

T & A D POYSER

Birds of the UK Overseas Territories



EDITED BY
ROGER RIDDINGTON

BIRDS OF THE UK OVERSEAS TERRITORIES



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T & AD P O Y S E R

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Species featured on cover. Front: Northern Rockhopper Penguin *Eudyptes moseleyi* and Cobb's Wren *Troglodytes cobbi* (Cobb's Wren is only present on Paperback edition); spine and back: Black-browed Albatross *Thalassarche melanophris*.

Photo on page 2: Adélie Penguins *Pygoscelis adeliae* (Doug Allan/British Antarctic Survey).

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Foreword

One-third of the world's majestic albatrosses, one-quarter of the world's beloved penguins, tropical parrots, cryptic petrels and the smallest flightless bird on Earth: the United Kingdom's Overseas Territories (UKOTs) hold a veritable cornucopia of some of our planet's most iconic birdlife. Not only that, they also include some of the most varied and exciting places to watch them. The range of this book stretches from the dense rainforests of the Caribbean to the windswept volcanoes of the South Atlantic, and is an inspiration for anyone interested in the natural world.

It is our privilege, here in the UK, to retain a responsibility for the birds of our Overseas Territories, in partnership with the local communities who call these places home. The sight of 100,000 penguins stretched out on a plain, or a flock of flamingos flying overhead, is an unforgettable gift, and one we must protect for the next generation to enjoy. I have had

the pleasure of witnessing a few of the sights featured in this book, and while very few of us will have the privilege of visiting all the UKOTs, their natural heritage is part of the rich tapestry of life that belongs to all humankind.

Many of the chapters profile important successes that have been achieved by local conservationists. These passionate women and men are working with very limited resources to manage tens, or in some cases, hundreds of extremely rare and unique terrestrial species, as well as vast marine zones rich in life. While much has been achieved, there remains much to do in these frequently overlooked islands. I am therefore delighted that *British Birds* will be donating all profits from this book towards conservation efforts in the UKOTs. I hope you enjoy the fascinating tour around the globe this book provides and, as a result, may be inspired to support the birds of these remarkable places.

Miranda Krestovnikoff
RSPB President

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Many people have contributed to this book. In particular, *British Birds* would like to thank: Richard Porter, for having the idea in the first place and coordinating its execution; all the authors, photographers and illustrators who have contributed; Mike Crosby, Mike Evans and Lincoln Fishpool from BirdLife International, and Jonathan Hall, James Millett and Clare Stringer from RSPB, for suggesting contributors, reviewing manuscripts and providing much all-round help with the individual articles; and Mark Corliss, Caroline Dudley and Peter Kennerley for layout, editorial and proofreading input to the original papers and help with the book itself. Louise Soanes stepped in at the eleventh hour to ensure we had a chapter on the British Virgin Islands, and we are very grateful to her. *British Birds* would also like to thank Bruce Pearson for such an evocative cover, and Jenny Campbell and Jim Martin at Bloomsbury for all their unstinting help and support. Finally, our thanks go to all the authors, photographers and artists of the original papers in *British Birds* – without them, this book would not have happened.

Introduction

Roger Riddington

This book is based on a series of papers, published in the journal *British Birds* between 2008 and 2019 (with the exception of the British Virgin Islands paper, in press), showcasing the birdlife of the United Kingdom's Overseas Territories (UKOTs). The UKOTs are internationally recognised for their exceptionally rich and varied biodiversity. As well as the birds and other wildlife, each chapter describes the key habitats of each territory, and has used the framework of BirdLife's Important Bird and Biodiversity Area (IBA) designations to describe the conservation priorities of these remarkable places. The book covers the territories as they currently exist and makes no comment on sovereignty or other related issues.

Traditionally, *British Birds* has focused on the birds of the Western Palearctic – Europe, North Africa and the Middle East. Most of the UKOTs are situated beyond that biogeographical region, so in this series readers have been entertained by species and populations mostly unfamiliar in the Western Palearctic – from penguins and albatrosses to New World warblers. Some of the territories support populations of outstanding global importance, most notably of seabirds in remote ocean settings; others contain island endemics battling to survive in

a restricted environment. Yet, while the species themselves may be unfamiliar and exotic, the threats to wildlife and the wider environment have great resonance for European readers. The introduction of alien species by early settlers was often utterly catastrophic, especially for ground-nesting species. Centuries later, the resources and expertise necessary to eradicate populations of, for example, cats and rodents in order to restore populations of native species vulnerable to ground predators, have been considerable. More recently, the impact of a changing climate is being felt throughout the territories, from the changes in ice cover at the poles, to the magnitude and frequency of devastating storms in the Caribbean.

This book's publication in 2020 is particularly timely, since it will serve as an important baseline for what promises to be a critical period for these disparate and varied parts of the world. It is a book for the reader to marvel at what nature has to offer, but also a book that I hope will help to persuade governments, non-governmental organisations (NGOs) and individuals around the world that our natural world is truly special and that we must maximise our efforts to prevent humankind from destroying it.

Species taxonomy and nomenclature (English and scientific names) in the introductory sections follow the IOC (International Ornithological Committee) World Bird List (worldbirdnames.org). In the individual chapters, species taxonomy and nomenclature are unchanged from the time of writing and do not necessarily follow the IOC World Bird List.

In 2014, BirdLife International revised the name of Important Bird Areas, which then became Important Bird and Biodiversity Areas. However, the abbreviation IBA has been retained and this is used throughout this book.

The Importance of the UK Overseas Territories for Wildlife

Jonathan Hall and Richard Porter

The United Kingdom has 14 Overseas Territories, spread right across the world: Akrotiri and Dhekelia, in Cyprus; Anguilla; Bermuda; British Antarctic Territory; British Indian Ocean Territory; British Virgin Islands; Cayman Islands; Falkland Islands; Gibraltar; Montserrat; Pitcairn Islands; St Helena, Ascension and Tristan da Cunha; South Georgia and the South Sandwich Islands; and Turks and Caicos Islands. To many people, these ‘far-flung corners of Britain’ are known only as occasional holiday destinations, through news reports of disasters, or, in earlier times, from postage stamps. Yet, reading out their names still conjures mystery and romance.

The UKOTs are mostly small islands or island complexes, ranging from tropical coral atolls in the Indian and Pacific Oceans, to windswept volcanic land masses rising from the depths of the South Atlantic. They are all of global importance for their biodiversity.



Henderson Lorikeet *Vini stepheni* (Richard Cuthbert).

BirdLife International shows that 45 species of bird are globally threatened in the UKOTs; three of them are listed as Critically Endangered, and 44 species are Near Threatened.

The UKOTs are under the jurisdiction and sovereignty of the United Kingdom and share the British monarch as their head of state. They are essentially remnants of the British Empire, and many of them have voted to remain part of the UK. They cover an area of 1,728 million km² and in 2019 had a total population of just 265,000.

Most of the permanently inhabited territories are internally self-governing and responsible for their own environmental management, while the UK retains responsibility for good governance, defence and foreign relations. Three (British Antarctic Territory, British Indian Ocean Territory, and South Georgia and the South Sandwich Islands) are inhabited only by a transitory population of military or scientific personnel.

The environments of the UKOTs are of the highest international significance. Across the tropics, the British Indian Ocean Territory holds the world's largest coral atoll, the Turks and Caicos Islands have the largest contiguous area of mangroves remaining in the Caribbean, and the Cayman Islands have some of the finest examples of dry forest in the region. In the Pacific, Henderson Island has been recognised as a UNESCO World Heritage Site for being one of the few atolls in the world whose ecology has been practically untouched by human presence, with the consequence that four endemic land birds still persist on this 43 km² island. In the subtropical South Atlantic, the tiny cloud



World map showing the UK Overseas Territories.

forest of St Helena holds the global population of an estimated 250 unique species, while also providing the majority of water for this drought-prone island via mist capture. In cooler regions, the highest carbon accumulation rate ever recorded for a peatland is in the Falkland Islands – more than twice the rate recorded elsewhere – and a greater understanding of that may yet play a potentially significant role in our planet's climate resilience. Gough and Inaccessible Islands are another natural World Heritage Site, recognised as two of the least disrupted islands and marine ecosystems surviving anywhere in the temperate zone. South Georgia, subject to a hugely ambitious rodent eradication project during the past decade, is a vast habitat witnessing remarkable natural recovery. And in marine terms, the combined 'marine estates' of the UK and its Overseas Territories are the fifth largest and probably most diverse on the planet.

A report by the Royal Society for the Protection of Birds (RSPB; Churchyard *et al.* 2014) shows that the UKOTs hold at least 1,500 endemic species of plants and animals, compared with around 90 endemic species in

the UK. The report further estimates that there are around 50,000 unrecorded species and 2,100 undiscovered endemic species, since many of these territories are relatively poorly studied.

The UKOTs are also home to six species of the world's albatrosses: Wandering *Diomedea exulans*, Tristan *D. dabbenena*, Sooty *Phoebetria fusca*, Atlantic Yellow-nosed *Thalassarche chlororhynchos*, Grey-headed *T. chrysostoma* and Black-browed *T. melanophris*. Remarkably, a third of all the world's albatrosses breed in the UKOTs, and we know only too well the devastating impact they face on the high seas, where longline fishing kills 100,000 birds each year.

In addition, the UKOTs hold significant populations of nine of the world's 17 species of penguin: King *Aptenodytes patagonicus*, Emperor *A. forsteri*, Adélie *Pygoscelis adeliae*, Chinstrap *P. antarcticus*, Gentoo *P. papua*, Magellanic *Spheniscus magellanicus*, Southern Rockhopper *Eudyptes chrysocome*, Northern Rockhopper *E. moseleyi* and Macaroni *E. chrysolophus*. In total, their populations represent more than a quarter of the world's penguins.



Northern Rockhopper Penguin *Eudyptes moseleyi*, known locally by the Tristanians as a 'pinnamin' (Andy Schofield).

Among the threatened petrels are Atlantic *Pterodroma incerta*, Bermuda *P. cahow*, Henderson *P. atrata*, Phoenix *P. alba*, White-chinned *Procellaria aequinoctialis* and Spectacled *P. conspicillata*. Add in the Vulnerable Ascension Frigatebird *Fregata aquila* and a host of globally threatened waterbirds and landbirds (for example, West Indian Whistling Duck *Dendrocygna arborea*, Inaccessible Island Rail *Atlantisia rogersi*, Gough Moorhen *Gallinula comeri*, St Helena



Montserrat Oriole *Icterus oberi* (Rod Williams/NPL).

Plover *Charadrius sanctaehelenae*, Stephen's Lorikeet *Vini stepheni*, Pitcairn Reed Warbler *Acrocephalus vaughani*, Forest Thrush *Turdus lherminieri* and Montserrat Oriole *Icterus oberi*), and the international responsibility that falls on the UK for the protection of all these species is soon apparent.

The small communities of the UKOTs are heavily dependent on natural resources for their livelihoods. The Falkland Islands and Tristan da Cunha receive half or more of their annual income from fisheries, while the important tourism sector relies upon the environmental offerings available, summed up by the British Virgin Islands travel slogan 'Nature's little secrets'. Ecotourism is likely to become increasingly important, and thus achieving sustainable use of natural resources is a near-existential question for many of these communities.

It is in this context of internationally significant wildlife and nature-dependent communities that the notable conservation challenges should be understood. Local conservationists are highly dedicated but few in number, given the small populations, and as a consequence are stretched terribly thinly over a whole host of urgent terrestrial and marine issues. This has led to sad losses – the most recent known extinction on British soil occurred as recently as 2003, when the last St Helena Olive tree *Nesiota elliptica* died, its delicate pink flowers sadly never to be seen again.

The most cross-cutting issues of conservation threat, which are likely to lead to further extinctions, are invasive alien species and climate change. Work is under way to strengthen biosecurity to prevent the introduction of new invasive species, such as fire ants or disease-bearing mosquitoes, and to minimise the damage of those already introduced, through either long-term control or the painstaking work of eradication projects. Meanwhile, climate change threatens all the UKOTs in different ways, with the Caribbean increasingly exposed to ever more powerful and frequent hurricanes, and with changing

oceanic processes in the South Atlantic altering the distribution of food supplies and leading to an increased risk of starvation for seabirds at some colonies. Other threats are more regional in nature: habitat destruction through uncontrolled development in the Caribbean, industrial-scale illegal bird-killing in the Cyprus Sovereign Base Areas and illegal fishing in the British Indian Ocean Territory, among others.

The common underlying constraint is one of numerical and financial conservation capacity. Territory environmentalists have saved numerous species from the very brink of extinction (where there have been fewer than ten individuals remaining in the population), hold unbeatable expertise in their local ecology and know exactly which projects are most urgently needed, and conversely which are more likely to reflect the pet interests of external organisations. Their main hindrance is simply scale: small teams are frequently responsible for over 100 globally threatened endemic species and networks of terrestrial and marine protected areas in need of management, while also having to oversee environmental rules, scrutinise environmental impact assessments, develop new policies, assist visiting researchers, respond to environmental emergencies and bring in additional funding. The demands are huge, and yet the UKOTs fall between the gaps when it comes to funding. They are ineligible for most normal sources of UK environmental funding, yet they are simultaneously excluded from the international environmental funds open to other small island states because of their constitutional links to the UK. Increased financial resources from the UK government and private sources are therefore needed to enable them to safeguard their precious wildlife and ways of life, while also enabling the UK to fulfil its international environmental obligations.

In the face of these constraints and challenges, however, we can look back at this past decade of UKOT environmental conservation and see an important story of hope and success. Indeed, it has been a decade



St Helena Olive tree *Nesiota elliptica* (Rebecca Cairns-Wicks).



An illegally trapped female Blackcap *Sylvia atricapilla* in a mist net on Cyprus (Guy Shorrock/RSPB).

of transformation. At the start of 2010, less than 1,000 km² of seas were fully protected in the conservation gold standard of ‘no-take’ marine reserves. By 2020, over 2.2 million km² of rich ocean will be permanently closed to all extractive activities. Illegal autumn bird-killing in the Cyprus Sovereign Base Areas has been reduced by over 70%, meaning that over half a million songbirds are now able to fly onwards in their incredible migratory journey every year. Comprehensive networks of terrestrial



Cayman Islands Blue Iguana *Cyclura lewisi* (Yves-Jacques Rey-Millet).



Critically Endangered Tristan Albatross *Diomedea dabbenena* courtship dance on Gough island (Andy Schofield).

protected areas have been created in Ascension Island and St Helena, accompanied by new environmental laws in both jurisdictions. Tropical forests in the Cayman Islands and Montserrat have received additional protections, while Anguilla has completed rodent removal from Dog Island. This is one of the most important seabird breeding islands in the eastern Caribbean, and seabirds, reptiles and even cacti are responding rapidly to the absence of these generalist predators. The first successful island rat eradication has taken place in the British Indian Ocean Territory, while the largest rodent eradication ever undertaken took place in South Georgia. This world-leading work was completed over the course of several years, leading to dramatic increases in the South Georgia Pipit *Anthus antarcticus* population. Less well known, but equally world leading, has been the quiet but impressive progress made on removing invasive plants from South Georgia, with several now on the cusp of eradication.

In 2010, there were four Critically Endangered bird species breeding in the UKOTs. Two of these, the Montserrat Oriole *Icterus oberi* and St Helena Plover *Charadrius sanctaehelenae*, have now been downlisted to Vulnerable owing to conservation interventions. Plans are under way to remove the invasive mice from Gough

Island in 2020, which if successful would save the other two Critically Endangered species, Tristan Albatross and Gough Finch *Rowettia goughensis*, and prevent the death of an estimated 2 million seabird chicks a year. The Ascension Frigatebird *Fregata aquila*, meanwhile, finally returned to breed on the main island of Ascension for the first time in over 100 years in 2012, following a successful feral cat eradication the previous decade.

As well as these important successes on the ground, there has been a welcome increase in conservation attention and support. The UK government's 'Blue Belt' programme of Marine Protected Areas (MPAs) has seen a concerted conservation effort gain high profile and millions of pounds in much-needed investment, while increasing numbers of NGOs and universities are seeking to support the UKOTs in their environmental challenges. It is our hope that the next decade will contain a further step-change in UKOT environmental management. In particular, there is a need for resourcing of further large-scale restoration projects, such as the cloud forest of St Helena and Henderson Island World Heritage Site, additional invasive species eradications across the UKOTs, and natural climate solutions in the Caribbean. May this book play its part in inspiring more people to support the wildlife and communities of these wonderful places.

1. Akrotiri Peninsula– Episkopi Cliffs IBA, Cyprus

Vasiliki Anastasi and Martin Hellicar

FIRST PUBLISHED IN DECEMBER 2014

ABSTRACT One of the most important sites for birds in Cyprus is the Akrotiri Peninsula–Episkopi Cliffs IBA, at the southern tip of the island and within the UKOT. The diversity and extent of the wetland habitats support great congregations of waterbirds in winter and spring, and the site is a bottleneck for migrating raptors in autumn and supports important populations of many of the island’s key breeding species. It is also under significant threat from habitat loss or degradation, chiefly as a result of development pressures – both military and civilian – while the need for a water-management strategy is also critical.

Introduction

Cyprus, a large island at the eastern end of the Mediterranean, is a special place for birds and biodiversity in general, at both a European and a global scale. Justifying its status as an Endemic Bird Area (EBA), the island is host to two endemic species: Cyprus Warbler *Sylvia melanothorax* and Cyprus Wheatear *Oenanthe cyprica*. While some Cyprus Warblers winter in the Middle East (especially in Israel), many remain in Cyprus all year round. Cyprus Wheatears return to the island to breed, from wintering grounds in southern Sudan and Ethiopia. Cyprus also has four endemic subspecies, three of them mostly confined to the forested valleys of the Troodos (the highest mountain range in Cyprus, in the west-central part of the island): the distinctively dark ‘Cyprus Coal Tit’ *Parus ater cypristes*, the ‘Cyprus Short-toed Treecreeper’ *Certhia brachydactyla dorotheae* and the local form of the Eurasian Jay *Garrulus glandarius glazneri*. The fourth is the ‘Cyprus Scops Owl’ *Otus scops cypricus*, whose distinctive double-note call can be heard across the island in spring and early summer.

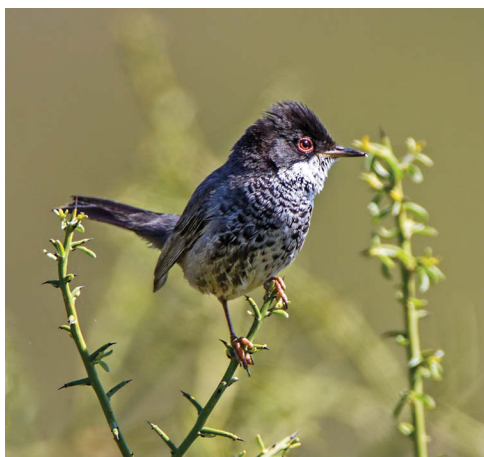


Figure 1.1. Male Cyprus Warbler *Sylvia melanothorax*, March 2014 (Albert Stoecker).

Cyprus also supports an important proportion of the European breeding populations of several species, notably Chukar *Alectoris chukar*, Black Francolin *Francolinus francolinus*, Bonelli’s Eagle *Aquila fasciata*, European Roller *Coracias garrulus*, Masked Shrike *Lanius nubicus* and Cretzschmar’s Bunting *Emberiza caesia*. But Cyprus is not just



Figure 1.2. Juvenile Red-footed Falcon *Falco vespertinus*, Cyprus, October 2011. Important numbers of this species pass through Cyprus on migration and the Akrotiri–Episkopi IBA is a favoured resting and feeding area (Albert Stoecker).

about important breeding birds. Lying along one of the major flyways between European breeding grounds and wintering areas in Africa and the Middle East, the island is significant for many species of migratory birds. Millions of birds use Cyprus as a stopover point during both spring and autumn migration, among them significant numbers of raptors and some species of global conservation concern, such as Pallid Harrier *Circus macrourus* and Red-footed Falcon *Falco vespertinus*. Over 390 species of birds have been recorded in Cyprus, about 200 of which occur regularly as passage migrants. Cyprus also has some key sites for wintering waterbirds, including important numbers of species such as Common Shelduck *Tadorna tadorna*, Greater Flamingo *Phoenicopterus roseus* and Eurasian Curlew *Numenius arquata*.

These key sites range from the mountain peaks of the Troodos, clothed in Black Pines *Pinus nigra*, to the steep coastal cliffs of Cape Aspro on the south coast, and from the open valleys of the Paphos District in the far southwest, rich with almond, olive and carob trees and brimming with the scent of thyme and oregano, to the salt lagoons of Larnaca and Famagusta. The 2014 Important Bird Area

The Akrotiri Peninsula–Episkopi Cliffs IBA

Akrotiri Peninsula–Episkopi Cliffs is an IBA identified for meeting many BirdLife International criteria. The site satisfies the criteria A1 and C1 for holding globally threatened species, A4i for holding more than 1% of global populations of species of waterbirds, A4ii for non-waterbird species and A4iii/C4 for holding more than 20,000 waterbirds. The site also meets criteria B1i and B1iii for holding a flyway population of congregatory waterbird species and other non-waterbird species. B1iv/C5 are also criteria for this site, on the basis that it is a raptor bottleneck where more than 3,000 raptors pass during migration. The site is one of the most important for species with unfavourable conservation status in Europe, meeting criterion B2, as well as for species with a favourable conservation status in Europe but with their global range concentrated in Europe, meeting criterion B3. This site holds more than 1% of flyway populations for some migratory species considered to be both threatened and not in the EU, satisfying the criteria C2 and C3, respectively. Criterion C6 is met for some of the species that are threatened in the EU, and for which this site is one of the five most important breeding grounds in Cyprus. For details of the criteria, see <http://datazone.birdlife.org/site/ibacriteuro>

Inventory (Hellicar *et al.* 2014), compiled by BirdLife Cyprus, lists the key sites for all the species and groups of birds described. The sites are identified on the basis of the three levels of BirdLife International IBA Criteria, i.e. Global, Regional and EU Criteria. Covering all of the 34 Cyprus IBAs, it is the most comprehensive and complete catalogue of sites for Cyprus. Prominent among those sites is the Akrotiri Peninsula–Episkopi Cliffs IBA.

The Akrotiri Peninsula–Episkopi Cliffs IBA

A few kilometres southwest of the city of Limassol, at the southernmost extremity of Cyprus, lies one of the most species-rich and important areas of the island for birds and other wildlife. This extensive site comprises the largest complex of wetlands on the island, as well as a mosaic of coastal scrub, dunes, agricultural areas and impressive coastal cliffs. Covering more than 7,800 ha, the Akrotiri Peninsula–Episkopi Cliffs IBA is for the most part situated within the West Sovereign Base Area (WSBA), part of the area classified as a UKOT. The Sovereign Base Areas of Akrotiri and Dhekelia (the latter is the Eastern Sovereign Base Area, ESBA, northeast of Larnaca) are those parts of Cyprus that remained under British jurisdiction following the end of British colonial rule and the declaration of the independent Republic of Cyprus, in 1960. Although part of Akrotiri is restricted



Figure I.3. Cyprus Wheatear *Oenanthe cyprica*, April 2012 (Albert Stoecker).

to military use and antenna installations, the Cypriot village of Akrotiri lies within the WSBA and there is open access for the public to most of the peninsula (restricted areas are clearly signposted). The site has a long ornithological history. The British forces

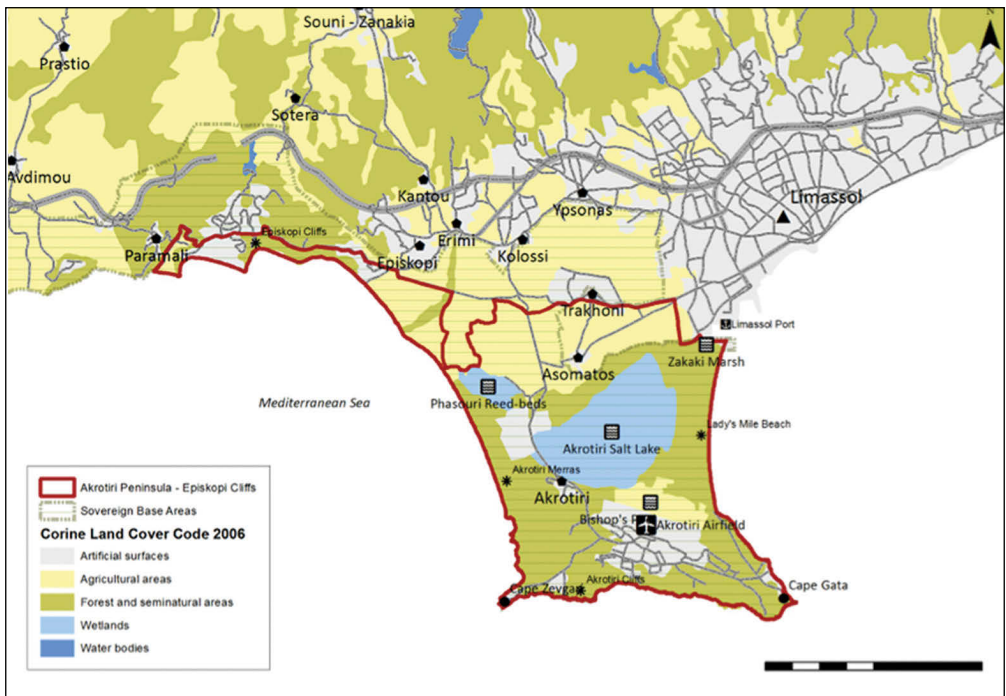


Figure I.4. Akrotiri Peninsula–Episkopi Cliffs IBA (BirdLife Cyprus).



Figure 1.5. The Akrotiri Salt Lake in January 2014. Conditions were wet at the time of this photo, which shows the lake close to its maximum extent (Silvio Rusmigo).

(chiefly Royal Air Force Army Ornithological Society and Army Ornithological Society), together with independent ornithologists, have studied the birdlife of the Akrotiri Peninsula for decades. The Annual Bird Reports and newsletters (published by BirdLife Cyprus and, before that, the Cyprus Ornithological Society since 1957) are a rich source of older information, along with other key references (Bannerman & Bannerman 1958; Flint & Stewart 1983, 1992).

The southern part of the Akrotiri Peninsula forms a plateau, roughly 60 m above sea level, with habitats such as pseudo-steppe (with annuals and grasses, as well as olive and carob tree thickets), while the northern part is low-lying, covered by alluvial deposits and with various lagoon habitats. A seasonal salt lake occupies the centre of the peninsula and is part of a wider aquatic system with a number of saline and freshwater habitats – for example, *Salicornia* and other annuals colonising mud and sand, Mediterranean salt meadows and Mediterranean halophilous scrub. The extent

of the wetlands is determined each year by the (unpredictable) annual rainfall. Water is usually present in most of the wetlands only in the winter months and early spring, although in wetter years most of these areas retain water throughout the year. A few retain at least some water even in drier years, notably Zakaki Marsh, Phassouri Reed-beds, Akrotiri Merras (the ‘gravel pits’ area) and Bishop’s Pool. The last site is the only freshwater pool in the area during drought years as it is filled with treated wastewater from the neighbouring Akrotiri airbase. The southern and western boundaries of the IBA are formed by the coastal cliffs known as the Akrotiri and Episkopi (or Kensington) Cliffs, respectively. The eastern part of the peninsula, known as Lady’s Mile Beach, is sandy, with shifting dunes and dune grasslands, whereas most of the western coast is covered in shingle and habitats such as perennial vegetation of stony banks. Juniper *Juniperus* and phrygana (garrigue) can be found in sometimes quite extensive patches throughout the peninsula.

THE AVIFAUNA

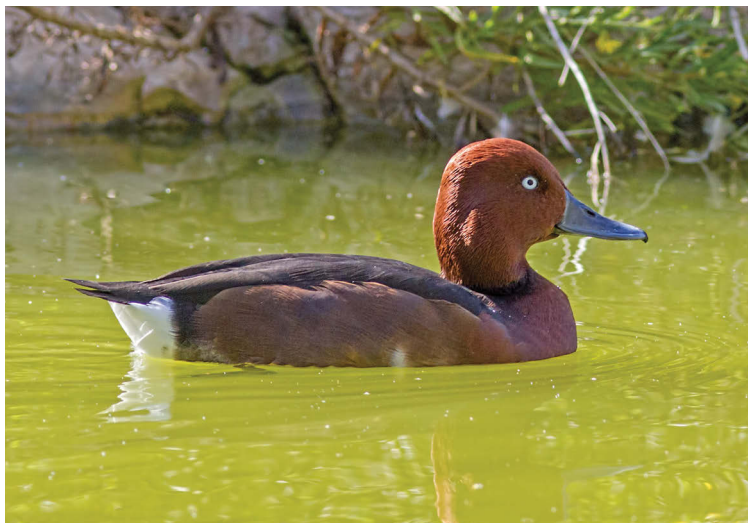
The Akrotiri Peninsula–Episkopi Cliffs IBA is the most important wetland IBA in Cyprus, with over 300 species recorded there. The diversity and extent of the wetland habitats allow great congregations of waterbirds in winter and spring, and the site forms a bottleneck for migrating raptors in autumn. Up to 20,000 birds may gather at Akrotiri Salt Lake at any one time, and can include globally important numbers of Greater Flamingos and Eurasian Curlews. Other notable migrants, which occur in regionally important numbers, include Common Shelduck, Little Egret *Egretta garzetta*, Glossy Ibis *Plegadis falcinellus* and Collared Pratincole *Glareola pratincola*. Both Common *Grus grus* and Demoiselle Cranes *G. virgo* appear on migration in late August – indeed, this is the best site to see Demoiselle Cranes in Europe. The cranes are most easily watched at the main salt lake, where they occasionally roost overnight before leaving on the developing thermals early the next day. In autumn, migrating raptors are a great spectacle; typically, more than 3,000 raptors pass through the site at this season, with small but still globally important numbers of Egyptian Vulture *Neophron percnopterus*, Pallid Harrier and Saker Falcon *Falco cherrug*, plus larger congregations of Red-footed Falcon

Falco vespertinus, which regularly occurs in 10s and reaches autumn maxima in the 100s (Hellicar *et al.* 2014).

The peninsula is equally important for breeding and resident species. This IBA is the most important breeding site in Cyprus for the globally threatened Ferruginous Duck *Aythya nyroca*, which bred for the first time in Cyprus at Phassouri Reed-beds in 2005, and has bred there or at nearby Zakaki pond ever since. The IBA is also one of the best breeding sites in Cyprus for Black-winged Stilt *Himantopus himantopus* and Kentish Plover *Charadrius alexandrinus*; other notable wetland breeders at the site are Spur-winged Lapwing *Vanellus spinosus* and Stone-curlew *Burhinus oedipnemos*.

Beyond the wetland areas, the site qualifies as an IBA for the number of breeding pairs of Black Francolin, a species that is at the edge of its European range on the island (Hellicar *et al.* 2014). The Cyprus Wheatear breeds on the IBA, although this species prefers wooded country higher up in the Troodos, while the Cyprus Warbler is a regular breeding species, especially in the maquis above Episkopi Cliffs. The Episkopi and Akrotiri Cliffs also support breeding Eleonora's *F. eleonora* and Peregrine Falcons *F. peregrinus*, as well as the most important breeding colony of Griffon Vulture *Gyps fulvus* on the island. The long-term decline

Figure 1.6. Ferruginous Duck *Aythya nyroca*, Cyprus, November 2012. The Akrotiri–Episkopi IBA is the only confirmed breeding site for the species on Cyprus (Albert Stoecker).



of free-range grazing goats and the illegal use of poisoned baits (intended to target other species, such as foxes and feral dogs) have resulted in a dramatic decline of Griffon Vultures on the island, down to just 8–10 individuals in 2012. Project GYPAS (2011–13), in which BirdLife Cyprus was a partner, aimed to supplement this dangerously small population with Griffon Vultures from Crete. Shag *Phalacrocorax aristotelis desmarestii* and European Roller are two other species breeding on these cliffs, the latter in small numbers, while Blue Rock Thrush *Monticola solitarius* and Wallcreeper *Tichodroma muraria* occur in winter.

Other important fauna and flora

The site's diversity of habitat types mesh together to form a unique and complex landscape. These include priority habitats such as the *Posidonia* beds – meadows formed by the seagrass *P. oceanica* – which are a major food source for marine turtles. The western part of the peninsula provides important nesting grounds for two Endangered marine turtles: Loggerhead *Caretta caretta* and Green Turtles *Chelonia mydas*. Turtles have ceased to breed along the east coast of the peninsula in the last few decades, probably as a result of human disturbance, but the Episkopi and Akrotiri Bays are important feeding areas for the two species. Other reptiles for which the site is important include the Endangered Schreiber's Fringe-fingered Lizard *Acanthodactylus schreiberi*, which can be found in the coastal dune areas (the junipers of the coastal dunes and the grasses and annuals of the pseudo-steppes are some of the site's most important habitats). The partly submerged sea caves at Akrotiri Cliffs provide one of the last remaining breeding refuges of the Critically Endangered Mediterranean Monk Seal *Monachus monachus* on the island, as well as important roosts of two bat species, the Near Threatened Common Bentwing Bat *Miniopterus schreibersii* and the Egyptian Fruit-bat *Rousettus aegyptiacus*. The Mediterranean Tree Frog *Hyla savingyi* breeds at Phassouri Reed-beds and is an

important food source for many wetland birds at the site.

In terms of flora, the IBA supports one of the largest, most pristine and ecologically complex coastal ecosystems in Cyprus, as well as the largest and most diverse wetland complex on the island. The site is pre-eminent in Cyprus for threatened plants and more than 800 indigenous plant taxa occur on the peninsula, or around 40% of the species on the island as a whole. Among them are specialities such as the endemic Cyprus Bee Orchid *Ophrys kotschyi* (Akrotiri Peninsula Environmental Management Plan 2012).

Threats to species/populations

Like many other wetlands throughout the world, this rich and complex ecosystem is vulnerable to human pressures. The greatest threats to the site's birds are habitat loss, degradation and fragmentation, as a result of development pressures from a variety of sources, both military and civilian, and including tourism, roads, renewable energy and many others. A landmark agreement between the Republic of Cyprus and the UK government was signed in January 2014, concerning changes to the planning regulations within the Sovereign Base Areas. This agreement will make development easier within most of the WSBA, though implementation details are unclear at the time of writing.

Disturbance by visitors, linked with the ease of access to many parts of the wetland, is a major problem. During the breeding season, ground-nesting waders such as Black-winged Stilts and Kentish Plovers are particularly vulnerable to disturbance from hikers, dog walkers and vehicles all around the site. Off-road driving is another great concern since it takes place in most of the areas considered important for feeding and breeding birds, often in the form of impromptu racing. Another serious problem for ground-nesting waders in particular is a lack of water management (which could potentially be much more sensitive to the

requirements of the IBA qualifying species), while predation by feral cats, domestic dogs and other feral animals is a threat to ground-nesting birds in general. The wetland complex is sensitive to pollution, including that from agriculture and storm sewers, while spraying of insecticides in the wetland is another potential threat (Hellicar *et al.* 2014).

Other threats include the dumping of rubbish, and illegal shooting and bird-trapping (with mist-nets and lime sticks). Illegal shooting, especially of European Bee-eaters *Merops apiaster* but also in some instances of migrant raptors, has become a major issue at Akrotiri in recent years, notably in the autumn. The trapping problem is a chronic one for much of Cyprus, and the WSBA is no exception, although it is at the ESBA and more specifically Cape Pyla that the problem has sadly peaked in recent years. Cape Pyla has become notorious for bird-trapping, with the trappers making use of extensive patches of *Acacia saligna* – an invasive alien species planted and nurtured by the trappers with the specific aim of creating good conditions for illegal mist-netting. With the estimated trapping taking hundreds of thousands of birds every year, campaigning



Figure I.7. A key breeding species on Cyprus is the Black Francolin *Francolinus francolinus*, which is at the southwestern edge of its breeding range on the island, September 2013 (Albert Stoecker).



Figure I.8. Lady's Mile, on the eastern side of the peninsula, and the encroaching port development, April 2013. The loss of important wildlife habitats to development is one of the key threats to the Akrotiri–Episkopi IBA (Silvio Rusmigo).

against this disgraceful and unacceptable slaughter is one of BirdLife Cyprus's main tasks, with the support of the RSPB and other BirdLife partners, notably NABU in Germany.

Conservation measures

The site was first identified as an IBA in 1989 (Grimmett & Jones 1989). In 2003, the Akrotiri Salt Lake and the Phassouri Reed-beds were designated as wetlands of international importance under the Ramsar Convention. Then, in 2010, parts of the IBA (some 60% of the 2012 IBA, the area shown in [figure 1.4](#)) were designated as a Special Protection Area (SPA) equivalent for the protection of wild birds, under the Sovereign Base Areas' Game and Wild Birds Ordinance (21/2008). This edict broadly replicates the Republic of Cyprus's Protection and Management of Game and Wild Birds Law (152(I)/2003), implementing the provisions of the European Directive 2009/147/EC on the conservation of wild birds. SPAs form part of the Natura 2000 network, an European Union network of protected sites. The designation of Akrotiri as a Natura 2000 Special Area of Conservation (SAC) for the protection of specific habitats, plants and non-bird species is still pending. SPAs are subject to the appropriate assessment process, for any

plans or projects that may affect the site or the species for which it was designated, and special management measures. The Akrotiri Peninsula Environmental Management Plan was published in 2012 and forms a good base for the development of a full management plan for the site.

Thus far, and even though more than half the site has gained protection status, no adequate conservation measures have been implemented. The one conservation measure required most urgently is the implementation of a water-management plan, which would take the needs of the qualifying species into consideration. In addition, bearing in mind the development threat looming over this important area and some of its most sensitive parts, there is a great need for implementation of the appropriate assessment procedure, as enshrined in the EU Habitats Directive, especially in the case of those proposed developments that will have the most significant impact on the site and key species. Parts of the IBA are in dire need of immediate action, including simple measures such as fencing and controlling access to rough tracks and informal parking lots. Coupled with controlling the access, the site requires continuous wardening, to clamp down on some of the illegal activities highlighted above and which put some key species at risk.



Figure 1.9. Greater Flamingos *Phoenicopterus roseus* at the Akrotiri Salt Lake, November 2011. A water-management plan is perhaps the single most urgent conservation requirement for the IBA; properly implemented, it could have a major effect on populations of many breeding, wintering and migratory species (Albert Stoecker).

Visiting Cyprus

Most visitors to Cyprus arrive by air, either at Larnaca in the east or at Paphos in the west. Public transport on the island is limited, being restricted to buses, and most visitors find that hiring a car is the most convenient way to explore the island.

Cyprus has a great variety of sites worth visiting, each with a range of different species and each being important at different times of the year, with the summer months generally providing the least birdwatching interest. The variety of the Cypriot landscape, from the coast to the plains and to the highest peaks of Troodos, allows plenty of scope for a birdwatcher on holiday. However, spring is generally regarded as the ideal time to visit, and it is during this season when the Akrotiri Peninsula–Episkopi Cliffs IBA is at its best, when most of the waterbirds are still around and many spring migrants have arrived.

How to contribute

Visitors can support bird conservation by reporting their sightings. BirdLife Cyprus uses BirdTrack, where you can enter all your bird sightings: <https://www.bto.org/our-science/projects/birdtrack>

To check recent sightings in Cyprus you can also visit <https://birdlifecyprus.org/recent-sightings>.

Birders can contribute to the conservation of the Akrotiri Peninsula–Episkopi Cliffs IBA even without visiting by:

- Writing a letter to your local Member of Parliament, urging them to raise with the Ministry of Defence the issue of the desperate need for protection of the site and to stop illegal bird-trapping in the Sovereign Base Areas in Cyprus.
- Subscribing to the electronic monthly newsletter of BirdLife Cyprus and/or becoming a member of that organisation, to support its efforts in protecting the habitats and sites of the island.

At the time of writing, this incredibly rich and important site for birds has to rank as one of the most threatened in Europe. The proposed changes in planning regulations pose an additional and very real threat to a site already suffering from disturbance, poaching and water-management threats. The presence of the British base since 1960 has prevented the type of development that has swallowed up many coastal sites elsewhere in Cyprus, but the proposed changes threaten the status quo, with implications not just for wildlife but for the landscape generally and the wealth of archaeological sites dotted throughout the peninsula. The hope has to be that a management plan for this site comes into effect and is implemented effectively in the very

near future, to preserve existing biodiversity value, and enhance and support key species and habitats. For this to happen, the British authorities must work hand in hand with the Cyprus government. Both parties need to bite the proverbial bullet, and to accept the short-term political cost of a negative reaction from local interests intent on development and accustomed to an ‘access all areas’ policy (not to mention the committed poachers). It is a short-term cost worth bearing for the sake of the long-term protective management of such a key site. All the relevant stakeholders must invest in this process to ensure that Akrotiri’s key habitats and species are protected, and the site becomes the ‘go to’ wildlife destination, both for locals and for visitors.

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UPDATE, JULY 2020

Since the paper was published in 2014, the Akrotiri Peninsula has continued to suffer environmental degradation due to lack of proper management, while the development threat has increased significantly at the expense of protected areas and species. The Akrotiri Environmental Management Plan has not been implemented and effective law enforcement to combat illegal activities degrading the site is – for the most part – lacking.

Damaging developments include, but are not limited to, a golf course with 400 villas plus a massive casino resort, both just north of the Akrotiri Salt Lake, and a large photovoltaic park next to Bishop's Pool. These developments have received environmental permits based on flawed assessments that failed to fully address key biodiversity issues. These issues include the expansion of the Limassol port into the Lady's Mile pools area. Plans currently being drafted that concern changes in the planning regulations within the Sovereign Base Areas, preceded by a non-military development agreement signed between the Republic of Cyprus and the UK Government, threaten to add further pressure to this already poorly managed natural area.

The sole exception to the degradation witnessed on Akrotiri in general is the restoration work achieved at Akrotiri Marsh, with the help of local herdsman. The marsh forms part of the Akrotiri wetland complex, and a two-year restoration project in 2015–17 was successfully completed through a conservation grazing programme using local cattle. This one shining exception to an overall gloomy picture was funded by the Darwin Initiative (UK government funding) and implemented by BirdLife Cyprus in collaboration with the Akrotiri Environmental Education Centre and the RSPB, plus the Akrotiri community.

BirdLife Cyprus, with support from the RSPB, has made the protection and proper management of this IBA a top priority. BirdLife is following developments closely, pushing for implementation of protection law and battling damaging developments on all fronts. Raising public awareness is key to this effort, as is securing more funds for practical conservation projects. The stakes are high: to manage and save this exceptional natural area – home to Greater Flamingo, Black Francolin and Ferruginous Duck – for generations to come.

2. Anguilla

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ABSTRACT The UKOT of Anguilla is the northernmost of the island groups in the Lesser Antilles, in the eastern Caribbean. It has been long known for its seabirds; 16 species currently breed, with Red-billed Tropicbird *Phaethon aethereus*, Brown Booby *Sula leucogaster* and Sooty Tern *Onychoprion fuscatus* occurring in globally important numbers. There are 16 IBAs in Anguilla, including five of the islands holding the main seabird colonies. The mainland IBAs are identified for populations of breeding seabirds, including Least Terns *Sternula antillarum*, and/or five restricted-range terrestrial species confined to the Lesser Antilles EBA. The Dog Island IBA is one of the most important seabird colonies in the Caribbean. Considerable economic growth in recent decades, especially from increased tourism, presents challenges to ensuring that new development is sustainable, helping to maintain the rich biodiversity and natural resources upon which the growth is founded.

Introduction

Anguilla is an island at the edge. Located in the tropics at 18°30'N 63°50'W, it lies just beyond the eastern end of the islands in the Greater Antilles, which stretch across the northern Caribbean, and at the northernmost point of the Lesser Antilles, the islands that mark the eastern border of the Caribbean Sea.

The main island of Anguilla is some 26 km long and 5 km across at its widest points, with an area of 91 km². It is the largest and only inhabited island, and provides the collective name for an archipelago of 22 islands that for the most part are little visited. The smaller islands, around 660 ha in total, are scattered fragments of a tropical paradise and provide safe nesting grounds for some of the most important seabird populations in the Caribbean (Lowrie *et al.* 2012). To avoid confusion, this introduction refers to the main island and its administration and governance. The smaller islands are referred to specifically, particularly in the IBA and seabirds sections.

On the approach to Anguilla by boat, the low-lying islands emerge slowly out of clear blue seas and white-topped surf. A stretch of sandstone cliffs on Anguilla reaches up 65 m, the highest point in the islands; elsewhere, the islands are mostly low rocky outcrops of limestone and coral. The hard coastline is interspersed with white sandy beaches, behind several of which brackish lagoons have formed. Except for the isolated outcrop of Sombrero, which lies on a separate rock bank 65 km to the northwest, the outer islands are all visible from the mainland.

Anguilla is part of the island arc that curves down the eastern Caribbean, following the line where the Caribbean and Atlantic tectonic plates meet. The outer islands in the north, such as Anguilla and nearby St Barthélemy, are sedimentary islands, their limestone rocks laid down in shallow seas 20–30 million years ago on a base of older rocks and subsequently gently folded and uplifted. On Anguilla there are remains of earlier volcanic activity underlying



Figure 2.1. Sooty Terns *Onychoprion fuscatus*, Dog Island, Anguilla, May 2007 (Pedro Geraldez).

the limestone, with igneous rocks and breccias visible at the northern end of Sandy Ground village and in Crocus Bay. The islands in the archipelago, along with St Martin/St Maarten and St Barthélemy, are high points on the Anguilla bank, an area perhaps connected in times when sea levels were lower. There are still active volcanoes on islands to the south, such as Montserrat, and earthquakes are occasionally experienced on Anguilla.

The limestone on Anguilla dips gently from the north, where the coastline comprises low cliffs, mostly below 50 m in height, down to the south coast. There are extensive areas of limestone pavement across the island, and in places the rock has become heavily fissured and difficult to walk across. Away from coastal areas, a dry evergreen scrub now covers the limestone and there is little surface drainage other than four ponds in the east of the island. In a few areas, such as Katouche Canyon and along the northeast coast, cave systems have formed. In some areas, thin soils have developed, but these remain isolated pockets and are utilised for grazing livestock and arable farming.

Anguilla has a tropical climate; the temperature varies rather little, with daily

mean temperatures in the range 26.4°C–29.8°C. The Atlantic trade winds, which brought European explorers in their sailing ships to the Caribbean, blow from the east at about 15–28 km/h. The annual average rainfall is low for the region at 970 mm, with an annual range of 460–2,050 mm, depending on the number and intensity of storms that pass over the islands (mainly from June to November). Storms can be dramatic and brief; they can also intensify in power to bring hurricane-force winds, extensive rainfall, wave surges and flooding. The most damaging hurricanes in recent years were Luis in 1995, Lenny in 1999 and Omar in 2008.

History

The first people to set foot on the islands were Amerindians: tribes from South America who moved up through the islands of the eastern Caribbean, travelling by wooden canoes and speaking Arawak. The first settlements on the islands have been dated to 1500 BC and occupation was intermittent until further Amerindians arrived around AD 600, using their skills to take advantage of inshore fish

and shellfish and by starting to grow crops. On Anguilla, the population was limited by lack of fresh water and soil, but even on this small island evidence of 42 sites and villages has been found covering the period to AD 1500.

Amerindians were still on the island by the time Columbus sailed into the Caribbean in 1492, although it is not clear when they left the island they named Malliouhana, or what this name means. It was a European who named it Anguilla, as the island's long, thin shape recalled an eel or *anguille*. The date of European discovery is uncertain, but we know that a party of British settlers arrived on Anguilla in around 1650. The new inhabitants began growing crops but found the island's dry climate and thin soils too poor for intensive agriculture. This was a period of exploration and competition for land and trade among Europeans, who fought over Caribbean islands during the seventeenth and eighteenth centuries. At various times the Anguilla islands were in Dutch, French and British hands. For the most part, however, Anguilla remained British, and new investors arrived and developed several estates growing cotton, sugar and other crops. They also brought

with them livestock, including goats and sheep.

This was also the time of the slave trade, whose effects reached Anguilla as estate owners brought in enslaved Africans. As a result of the difficult agricultural conditions, the estates were slowly abandoned during the nineteenth century, leaving an Anguillian population that was almost all of African or mixed descent. They survived by fishing, building boats, harvesting salt, raising livestock and trading between islands in their boats (Petty 2008). Life was never easy, especially during periods of drought, and as recently as the 1950s there was up to 80% unemployment. At times, further displacement took place, with local people moving between islands or travelling further afield to find employment, which is a practice that continues today.

Anguilla has been administered by the UK through its arrangements in the eastern Caribbean and, as early as 1824, it was placed under the administrative control of nearby St Kitts. In 1967, Britain granted St Kitts and Nevis full internal autonomy, and Anguilla was also incorporated into the new unified dependency, against the wishes of many



Figure 2.2. Limestone cliffs at Little Bay on the main island of Anguilla, September 2011. These cliffs provide nesting sites for both Red-billed *Phaethon aethereus* and White-tailed Tropicbirds *P. lepturus* (Gillian Holliday).

Anguillians. This led to a crucial episode in the island's history, with two rebellions, in 1967 and 1969: the Anguillian Revolution. The goal of the revolution was independence from St Kitts and Nevis, and a return to being a British colony. British authority was fully restored in July 1971, and in 1980 Anguilla was finally allowed to secede from St Kitts and Nevis and become a separate British Crown colony, now a UKOT.

The population in 2013 numbered over 12,000 and is widely dispersed across the island. The administrative capital is The Valley, an area that retains an open and relaxed feel, providing a nucleus for business, community services, culture, sport and even agriculture close to its centre. In the last few decades, Anguilla's financial fortunes have also changed, with an increase in tourism, particularly by

visitors from North America and Europe. In recent years, tourism has accounted for over 50% of employment, bringing an increase in infrastructure and social investment, and at the same time pressures on the natural environment. The ease of air travel and investment in transport facilities is boosting tourism, and in 2013 Anguilla attracted over 69,000 stopover tourists and 82,000 day visitors (data from Caribbean Tourism Organisation). Peak months for visitors are from December to April but a range of activities is extending the tourism season. The majority of visitors still arrive by boat, especially for day trips from nearby St Martin/St Maarten.

Environmental protection

The government of Anguilla develops and enacts legislation and policy. Its environmental lead is through the Department of Environment (DoE), which also has an operational role. The department's work is complemented by that of the Anguilla National Trust (ANT), a statutory body and membership organisation committed to the conservation of the island's natural and cultural heritage within the context of sustainable development.

There is a range of environmental and biodiversity legislation in place or being developed on Anguilla. The Trade in Endangered Species Act is the local legislation that gives effect in Anguilla to the Convention on Trade in Endangered Species of Wild Fauna and Flora (CITES). In 2014 the UK government extended the CITES regulations to Anguilla.

The Biodiversity and Heritage Conservation Act (BHCA) is aimed at the conservation of the wildlife native to Anguilla and of Anguilla's rich historic and cultural heritage. The BHCA is a response to the threat to Anguilla's wildlife and heritage resources posed by human activities, especially increasing land development. It provides a sound framework



Figure 2.3. A remnant area of mature dry forest at Crocus Bay on the northern coast of Anguilla mainland, September 2011 (Gillian Holliday).

for species conservation, for example through species action plans, and for the designation of protected areas, including the creation of management plans. The BHCA also complements the Bill for the Environmental Protection Act 2008 (EPA), which is primarily concerned with pollution.

The draft bill for the EPA 2008 provides for an effective environmental assessment process for all activities that might have a significant adverse impact on the environment, and establishes a licensing system to ensure that activities will commence and continue to be conducted in a manner that does not damage the environment. A recent assessment of environmental protection frameworks in UKOTs (FIELD & RSPB 2013) identified the EPA 2008 and the Physical Planning Bill 2001 as priority gaps for completion. Introducing mandatory environmental impact assessment (EIA) procedures, improving access to information and clarifying the status of legislation would increase accountability and enable public participation.

Some of the recent conservation initiatives on Anguilla include ecosystem-based assessments, habitat mapping (terrestrial and marine), environmental economic evaluations, and capacity building in remote sensing and GIS applications in relation to environmental analysis. The recent 'Greening the Economy' work-shop focused on broad national environmental issues. There is a proposal for a full national ecosystem assessment for Anguilla, which will help to inform a national development plan for the islands.

Island habitats

The diversity of habitats and biodiversity on Anguilla is influenced by its isolation, small land area, low elevation and climate. The main habitat types are limestone scrub and thickets, brackish ponds, coastal cliffs, beaches, and inshore marine habitats, including coral reefs (Medcalf & Cameron 2013; Medcalf *et al.* 2014). To date, 141 species of bird have been recorded, of which 50 have bred in recent years.

From a distance, large parts of the main islands of Anguilla and nearby Scrub Island appear green, as the limestone areas are dominated by a dry, evergreen, drought-tolerant scrub. Species here have adapted to low and intermittent rainfall, long periods of sunshine and continuous drying winds. In less exposed areas and away from the coast, some trees and bushes grow to 5 m tall and it is easy to lose your way in long stretches of dense vegetation. Many of the shrub species (including Torchwood *Amyris elemifera*, Mutton Polly *Antirhea acutata*, Chink or Cherry *Bourreria succulenta*, Wild Grape *Coccoloba krugii* and White Wattle *Eugenia foetida*) are found in similar habitats across the Caribbean. A short walk through this habitat, especially alongside a wetland, will provide encounters with most of the island's resident landbirds.

In the east of the mainland and on the outer islands, prevailing winds sculpture the bushes and keep the vegetation low. Frangipani *Plumeria alba* and the tall spikes of the tree cactus *Pilosocereus royenii* punctuate the scrub, which thins out on limestone pavements and more exposed parts of the coast. At Windward Point, at the eastern end of Anguilla, is a superb field of Pope's Head Cactus *Melocactus intortus*.

In sheltered areas and in a few natural folds in the topography, areas of taller limestone thicket and dry forest are found. The most extensive area remaining is in the Katouche Canyon, where the thick, dense canopy provides moist conditions and respite from the sun. Loblolly *Pisonia subcordata*, Gumbo-limbo or Turpentine Tree *Bursera simaruba*, Wild Fig *Ficus citrifolia*, Wild Pine *Tillandsia utriculata* and most of the native tree and shrub species can be found here. This habitat was probably once more widespread, but over recent centuries large trees have been cleared for agriculture, construction and charcoal. Further smaller areas of this habitat can be found at West End point and along Crocus Bay on the north coast of Anguilla.

Where goats browse, a low thorn scrub community dominates, which can be extensive and impenetrable. Common plants include



Figure 2.4. An area of limestone, with the distinctive Pope's Head Cactus *Melocactus intortus*, at Windward Point on the main island of Anguilla, September 2011 (Gillian Holliday).

Five-finger *Randia aculeata*, Sloe *Reynosia uncinata*, Thorn *Ziziphus rignonii* and Cockspur *Castela erecta*. The herb layer here and around some wetlands attracts a range of invertebrates, although these are little studied to date.

Around 1,335 ha of the mainland is used for agriculture, mainly to grow vegetables and fruit, with isolated grassland supporting goats and smaller numbers of cattle and sheep. There are small-scale hydroponic schemes, growing mainly salad vegetables and herbs for the tourism market.

Anguilla has an extensive wetland system of 26 sites spread across the mainland and Dog and Scrub Islands, and these are a striking feature of the Anguilla landscape. Elsewhere, there is little surface drainage, with water permeating the limestone rocks and through systems of caves and caverns. The wetlands range in size from small seasonal pools to larger, though still shallow, permanent ponds. The biggest are Caul's Pond, Cove Pond and Road Salt Pond at 35–45 ha in extent. Water levels are replenished through rainfall and run-off from catchments and freshwater springs.

All the pools are brackish to an extent, a result of direct saltwater intrusion from seepage through the limestone or from storm surges into coastal lagoons.

Four wetlands are found inland: Badcox, Caul's, East End and Mimi Bay Ponds. These spring- and rainfall-fed ponds have formed in the few shallow depressions in the limestone and have attracted the largest flocks of waterfowl in recent years, particularly Blue-winged Teals *Anas discors* in winter. The remaining larger ponds are coastal lagoons where, over time, sand has drifted and deposited, forming beaches, dunes and bars, effectively converting once shallow lagoons into enclosed ponds. In periods of low rainfall these lagoons dry out, with impacts on both salinity and invertebrate populations.

Dry, evergreen scrub hems in most of the coastal lagoons on the landward side, but at the margins and the coastal edge a variety of plants can be found in brackish water and coastal dunes, including Pondweed *Sesuvium portulacastrum*, Balsam *Croton flavens* and Sweet Weed *Stylosanthes hamata*. Perhaps the most dominant tree around the water's edge

of many ponds is the Buttonwood *Conocarpus erectus*, a widespread terrestrial species of mangrove. Small areas of mangrove swamp remain on Anguilla, with Red *Rhizophora mangle*, Black *Avicennia germinans* and White Mangrove *Laguncularia racemosa*. These are found on ponds that are slightly deeper and more likely to hold water year-round, such as Little Harbour Pond. All of this vegetation provides critical resting, foraging and nesting grounds for a range of wetland resident and migratory birds, far more than would be expected for an island so dry and so small.

Anguilla's coastline is mostly low, fissured limestone interspersed with long stretches of white-sand beaches, which have provided a basis for its increasing tourism industry. A number of coral reefs are found in shallow seas and some lie close to the shore, in places like Shoal Bay East. In a few areas such as Forest Bay, Little Bay and Island Harbour, beds of turtle grass *Thalassia testudinum* are found, attracting a range of herbivorous fish and the Endangered Green Turtle *Chelonia mydas*. The reefs surrounding the northern coast of the island also provide important foraging grounds for the Critically Endangered Hawksbill Turtle *Eretmochelys imbricata*. The cliffs that line this coast are the highest on Anguilla, with sandstone cliffs at Crocus Bay and limestone cliffs at Little Bay, where White-tailed *Phaethon lepturus* and Red-billed Tropicbirds *P. aethereus* breed.

Important Bird Areas

There are currently 16 IBAs identified on Anguilla, 12 on the main island and four on the smaller islands (figure 2.5). The main seabird colonies qualify under the global congregations criterion (A4ii), sites supporting >1% of the global population of a seabird species (A4ii), or the regional congregations criterion (B4ii), sites supporting >1% of the regional population of a seabird species. In addition, Dog Island qualifies under criterion A4iii, sites supporting ≥10,000 pairs of seabirds of one or more species. Global and regional population estimates are

taken from IBAs in the Caribbean (BirdLife International 2008).

The seabird colonies have consistently met the regional congregations criterion, although Laughing Gulls *Larus atricilla*, Bridled Terns *Onychoprion anaethetus* and Roseate Terns *Sterna dougallii*, which have all reached 1% of the global population, have been recorded in lower numbers in recent years. The 1% global thresholds for Brown Booby *Sula leucogaster* (2,000 birds) and Sooty Tern *O. fuscatus* (28,600 birds) have consistently been reached (BirdLife International 2008). Ongoing surveys confirm the global and regional importance of the seabird populations on Anguilla, although providing accurate trends is difficult since the main surveys are often incomplete due to access difficulties. The most up-to-date surveys are from 2013; see table 2.1.

On the mainland, the IBAs qualify either under criterion B4ii for their populations of Least Terns *Sternula antillarum*, or under A2 for assemblages of restricted-range species. These sites are known or thought to hold a significant component (two or more) of the restricted-range species whose breeding distributions define an EBA. The Lesser Antilles EBA (EBA 030; Stattersfield *et al.* 1998) extends across all the island groups in the Lesser Antilles, from Anguilla to Grenada. The key habitats are lowland and montane rainforest, dry forest and elfin forest. The EBA is defined by 38 restricted-range species, of which five occur in Anguilla's dry forest: Green-throated Carib *Eulampis holosericeus*, Antillean Crested Hummingbird *Orthorhynchus cristatus*, Caribbean Elaenia *Elaenia martinica*, Pearly-eyed Thrasher *Margarops fuscatus* and Lesser Antillean Bullfinch *Loxigilla noctis*. All these species are widespread in the EBA and of Least Concern.

The main seabird colonies are all recognised as IBAs. Sombrero IBA is a remote, flat-topped rocky island, 38 ha in extent and 55 km northwest of Anguilla. The island's vegetation is currently in the early stages of recovery following damage by Hurricane Luis in 1995. Extensive phosphate deposits were mined in the nineteenth century, leaving the island's surface

pitted with craters up to 10 m deep. The island lies on a route where European shipping enters the Caribbean, an area with hazardous reefs. A lighthouse there was built by the British and operational from 1868; the light was automated in 2001 and now the only visitors are occasional fishermen, sailors, divers and researchers.

The island has long been important for its breeding seabirds. Currently, seven species breed and it is listed as globally important for Bridled Terns; up to 810 individuals have been recorded, although fewer in recent years. Sombrero holds regionally important populations of Brown Booby, Masked Booby *Sula dactylatra* and Brown Noddy *Anous stolidus*.

Dog Island IBA lies 13 km northwest of the mainland and is a rocky island of 207 ha with three smaller islands off its west and north coasts. The coastline comprises low cliffs interspersed with sandy beaches. Weathered limestone rocks reach sea level in some areas and there are two large ponds inside beaches at Spring Bay and Stoney Bay. The centre of the island is covered in impenetrable low thorny scrub and cacti. A herd of feral goats is a remnant of previous periods of livestock farming.

Dog Island is a magnificent seabird island and holds globally important populations of Brown Booby (several annual counts of over 1,000 pairs) and Sooty Tern (a recent census

estimated the population at over 135,000 pairs). Among ten breeding seabirds, Red-billed Tropicbird, Magnificent Frigatebird *Fregata magnificens*, Masked Booby, Laughing Gull, Bridled Tern and Brown Noddy all occur in regionally important numbers. Along with Barbuda, the island is one of two breeding sites in the Lesser Antilles for Magnificent Frigatebird, with 518 pairs in 2013. Four pairs of Audubon's Shearwater *Puffinus lherminieri* were found in 2013, adding to a recent breeding record on Little Scrub Island. Lowrie *et al.* (2012) found Dog Island to be the second most important site for breeding seabirds in the Lesser Antilles. Following an eradication operation in 2012, the island has now been declared rat-free and monitoring is in place to track the impact of this on its seabirds.

Prickly Pear East and West IBA comprises two islands, 63 ha in total and separated by a narrow channel, lying 8 km north of the mainland. Prickly Pear West is the more rugged and, apart from one small beach, is a low limestone outcrop. Prickly Pear East is also low and rocky with areas of scrub at its centre. A small pond lies behind beaches on its northern shore.

The IBA is listed as globally important for the Laughing Gull (an estimated 2,500 pairs in 2004) and regionally important for



Figure 2.5. IBAs on Anguilla. Note that red dots/lines show IBA locations, rather than actual boundaries (Colin Wilkinson).



Figure 2.6. Scrub Island IBA, viewed from Windward Point, September 2011 (Gillian Holliday).



Figure 2.7. The Long Salt Pond IBA, Anguilla, February 2013. Note the salt flats, which provide nest sites for Least Terns *Sternula antillarum* and Snowy Plovers *Charadrius nivosus*, the old salt pond walls and also the encroaching housing (Gillian Holliday).

Red-billed Tropicbird, Brown Pelican *Pelecanus occidentalis*, Brown Booby and Least Tern.

Scrub Island IBA is the largest of Anguilla's outer islands at 348 ha and is separated from the northeast corner of the mainland by a channel 500 m wide. The island is low-lying, with scrub at its centre stretching to the coastline of low cliffs and fissured limestone. There are four sandy beaches, a large pond and a complex of

lagoons on the eastern coast, providing suitable breeding areas for gulls and terns.

The island is particularly important for breeding seabirds and the IBA currently lists it as globally important for Laughing Gull and Roseate Tern, although recent surveys show that both species have declined. The island is one of few regular breeding sites in Anguilla for Royal *Sterna maxima* and Cabot's Terns *S. acuflavida*.



Figure 2.8. Snowy Plover *Charadrius nivosus*, Anguilla, October 2006 (Gillian Holliday).

The **12 mainland IBAs** are all centred on ponds, except for Katouche Canyon, which holds the most extensive area of mature dry forest (32 ha). The IBAs range in size from 3 ha to 43 ha and seven are listed for breeding Least Terns: Cove, Grey, Long Salt, Road Salt, Caul's, Rendezvous Bay and Meads Bay Ponds. Regular transects through areas of mangrove and dry forest around ten mainland IBAs and on Scrub Island have identified these as important areas for two or more of Anguilla's five restricted-range bird species within the Lesser Antilles EBA.

Seabirds

Anguilla's islands are, essentially, seabird islands. Look out from any mainland beach at any time of year and you will see Brown Boobies, Brown Pelicans, Magnificent Frigatebirds and Royal Terns. The islands form a first landing point for pelagic species from the Atlantic, and provide both shallow seas for feeding and generally undisturbed islands for breeding. Since 2000, 16 species of seabird have been recorded breeding, out of 17 current breeders in the Lesser Antilles. The remaining species, Common

Tern *Sterna hirundo*, has been recorded in the breeding season on Anguilla but not proven to breed.

The islands have long been famous for their seabirds, but only in recent years have systematic counts confirmed their status as one of the most important seabird areas in the Caribbean. Counts were initiated in 1998–2000, in response to a proposal to build a rocket launching base on the remote island of Sombrero. That proposal was ultimately withdrawn, but with continuing support from the RSPB, Environmental Protection in the Caribbean (EPIC) and the University of Liverpool, ANT and DoE have been carrying out more regular surveys to build a clearer picture of the bird populations on the islands. This monitoring has contributed to the identification of IBAs and provided data for EPIC's seabird atlas of the Lesser Antilles (Lowrie *et al.* 2012). There is now a basis for regular monitoring to track population trends and inform conservation action.

Red-billed Tropicbirds are found mostly on Dog Island and Prickly Pear West, where they nest under boulders or within crevices. These sites held 64 and 63 pairs, respectively, in 2013, globally important numbers (Bright *et al.* 2014).

Small numbers of White-tailed Tropicbirds have been found breeding since 1999, with a maximum of five pairs on cliffs at Little Bay on the mainland in 2007.

The Brown Booby is one of the most familiar seabirds on Anguilla, and both adults and immatures can be seen throughout the year. The population has exceeded 2,000 pairs (or apparently occupied nests) in four main colonies: Dog Island, Prickly Pear East and West, and Sombrero. Smaller numbers of Masked Boobies can be found among these colonies, with numbers reaching regionally important levels on Dog Island and Sombrero. Up to two breeding pairs of Red-footed Boobies *Sula sula* were present on Prickly Pear West during 1998–2000.

The Sooty Terns on Dog Island nest among dense, low thorn scrub and have proved difficult to census. A survey by ANT and RSPB in 2007 estimated the population at over 113,000 pairs, the largest in the Caribbean (Wilkinson *et al.* 2012), while the 2013 census estimated over 135,000 pairs. Sooty Terns also breed in smaller numbers on Sombrero. Visitors should take a boat trip around Dog Island or Sombrero to

guarantee seeing Sooty and Bridled Terns, as these species are rarely seen from the Anguilla mainland.

The Least Tern is found in small numbers on three islands, with larger numbers on the mainland IBAs. Overall, Anguilla is regionally important for this species, holding around 6% of the regional population in 2007, with Long Pond IBA the most important site. All these mainland sites are IBAs but are prone to disturbance from visitors and vulnerable to predation by feral dogs. They would benefit from seasonal measures to reduce disturbance, for both Least Terns and the breeding Snowy Plovers *Charadrius nivosus*, which are Near Threatened.

The main breeding season for seabirds is from April to July, when Laughing Gulls and all of the terns, other than resident Royal Terns, arrive on the islands. Brown and Masked Boobies have more extended breeding seasons and may breed year-round, with several peaks in breeding numbers throughout the year. Surveys show considerable variation in the breeding numbers of terns owing to low breeding site fidelity, making it difficult to detect long-term



Figure 2.9. Red-billed Tropicbird *Phaethon aethereus* on a nest on Dog Island, Anguilla, May 2007 (Colin Wilkinson).