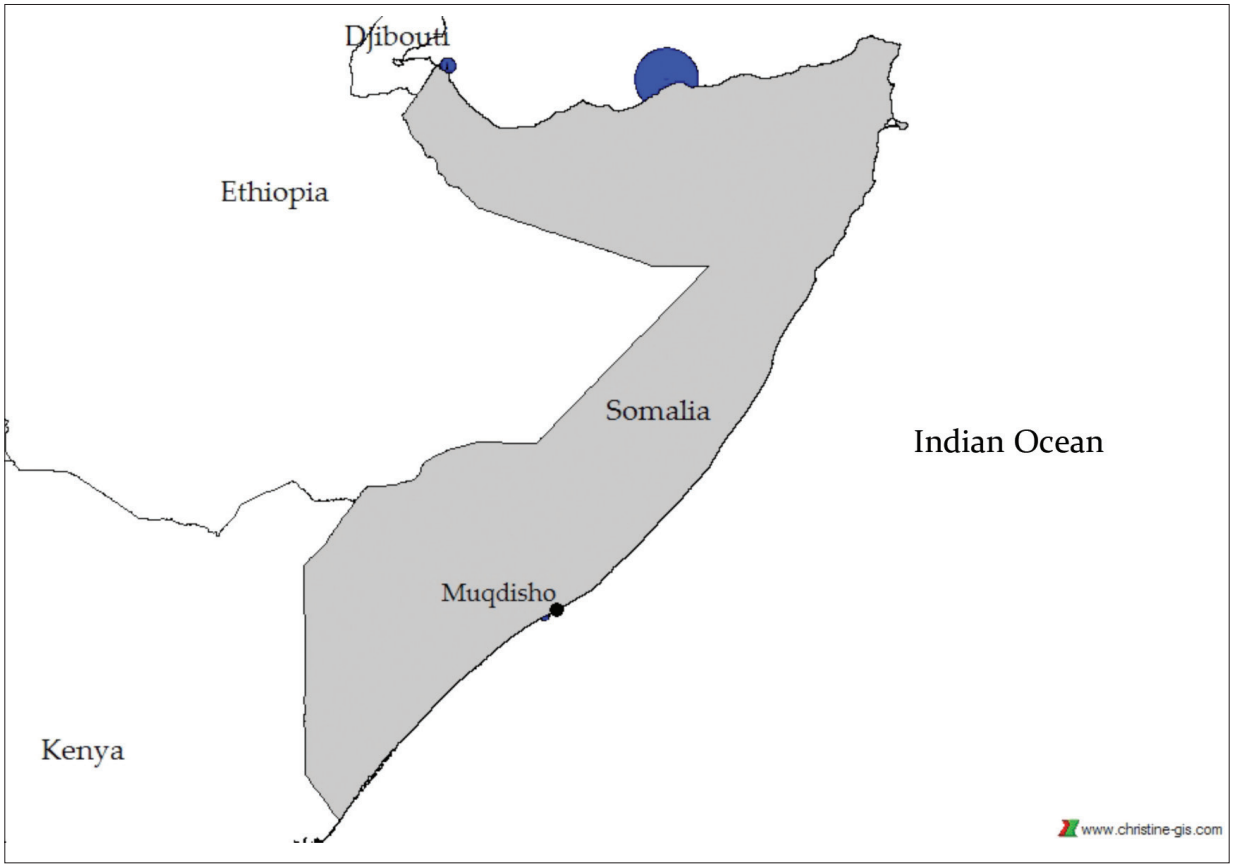

Figure A 7: The proposed marine IBAs in Somalia for Anous stolidus and Sterna dougallii

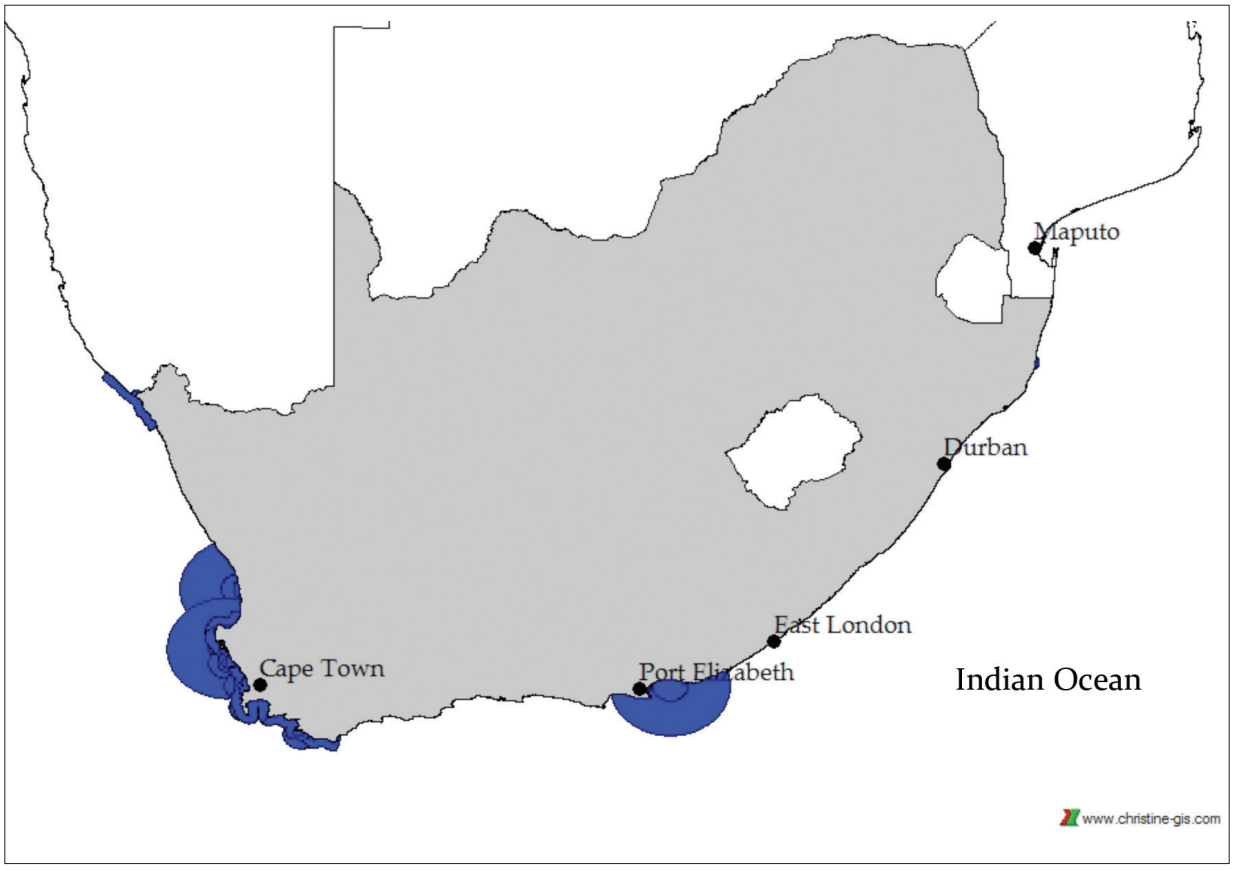

Figure A 8: The proposed marine IBAs in South Africa.

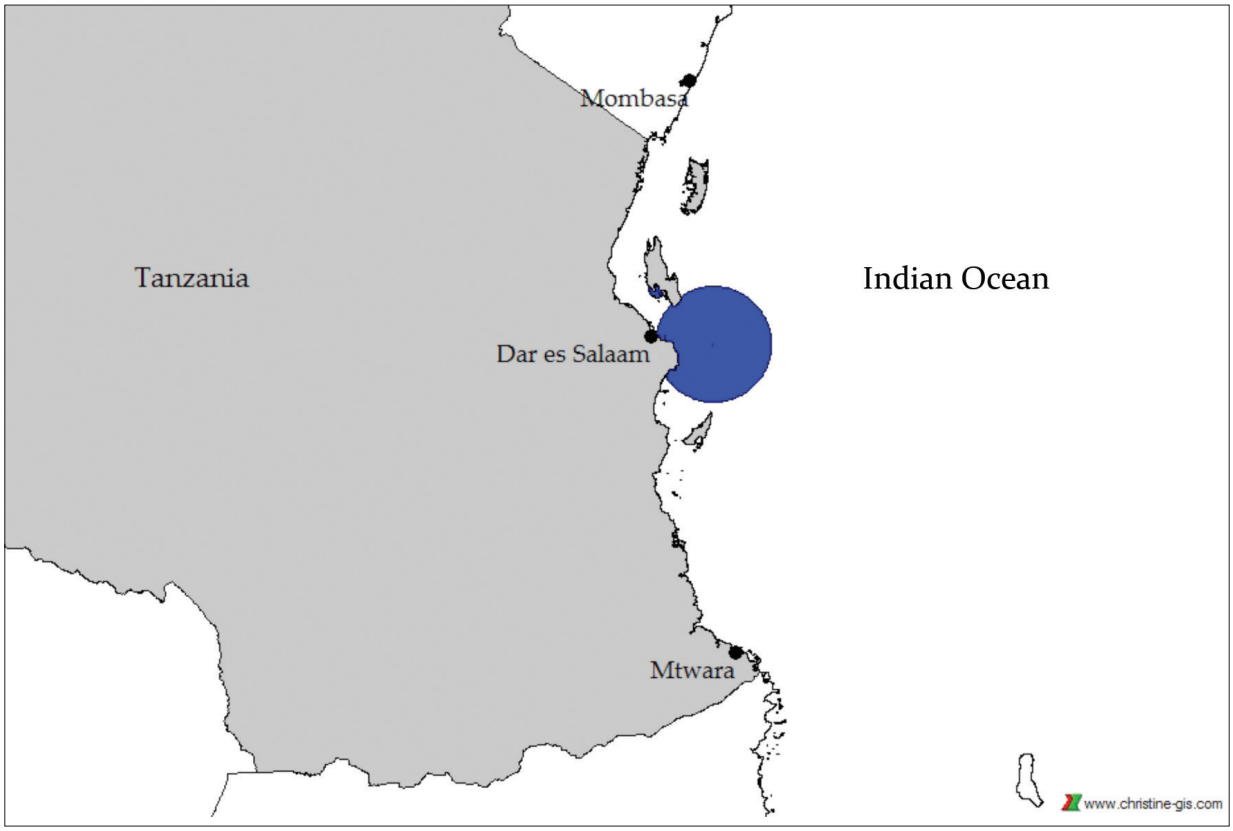

Figure A 9: The proposed marine IBAs in Tanzania for Anous stolidus, Sterna bergii, Sterna fuscata, Sula dactylatra and Sterna dougallii

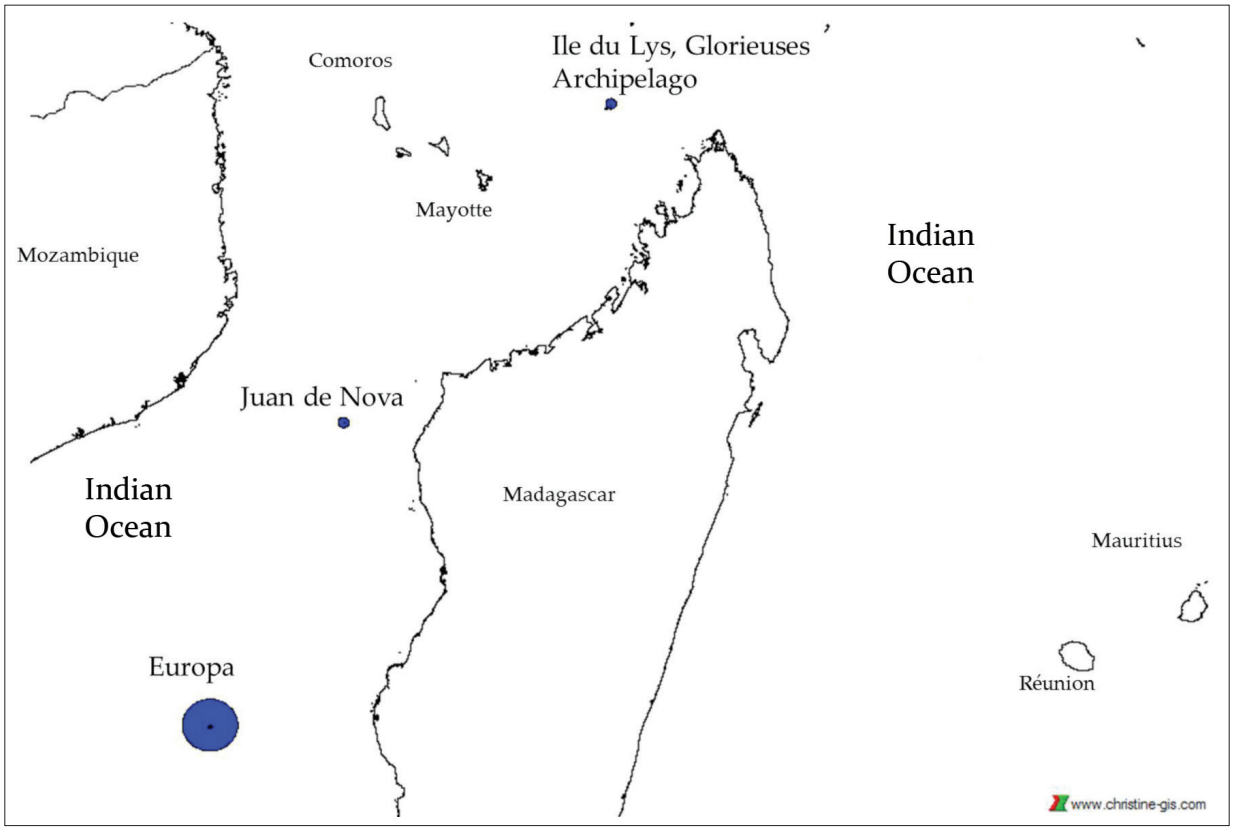

Figure A 10: The proposed marine IBAs in Europa (Fregata ariel, Phaethon lepturus, Phaethon rubricauda, Sterna fuscata and Sula sula), Juan de Nova (Sterna fuscata), Ile du Lys (Sterna fuscata) and Tromelin (Sula dactylatra and Sula sula).

Appendix 6: Specific Actions to Enhance Biodiversity Conservation in the Region

1. **Conservation action:**
   a. Develop and implement actions to protect priority species (Section 8.2) and sites (Section 8.3);
   b. Design and implement pilot habitat restoration projects in coastal and marine areas important for priority bird species and other forms of biodiversity, and to maintain key ecosystem services for human wellbeing;
   c. Prioritise eradication of Invasive Alien Species (IAS) and re-invasion pathways and other country-specific threats identified in the national reports;
   d. Protect key breeding sites for seabirds;

2. **Sustainable development:**
   a. Inform and empower coastal communities on sustainable use of natural resources and promote alternative livelihoods;
   b. Identify and assess sustainable financing mechanisms that deliver livelihood benefits to local coastal communities.

3. **Science:**
   a. Conduct detailed research on the status of the birds listed in Section 8.2;
   b. Develop integrated monitoring protocols that deliver information on the state of the marine and coastal environment (SMCE);
   c. Publish a Regional Seabirds Status and Trends report every two years;
   d. Publish a State of the Western Indian Ocean Biodiversity (SWIOB) report every two years;
   e. Establish a network of marine biologists to support implementation of 3a-d above, facilitate collaborative research initiatives, knowledge sharing and analysis of scientific data to inform environmental policy frameworks.

4. **Policy:**
   a. Mainstream biodiversity and bird monitoring results into policy frameworks and development plans and sectors;
   b. Establish and enhance policy frameworks for biodiversity conservation, using best practices;
   c. Establish a coordination mechanism to integrate biodiversity conservation into implementation of Multilateral Environmental Agreements (MEAs) commitments for marine and conservation areas;
   d. Provide guidance on the implementation of the WIO-LaB (Addressing Land-based Activities in the Western Indian Ocean) protocol;