

# Cayman Islands



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**West Indian Whistling-ducks, Cayman**

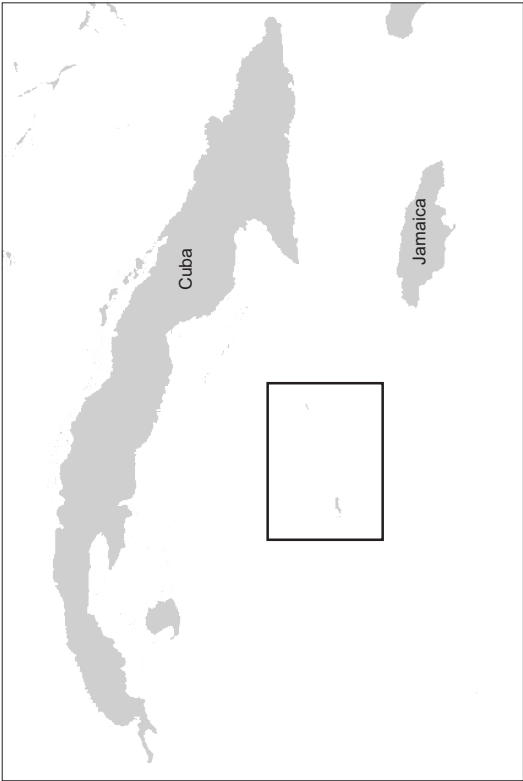
## General introduction

The Cayman Islands comprise three low-lying islands: Grand Cayman, Little Cayman and Cayman Brac. These emergent limestone bluffs are situated along the submerged Cayman Ridge, which is continuous with the Sierra Maestra mountains of south-eastern Cuba. The Cayman Islands are located between latitudes 19°20'N and 19°43'N and longitudes 79°50'W and 81°21'W, and are situated in the western extreme of the Caribbean, approximately 155 miles (250 km) south of Cuba, a similar distance east of Jamaica. Grand Cayman is situated some 81 miles (130 km) south-west of Little Cayman and Cayman Brac, which are in turn separated from each other by a narrow channel, 4 miles (7 km) wide. The Cayman Islands are composed entirely of calcareous marine deposits and were formed by uplifting and block faulting of the ocean floor around 10 million years ago.

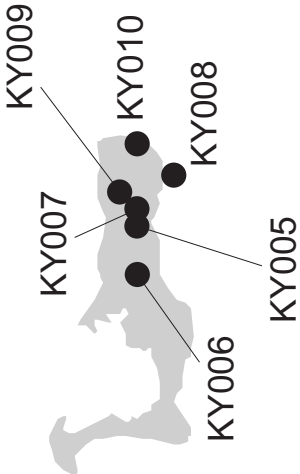
The local climate is influenced by the location of the Islands in the central Caribbean Basin. They are sheltered by the Greater and Lesser Antilles from the north-east trade winds, which persist for most of the year. The islands have a tropical marine climate with two distinct seasons: a wet

season from May to November and a relatively dry season from December to April. Air temperatures (recorded on Grand Cayman) range from a low of 11.2°C to a high of 36.5°C, but the mean monthly air temperatures range from only 24.75°C (February) to 28.4°C (July). North-easterly trade winds predominate for most of the year, with hurricanes occurring mainly between August and November. Damaging storms strike the islands at a frequency of approximately once every ten years. Storm surges and high winds during tropical and winter storms almost certainly cause significant mortality among birds.

Christopher Columbus is credited with the discovery of the islands on 10 May 1503, naming Little Cayman and Cayman Brac *Las Tortugas*, a reference to the abundant sea turtles he sighted. The islands were later renamed *Lagartos*, meaning alligator or large lizard, probably a reference to crocodiles seen on Little Cayman. Around 1540 the name Caymanas was applied, derived from the Carib word for marine crocodile. The two species of crocodiles are now extinct, the freshwater crocodile *Crocodylus rhombifer* within historic times.



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There were no pre-Columbian inhabitants and human habitation is a relatively recent event. It was not until 1741 that permanent settlements were established on Grand Cayman, the first capital being Bodden Town, on the south coast. The capital was later relocated to George Town, on the west coast, which remains its location to the present day. At the start of the 19th century, the population of the Cayman Islands numbered some 1,000 individuals. Wireless contact and international phone services were established in the 1930s, with further modernisation in the 1950s. This included the development of air services linking the three islands and provision of an electricity supply in George Town. A fledgling tourism industry was also established around this time, swelling the population to about 8,000.

Into the 1960s, the remittance of sailors and merchant seamen remained the major economic income for the islands; however, the banking and trust legislation of 1966 laid the financial foundations that would change the Cayman Islands for ever. During the 1970s the islands enjoyed unprecedented prosperity as a result, with an explosion in both the banking and tourism industries, and a corresponding increase in population. The total population of the islands currently exceeds 42,000, and is growing at a rate of about 3% per year. The Cayman Islands are currently ranked the fifth largest financial centre in the world, with a GNP of CI\$900 million.

It is believed that mosquitoes were accidentally introduced to the islands some time soon after European settlement. They quickly established and multiplied. At the start of the 1970s, the mosquito density was measured as more than twice the maximum recorded anywhere in the United States. Under the active control of the government's Mosquito Research and Control Unit, established in 1966, the mosquito population was greatly reduced, further increasing the attractiveness of the Cayman Islands as a tourist destination. The tourism industry now caters to over two million visitors each year, the majority of whom are cruise-ship passengers. The recent economic boom and population increase places a burgeoning pressure on the natural environment. The Cayman Islands Government Department of the Environment has established, and monitors, several Marine Parks around the islands, and is in the process of establishing a series of National Parks. The other major conservation institution is the National Trust for the Cayman Islands, a non-governmental non-profit organisation, which operates under a joint mission: 'to preserve natural environments and places of historic significance in the Cayman Islands for present and future generations'.

In 1937, Lord Moyne collected the first vertebrate fossils from a cave in Cayman Brac. These were of the capromyid rodent *Capromys*. More than 62 vertebrate fossil species are now known from the islands: two amphibians, 12 reptiles, 34 birds and 14 mammals (see Appendix 1, which lists avian fossils). The islands have suffered several extinctions within historic times including three birds – the Audubon's Shearwater, Grand Cayman Thrush and Jamaican Oriole – two mammals – the Hutia *Capromys sp.*, a West Indian

shrew *Nesophontes sp.*, – and a reptile, the Freshwater Crocodile *Crocodylus rhombifer*. These extinctions are believed to be linked to human settlement of the islands, and subsequent introduction of cats and dogs, along with the rats *Rattus rattus* and *Rattus norvegicus*. Other introduced mammals include the House Mouse *Mus musculus* and the Central American Red Agouti *Dasyprocta punctata*, the latter now effectively occupying the ecological niche of the Hutia. The extant native mammals of the Cayman Islands are now represented solely by bats, of which nine species are known, including an endemic sub-species of the big Brown Bat *Eptesicus fuscus*.

Habitat loss is the other major threat to biodiversity. Historically, forests were exploited for timber and fuel. Agriculture is also well established, especially in those areas supporting pockets of wind-blown soil deposits. More recently, clearance of vegetation for the extraction of aggregate and urban development has accounted for the most significant losses of terrestrial and wetland habitat. Habitat loss probably contributed to the extinction of the only endemic bird, the Grand Cayman Thrush, last seen in 1938. However, ongoing evaluation of the taxonomic status of several island endemics, currently distinguished at the sub-species level, indicates that these probably qualify as full species – most notably the Cayman Brac (Cuban) Parrot and Grand Cayman Blue Iguana *Cyclura (nubila) lewisi*, both of which are similarly threatened by habitat loss.

The Cayman Islands have never been physically connected to any other land mass. However, incidence of endemism is fairly limited, due to a combination of the close proximity of neighbouring islands and strong trade winds, which assist dispersal. As a result, the Cayman Islands' floral, avian and insect communities are closely allied with those of Cuba and Jamaica. Other groups however, including the herpetofauna and non-marine molluscs, display a high degree of endemism. Approximately 75% of Cayman's herpetofauna is endemic (Seidel and Franz 1994). These include the Grand Cayman Blue Iguana *Cyclura (nubila) lewisi*, Grand Cayman Blind Snake *Typhlops caymanensis* and the Grand Cayman Ground Boa *Tropidophis caymanensis caymanensis*, with endemic sub-species *Tropidophis caymanensis parkeri* on Little Cayman and *Tropidophis caymanensis schwartzi* on Cayman Brac. A total of 30 of the 48 non-marine molluscs are endemic to the islands. By 1984, some 21 endemic species and sub-species of flora had been identified (Proctor 1984). Following numerous additions to the original published list, the total number of non-cultivated plant species has now reached approximately 700. Loss of plant species has also been noted. First recorded in 1899, Cayman Sage *Salvia caymanensis* was last seen and collected in 1969.

The habitat of the Cayman Islands may be broadly categorised into four vegetation types – wetlands, coastal, dry evergreen forest, woodland and shrubland – as well as man-modified areas.

Wetland habitats include mangrove swamps, saline lagoons and ponds, grassland freshwater ponds, brackish sedge

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and *Typha* swamps. The marine mangrove ecosystem comprises four main species: Red Mangrove *Rhizophora mangle*, White Mangrove *Laguncularia racemosa*, Black Mangrove *Avicennia germinans* and Buttonwood *Conocarpus erectus*. Modified areas such as secondary swamps provide important habitat for many migrant birds. The swamp maps showing the dyke roads of the Mosquito Research and Control Unit (MRCU) provide access to many of the swamp areas (Brunt and Giglioli 1980).

Coastal habitats include fringing reefs, shoreline, littoral woodland and shrubland, and marine bluffs (cliffs). The Caymans' shorelines are either sandy beach or ironshore, a Pleistocene conglomerate that overlaps the bluff limestone as a low-elevation coastal terrace. While most of the shoreline is characteristically of extremely low elevation, the bluffs of Grand Cayman and Cayman Brac provide nesting site habitat for seabirds. Littoral vegetation still comprises much of the indigenous mono-specific Sea Grape *Coccoloba uvifera*. Broadleaf *Cordia sebestena* var. *caymanensis* and *Thespesia populnea* are also common. However, under the influence of man, exotic species including *Casuarina equisetifolia* have become established and are now invasive.

Dry evergreen forest and shrubland dominate the interior of the Cayman Islands, eking out a precarious existence on the karstic limestone. Extensive hardwood forests once covered the drier eastern regions of Grand Cayman and Cayman Brac bluff. However, by the beginning of the 20th century, most of the mature trees had been felled. The dominant dry forest species common to all three islands are *Amyris elemifera*, *Bursera simaruba*, *Calypttranthes pallens*, *Canella winterana*, *Chionanthus caymanensis*, *Citharexylum fruticosum*, *Coccothrinax procterii*, *Cordia gerascanthus*, *Erythroxyllum* spp., *Exostema caribaeum*, *Ficus aurea*, *Ficus citrifolia*, *Gymnanthes lucida*, *Guapira discolor*, *Guetarda elliptica*, *Hippomane mancinella*, *Hypelate trifoliolate*, *Myrcianthes fragens*, *Picrodendron baccatum*, *Plumeria obtusa*, *Sideroxyllum salicifolium*, *Tabebuia heterophylla*, *Trichilia glabra* and *Zuelania guidonia*. Species confined to Grand Cayman are *Celtis trinervia*, *Colubrina arborescans*, *Dendropanax arboreus*, *Erythrina velutina*, *Jatropha divaricata*, *Myrsine acrantha*, *Roystonea regia*, *Tabernaemontana laurifolia*, *Terminalia eriostachya*, *Trichilia havanensis* and *Xylosoma bahamense*. Those confined to Grand Cayman and Cayman Brac are *Cedrela odorata*, *Clusia rosea*, *Cordia laevigata*, *Maclura tinctoria*, *Petitia domingensis* and *Sideroxyllum foetidissimum*. Confined to Grand Cayman and Little Cayman are *Antirhea lucida*, *Buxus bahamensis*, *Trema lamarckianum* and *Thrinax radiata*. Confined to Cayman Brac is *Exothea paniculata*. Confined to Little Cayman is *Metopium toxiferum*. *Swietenia mahagoni* occurs on all three islands at low elevations and therefore is absent from the bluff, Cayman Brac.

First introduced in the 18th century to Grand Cayman only as a source of dye, Logwood *Haematoxylum campechianum* has become established throughout, spreading aggressively in open tracts, especially damp areas of low salinity. Increasing urbanisation is establishing man-modified habitats as important areas for habitat restoration. Gardens, urban areas, roadsides, pastures, fruit plantations, marl pits

and spoil banks possess the potential to support increased numbers of native plants and wildlife if appropriate development, planting and regeneration schemes are employed. Introduced and cultivated species on the three islands include Coconut Palm *Cocos nucifera*, Mango *Mangifera indica*, Neesberry *Manilkara zapota* and Tamarind *Tamarindus indica*. Wild Tamarind *Leucaena leucocephala* is invasive in many areas on Grand Cayman and Cayman Brac. While land clearance for urban development has led to increased populations of some of the indigenous landbirds, conflict situations have also arisen, most notably with egrets and herons (airport facilities/bird strike) and parrots (private and commercially cultivated fruit trees). For a detailed account of the biogeography of the Cayman Islands see Brunt and Davis (1994).

### Grand Cayman

Covering a total area of 76 square miles (197 square km), Grand Cayman is the largest and most westerly of the three islands and supports approximately 96% of the total human population of the country, the majority of whom live on the western half on the island. The main population centres are George Town, northwards along Seven Mile Beach to West Bay and east towards Bodden Town.

North Sound, a north-facing shallow marine bay extending for almost 62 square miles (100 square km) is perhaps the most significant topographical feature. Originally bordered by mangrove swamps to the west, south and east, development has severely reduced fringing vegetation along the southern and eastern portions. The bed of the Sound has also been extensively dredged, to facilitate the passage of marine craft and to provide fill for development. Tidal amplitude around Grand Cayman averages 26 cm, with a maximum recorded range of 1 m, excluding storm surges.

As the tourism industry has expanded, especially within the last 30 to 40 years, Seven Mile Beach has become the site of some of the most intensive development. Residential tourism has impacted the terrestrial environment through the construction of hotels and condominiums, marinas and associated amenities. About 70% of tourist arrivals are via cruise ships. Anchor and chain damage to the coral reefs off George Town and Spot Bay is significant, and silting of the reef from boat activity in North Sound is a further concern. However, many of the island's other reefs remain comparatively untouched. In the 1990s, agriculture underwent a renaissance, with local schemes aimed at improving cattle and pig breeding to supply the island's markets with local produce. Cultivation of root crops, vegetables, citrus fruits, mangoes and bananas was also promoted. An established turtle farm continues to supply the Cayman Islands with Green Turtle *Chelonia mydas* meat, and there is a small local fishing industry.

Grand Cayman reaches its maximum elevation, 18 m, in the Mastic region of North Side. Locally dubbed 'The Mountain', this area comprises a series of east-west karstic ridges, which support the island's largest remnants of dry forest, and represents the most biodiverse habitat in the islands. Extensive brackish wetlands with buttonwood have developed in depressions in the dolostone in the

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central and eastern parts of the Island. However, few of the once extensive freshwater wetlands remain and all are less than 1.0 ha in extent. The 3,400 ha Central Mangrove Wetland (CMW) is perhaps the single most significant feature. Despite the extensive clearance of mangrove elsewhere, the CMW remains largely untouched and plays numerous vital roles in both the terrestrial and marine ecology of Grand Cayman. Reef ecology, local freshwater hydrology and local weather systems are all intimately influenced by the natural processes of the CMW, which contributes, through evapotranspiration, an estimated 40% of the rainfall in western districts. The extreme east of Grand Cayman, upwind of the CMW and predominantly shrubland, is significantly drier than the rest of the island.

The Queen Elizabeth II Botanic Park maintains a broad range of both native and exotic vegetation, and offers some of the most accessible birdwatching on the island. The National Trust houses a captive breeding programme on site for the Grand Cayman Blue Iguana. Endemic to Grand Cayman, the Blue Iguana is recognised as the most endangered iguana in the world. With only 10 to 25 individuals surviving in the wild, the recent successes of the breeding facility are pulling this unique species back from the brink of extinction.

### Little Cayman

Smallest and least populated of the Cayman Islands, Little Cayman covers an area of just 11 square miles (28 square km). South Town (Blossom Village) is the only settlement. The total population ranges from 150 to 200, having increased from just 33 in 1981. New roads, small hotels and condominiums have been constructed to meet the growing demands of the tourism industry. The main attractions are scuba diving and nature tourism.

The south coast comprises fringing reefs, with a rubble ridge forming shallow, protected sounds. Coastal areas, along with the western half of the island, consist of a platform of ironshore formation rock overlain by beach ridge vegetation, mangrove swamps and saline coastal lagoons. Bluff formation dolostone outcrops to form the central bluff, which rises to a height of 14 m in the region known as Sparrowhawk Hill, the maximum elevation of the island, and terminates in the east.

With development modest in comparison with Grand Cayman and Cayman Brac, Little Cayman retains the most non-modified habitat of the three islands. Terrestrial vegetation is dry shrubland and primary dry forest. Mangrove species and *Conocarpus* are associated with the numerous coastal ponds, the largest comprising the Tarpon Lake complex on the south coast, and inland wetlands. Fortunately, the island's wetland habitat, which amounts to about 40% of the total area, remains the property of the Crown, and it is hoped that this will afford these lands some protection from future development. However, with plans for the relocation, upgrading and expansion of the airstrip now in the early stages of implementation, it is envisaged that development will continue on Little Cayman.

The most significant natural feature on Little Cayman is the

Booby Pond Nature Reserve. Located on the south-west coast, this animal sanctuary was designated a Wetland of International Significance under the terms of the Ramsar Convention in 1994, and currently represents the Cayman Island's only Ramsar site. This 113 ha reserve falls under the protection of the National Trust, which operates an excellent visitor centre on site. The reserve comprises a mangrove-fringed lagoon, backed on the north side by dry forest and shrubland. The site provides habitat for the largest colony of Red-footed Boobies in the Caribbean, as well as resident and migrant species. Little Cayman's Lesser Cayman Islands Iguana *Cyclura nubila caymanensis* appears to be faring well in comparison with its counterparts on the other islands. These confiding and approachable creatures are additionally developing into something of a tourist attraction in their own right.

### Cayman Brac

The most easterly of the Cayman Islands, lying about 4 miles (7 km) east of Little Cayman and about 87 miles (140 km) north-east of Grand Cayman, Cayman Brac covers an area of approximately 15 square miles (38 square km), rising to a maximum elevation of 46 m. The island supports a population of about 1,600 individuals, centred along the northern coastal shelf at West End, Cotton Tree Bay, Watering Place, Creek and Spot Bay. Facilities include an international airport, a deep-water harbour and small tourist resorts. The establishment of settlements along the comparatively low-lying coastal shelf has, in the past, exposed the populated areas to severe damage during high seas, most notably in 1932 (the '32 Storm' is estimated to have claimed 109 lives). Several of the victims are commemorated in a mass grave on the north side of the island.

The dominant topographic feature of Cayman Brac is a dolostone plateau, known locally as 'The Bluff'. Outcropping in the west, The Bluff rises slowly to the north-east, attaining a height of 46 m before terminating in vertical marine cliffs. This represents the maximum elevation of the Cayman Islands. Little Cayman Brac, a rock-fall, lies offshore close to the north-eastern bluff edge. Low-elevation ironshore forms the west end and narrow coastal shelves to the north and south. Wetland, which comprises less than 3% of the land area, is confined to the south-west and includes three coastal lagoons, which are important sites for migrant waterfowl and waders. The wetlands have been reduced by road and airport development, and by the effects of Hurricane Gilbert in 1988. A series of joint fractures in the western mid-bluff, called the 'Splits', intersect with the freshwater lens. One of these formations supports Cayman Brac's only mixed heronry and has recently come under the protection of the National Trust.

Cayman Brac's vegetation comprises roughly 70% forest and shrubland, 3% wetland and 27% urban. Dry forest and shrubland cover the majority of the bluff, with cattle pastures and subsistence agriculture in the east and central areas, where sufficient soil exists. The primary dry forest supports a diversity of fauna and flora not found on the other two islands. The vegetation on the east is notably

more xeric and includes the large endemic cactus *Pilosocereus* sp. A small proportion of the Brac's dry forest, 82 ha, is protected by the National Trust's Brac Parrot Reserve. Off-trail, the karst is extremely treacherous, and remarkably sharp and uneven underfoot.

The Cayman Brac Parrot is currently under threat from poor recruitment of its preferred nesting tree, the West Indian Cedar *Cedrela odorata*, due to its susceptibility to attack by the Mahogany Shootborer *Hypsipyla grandella*. Poaching represents a further threat to the parrots; however, the most significant sources of concern are habitat loss and fragmentation. Recent economic initiatives have resulted in the establishment and expansion of a road system throughout The Bluff. The opening up of this area for

development raised immediate concerns for its effects on landbirds due to forest fragmentation, and on the already diminishing coastal colonies of seabirds. Cayman Brac supports a small number of Lesser Cayman Islands Iguanas. However, this population is reported as dwindling, probably as a result of predation by feral cats and dogs, in combination with the development of the road network.

### Further reading

See full details at end of chapter.

Bradley (1995, 2000), Brunt and Davis (1994), Burton (1994, 1997), Clench (1964), Davis (1994), Morgan (1994), Moyne (1938), Ng and Beswick (1994), Proctor (1984, 1996), Seidel and Franz (1994).

## Ornithological importance

The Cayman Islands are, in effect, oceanic islands, never having had any attachment to mainland America. The greatest affinity of the ornithology is with the Greater Antilles, especially with the closest islands of Cuba and Jamaica. The total number of species recorded in the Cayman Islands is 222, of which 49 (21%) are breeding, 173 (79%) are migrants and 17 endemic races are recognised (Bradley 2000) (see the table on page 71).

### Globally threatened species

There are three species of global conservation concern (see the table on page 71). These are the Vulnerable West Indian Whistling-duck, and the Near-threatened Cayman (Cuban) Parrot and Vitelline Warbler.

The West Indian Whistling-duck breeds on Grand Cayman, Little Cayman and intermittently on Cayman Brac. Since the lowest recorded population in 1986 of 200 on Grand Cayman and 45 on Little Cayman, the total population has increased to a maximum of 2,156 birds in 2003, 10–21% of the estimated global population of approximately 10,000–20,000 birds (BirdLife International 2004). The majority, 1,500–1,800, occur on Grand Cayman and 310–356 on Little Cayman. Birds regularly fly over from Little Cayman to forage on Cayman Brac where up to 10 pairs bred between 1999 and 2001. The increase is attributed to both the introduction of legal protection of the species and its active enforcement in 1989, causing a reduction in illegal hunting, and the start-up of an artificial feeding programme on Grand Cayman.

The Cuban Parrot occurs in Cuba, the Cayman Islands and the Bahamas, with a global population estimated at around 10,000 (BirdLife International 2004). The 1995 total population maximum of 2,400 birds represents 24% of the global population. There are two endemic races on the Cayman Islands: the Cayman Parrot on Grand Cayman, with a population estimate in 1995 at 1,408–1,935 birds, and the Cayman Brac Parrot on Cayman Brac, with a population estimate of 350–430 birds. This race previously occurred on Little Cayman but was extirpated some time before 1944. The Grand Cayman population ranges throughout much of the island with sub-populations in forest and individual

pairs breeding close to urban areas in the West Bay peninsula. Its greatest threat is the ongoing fragmentation and clearance of dry forest, since 95% is privately owned and unprotected.

The Vitelline Warbler occurs on the Swan Islands (3 square miles/8 square km) and the Cayman Islands (102 square miles/263 square km), a total range of 104 square miles (270 square km), of which 52 square miles (135 square km) is estimated to be suitable habitat (BirdLife International 2000).

There are three races, two on the Cayman Islands, *D. v. vitellina* on Grand Cayman and *D. v. crawfordi* on Little Cayman and Cayman Brac, and *D. v. nelsoni* on Greater Swan Island, which only occurs in half of the 3 square miles (8 square km) total area. The population of *nelsoni* was most likely reduced by a direct hit from Hurricane Mitch in 1988, which remained over the Swan Islands for 24 hours. Therefore, at least 97% of the global population is resident on the three Cayman Islands with around 67% on Grand Cayman, 22% on Cayman Brac and 11% on Little Cayman. The Cayman Islands' races are currently not under threat, and are classified as Near-threatened due to their small range.

### Restricted-range species

Currently the Cayman Islands form a secondary bird area (S014) having only one full species, the Grand Cayman Thrush. It is the only island endemic recorded since 1886, the date of the first ornithological expedition to the Cayman Islands, and is now considered extinct on Grand Cayman since 1938, when it was last seen in forest in the eastern districts (Johnston 1969). However, if the proposed new species, Taylor's Bullfinch, formerly a race of the Cuban Bullfinch, is accepted (Garrido *et al.* in preparation), the Cayman Islands would have two full species and therefore should qualify as an endemic bird area. The Jamaican Oriole is extirpated on the Cayman Islands; it was last photographed in George Town in 1968, but is not noted in the literature after 1930. This leaves three restricted-range species with Cayman endemic races (see the table on page 71): the Near-threatened Vitelline Warbler *vitellina* and *crawfordi*, the Thick-billed Vireo *alleni* and the Yucatan Vireo *caymanensis*.

## The occurrence of globally threatened, restricted-range and biome species at Important Bird Areas in the Cayman Islands

(LC = Little Cayman; CB = Cayman Brac; GC = Grand Cayman)

IBA code	KY 001 LC	KY 002 LC	KY 003 LC	KY 004 CB	KY 005 GC	KY 006 GC	KY 007 GC	KY 008 GC	KY 009 GC	KY 010 GC
<b>A1 Globally threatened species</b>										
West Indian Whistling-duck <i>Dendrocygna arborea</i> VU	X	X				X	X			
Cuban Parrot <i>Amazona leucocephala</i> NT				X	X	X	X	X	X	X
Vitelline Warbler (A2) <i>Dendroica vitellina</i> NT	X		X	X	X		X	X	X	X
<b>A2 restricted-range species</b>										
Grand Cayman Thrush <i>Turdus ravidus</i> (extinct)					X			X	X	X
Thick-billed Vireo (A3) <i>Vireo crassirostris</i>				X	X		X	X	X	X
Yucatan Vireo <i>Vireo magister</i>					X		X	X	X	X
Cuban Bullfinch (A3) <i>Melopyrrha nigra</i>					X		X	X	X	X
Jamaican Oriole (A3) <i>Icterus leucopteryx</i> (extirpated)					X		X	X	X	X
<b>A3 biome species</b>										
Caribbean Dove <i>Leptotila jamaicensis</i>					X		X	X	X	X
West Indian Woodpecker <i>Melanerpes superciliaris</i>					X	X	X	X	X	X
Loggerhead Kingbird <i>Tyrannus caudifasciatus</i>				X	X	X	X	X	X	X
Stripe-headed Tanager <i>Spindalis zena</i>					X		X	X	X	X
Greater Antillean Grackle <i>Quiscalus niger</i>	X	X			X	X	X	X	X	X
Number of species recorded	3	2	1	4	12	5	12	12	12	12

The Thick-billed Vireo *alleni* occurs in forest understorey, secondary woodland and inland shrubland on Grand Cayman and Cayman Brac; it has been extirpated on Little Cayman. On Grand Cayman, the population has declined sharply since 1983 and present distribution is locally fairly common in central and eastern districts. On Cayman Brac, the population has declined in developed areas but otherwise remains common. The Yucatan Vireo *caymanensis* is confined to Grand Cayman; it occurs throughout, most commonly west of Savannah, where it breeds in the upper

levels of the dry and black mangrove forest. The Cuban Bullfinch *taylori* is confined to Grand Cayman. It is scarce to absent in western Grand Cayman where the decline in numbers began around 1990 in line with increased development/habitat loss. It is locally common at North Side, the Mastic Reserve, and in forest and secondary woodland in the central and eastern districts.

### Biome species

The Cayman Islands form part of the Greater Antilles biome (NEO 07) with five species, all with endemic Cayman sub-

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species. The Caribbean Dove *collaris*, West Indian Woodpecker *caymanensis* and Stripe-headed Tanager *salvini* are confined to Grand Cayman. The Loggerhead Kingbird *caymanensis* occurs on Grand Cayman and Cayman Brac and is extirpated on Little Cayman. The Greater Antillean Grackle *caymanensis* occurs on Grand Cayman and the Greater Antillean Grackle *bangsi* on Little Cayman.

### Seabirds

The Cayman Islands support six breeding seabird taxa: the Red-footed Booby and Magnificent Frigatebird on Little Cayman; the Brown Booby and White-tailed Tropicbird on Cayman Brac (<10 pairs breed on Grand Cayman); approximately 10 pairs of Bridled Terns on Grand Cayman; and a declining number of summer breeding Least Terns throughout, down from 200 pairs in 1997. Three species, the Brown Booby, White-tailed Tropicbird and Bridled Tern, are not included in any IBA sites. The Brown Booby is resident and breeds only on Cayman Brac, first noted in 1888. Monitoring, which started in 1982, recorded approximately 500 birds in 1983, a decline to >100 birds in 1996 and a recovery to 273–340 birds (100–120 pairs) in 2003, which is more than 1% of the Caribbean population, estimated at 13,000 birds. On Cayman Brac, the White-tailed Tropicbird declined from a maximum of 800 birds in 1985 to <60 pairs in 1997, rising to 100 pairs in 2003.

### Non-breeding migrants

The position of the Cayman Islands, close to the boundary of the Caribbean Sea and the Gulf of Mexico at the western edge of the Greater Antilles, and midway between the North and South American continents, accounts for the greater part of its avifauna (79%, 173 species) occurring as non-breeding migrants (see the table below). The majority breed in the Nearctic, either making a complete or partial long-distance migration to winter in the Neotropics. More species are recorded in the islands in greater abundance in autumn than in spring; although autumn numbers show wide yearly fluctuations linked to both local climatic conditions and regional weather patterns. Well over half the non-breeding migrants are recorded annually (97 species: 38 waterbirds and 59 landbirds). The remaining 76 species (42 waterbirds and 34 landbirds) are either vagrants or rare visitors that include the West Indies and North America (including offshore waters) in their non-breeding range (see the table below). As there have been no long-term banding studies of migrants on the Cayman Islands, their status is based on systematic and regular observations, on counts made at sample sites on all three islands, and on data gathered from the literature and museum specimens.

### The status of the waterbird and landbird species recorded in the Cayman Islands (Bradley 2000)

	Number of		Total
	Waterbirds	Landbirds	
Resident*	17	26	43
Breeding migrants	3	3	6
Sub-total	20	29	49
Non-breeding migrants**			
Regularly wintering and on passage	27	39	66
Regular on passage only	5	19	24
Casual and intermittent long stay	6	1	7
Vagrants and rare visitors	42	34	76
Sub-total	80	93	173
Total number of species	100	122	222

\* Included are species whose numbers are augmented in winter by migrants from North America (e.g. Yellow-crowned Night Herons, Green Herons).

\*\* Species that occasionally remain to breed (e.g. Little Blue Herons, Cattle Egrets, American Coots).



## Conservation infrastructure and Protected Area system

As a UK Overseas Territory the Cayman Islands are included under the ratification by the UK of the Convention on Biological Diversity, the Convention on International Trade in Endangered Species of Flora and Fauna (CITES), the Convention on Wetlands of International Importance (Ramsar) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn). The Cayman Islands have also been included in the UK's ratification of the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (Cartagena), and the government has requested that the Specially Protected Areas and Wildlife Protocol (SPAW) be ratified on behalf of the Cayman Islands.

The Department of Environment of the Cayman Islands Government and the National Trust for the Cayman Islands, the only environmental NGO, are the two organisations responsible for advocacy and conservation provisions. The Crown (the Cayman Islands Government) and the Trust, jointly or separately, are owners of all protected land in the islands. It is intended that sites put forward in this inventory will be incorporated into the Cayman Islands Department of the Environment (DOE) Protected Areas Management Programme, together with a list of additional sites that do not meet the IBA criteria but are locally important for birds. While three of the proposed IBA sites are fully protected, all need monitoring, research, more legal protection (which also means land purchase in the islands), advocacy and planning.

The Development Plan for Grand Cayman 2002 is in the appellate process after the government removed the proposed conservation and nature tourism zones from the plan. The Department of the Environment, the National Trust and many private individuals are appealing this decision. The Sister Islands (Little Cayman and Cayman Brac) have decided not to implement a Development Plan, but instead propose a Sustainable Management Plan, which is in its first draft; the plan does not propose any system of Protected Areas. Together, these lacunae make conservation planning difficult and leave costly land purchase as the only route to conserve environmentally important sites.

The Cayman Islands Government Environmental Protection Fund was established in 1997 through a levy of between \$2 and \$4 tax on every person departing the island. One of the main purposes of the fund is the purchase of conservation land, and the government has recently confirmed its intent to use the fund to make its purchase of land in the proposed Barkers National Park, Grand Cayman. This would set a welcome precedent for the further acquisition of land for conservation on the three islands. New conservation legislation, the Draft National Conservation Law, which was due to be enacted in 2004, would allow profound changes in conservation management, including introducing regulations and enforcement across the spectrum from the creation of National Parks to control of the importation of exotic species.

## Overview of the inventory

The IBA programme in the Cayman Islands has identified 10 sites of global importance for birds (see the table on page 74). They cover all the A1, A2, A3 and A4 species mentioned. While there is sufficient information available on species of global concern and restricted range to propose the sites, the process has made clear that further studies and urgent sustainable management strategies are required.

Three sites are on Little Cayman, covering 50% of the island's area. These are: the Booby Pond Reserve, a Ramsar site, protecting the largest Red-footed Booby colony in the Caribbean; the entire Crown Wetlands, important as breeding habitat for the globally threatened Vulnerable West Indian Whistling-duck; and 255 ha of dry forest at Sparrowhawk Hill for the Near-threatened Vitelline Warbler *vitellina*.

One site is on Cayman Brac, covering 9% of the island's area. It is an important breeding site for the Near-threatened Cayman Brac Parrot *hesterna*. It has the smallest population of any amazon, and the most limited range at 15 square miles (38 square km). While it breeds only in mature forest on the Cayman Brac bluff, it forages throughout the island and thus is under severe threat due to a lack of protected

bluff forest habitat.

Six sites are proposed on Grand Cayman, covering 20% of the island's area. Five sites hold the Near-threatened Cayman Parrot *caymanensis* and include 80–85% of its forest breeding habitat. However, only a small proportion of this habitat is protected. The Central Mangrove Wetland is the main breeding site for the West Indian Whistling-duck and an important site for the Cayman Parrot *caymanensis*. The Mastic Reserve and three areas of dry forest in the eastern districts include much of the remaining breeding areas of Cayman Parrot as well as that of the Vitelline Warbler, and the restricted-range species the Thick-billed Vireo *alleni*, the Yucatan Vireo *caymanensis* and the Cuban Bullfinch.

Note that, although other important flora and fauna are mentioned in the accounts, often the threat status to these endemic species is not defined. They are all presumed at risk because of their restricted range.

The accounts were written before Hurricane Ivan in 2004, which devastated the islands. A project is currently under way to assess the impact of the hurricane on the fauna and flora of the islands.

## Important Bird Areas in the United Kingdom Overseas Territories

### Sites of global conservation importance

IBA code	Site name		A1	A2	A3	A4i	A4ii
KY001	Little Cayman	Booby Pond nature reserve	X	X	X	X	X
KY002	Little Cayman	Crown Wetlands	X		X	X	
KY003	Little Cayman	Sparrowhawk Hill	X	X			
KY004	Cayman Brac	Bluff Forest	X	X	X		
KY005	Grand Cayman	Mastic Reserve	X	X	X		
KY006	Grand Cayman	Central Mangrove Wetland	X		X	X	
KY007	Grand Cayman	Botanic Park and the Salina	X	X	X		
KY008	Grand Cayman	Franklin's Forest	X	X	X		
KY009	Grand Cayman	Frank Sound Forest	X	X	X		
KY010	Grand Cayman	Eastern Dry forest	X	X	X		

## Site accounts

# KY001: Booby Pond nature reserve

<b>Ref number</b>	<b>KY001</b>
<b>Admin region</b>	<b>Little Cayman, Cayman Islands</b>
<b>Coordinates</b>	<b>19°40'N 80°02'W</b>
<b>Area</b>	<b>113 ha</b>
<b>Altitude</b>	<b>0–3 m</b>
<b>IBA categories (details below)</b>	<b>A1, A2, A3, A4i, A4ii</b>
<b>Status</b>	<b>Ramsar site; 80% National Trust protected; 100% protected as an animal sanctuary</b>

### Site description

Booby Pond nature reserve lies on the south coast of Little Cayman behind the beach ridge at South Hole Sound. It comprises a seasonally flooded, enclosed hypersaline lagoon, Booby Pond (43 ha), with a broken black and white mangrove fringe and, on the north inland side of the pond, an area of dry forest. *Thespesia populnea* and *Cordia sebestena* var. *caymanensis* are intermixed with mangrove species on the pond fringe. The dominant dry forest species are *Bursera simaruba*, *Canella winterana*, *Guipera discolor*, *Coccothrinax procterii*, *Ficus aurea*, *Myrcianthus fragrans* and *Plumeria obtusa*.

### Birds

See the accompanying table for details of key species. The Red-footed Booby colony breeds in the reserve; there were 4,839 pairs (an estimated 20,000 birds) in 1997, which is more than 1% of the global population, and it is the largest colony in the Caribbean. The sulid population was estimated at 10,000 birds in 1888, 2,700 pairs in 1975 and 3,155 pairs in 1985. The birds breed on the north side of Booby Pond in the mangrove, shrubland and inland dry forest. A colony of 150–200 pairs of Magnificent Frigatebirds breeds alongside the sulids on the pond edge. Two Species of Global Concern breed: up to 20 pairs of West Indian Whistling-ducks and 20 pairs of Vitelline Warblers *crawfordi*. The biome species Greater Antillean Grackle *bangsi* breeds at the site with 35 pairs noted; the race *bangsi* occurs only on Little Cayman, having become extirpated from Cayman Brac after 1945.

There are 31 breeding taxa: 16 landbirds, Caribbean Elaenias

*caymanensis* and Bananaquits *sharppei* are fairly common. Indigenous species are the White-crowned Pigeon, Zenaida Dove, Common Ground-dove, Mangrove Cuckoo, Smooth-billed Ani, Northern Mockingbird, Barn Owl and the Yellow Warbler, with summer breeding migrants the White-winged Dove, Grey Kingbird, Antillean Nighthawk and the Black-whiskered Vireo. There are 15 species of waterbird including, in a mixed heronry, max. counts 250 pairs Snowy Egrets, 40 pairs Tricoloured Herons, 14 pairs Cattle Egrets, eight pairs Little Blue Herons and 25 pairs Yellow-crowned Night-herons. Max counts 20 pairs Least Terns, four pairs Pied-billed Grebes, 12 pairs Green Herons, 18 pairs American Coots, 230 Common Moorhens (breeding and migrant), 103 pairs Black-necked Stilts and five pairs of Willets.

### Key species

A major wintering waterbird site for up to 500 Blue-winged Teals, 40 Northern Shovelers, 18 American Wigeons and 20 Lesser Scaups, 300 American Coots, 40 Great Blue Herons, 130 Great Egrets, and 300 Greater Yellowlegs and Lesser Yellowlegs, and flocks of up to 400 Semipalmated Sandpipers and Least Sandpipers. Migrant raptors include Ospreys, Merlins and Peregrine Falcons. Regular migrant landbirds include the Yellow-bellied Sapsucker, Gray Catbird, White-eyed Vireo, Yellow-throated Vireo and 21 species of warbler, most commonly the Northern Parula, Cape May Warbler, Yellow-throated Warbler, Palm Warbler, Prairie Warbler, Yellow-rumped Warbler, Black-and-white Warbler, American Redstart, Ovenbird and the Northern Waterthrush.

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1, A4i	West Indian Whistling-duck <i>Dendrocygna arborea</i>	20	
A1, A2	Vitelline Warbler <i>Dendroica vitellina crawfordi</i>	Not known	
A3	Greater Antillean Grackle <i>Quiscalus niger bangsi</i>	35	
A4ii	Red-footed Booby <i>Sula sula</i>	Max 5,000	20,000 birds

### Other threatened/endemic wildlife

Plants endemic to the Cayman Islands are: *Allophylus cominia* var. *caymanensis*; *Cordia sebestena* var. *caymanensis* and *Coccolrinax procterii*. Endemic to Little Cayman and Cayman Brac are: *Chionanthus caymanensis* var. *caymanensis*, *Encyclia kingsii*, *Myremecophila thompsoniana* var. *minor* and *Phyllanthus caymanensis*. Endemic fish: *Limnea caymanensis* and *Gambusia xanthosma*. Reptiles include *Anolis mayardi*, endemic to Little Cayman. Endemic to Little Cayman and Cayman Brac: *Alsophis cantherigerus ruttii*, *Cyclura (nubile) caymanensis* (EN), *Sphaerodactylus argivus bartschi* and *Tropidophis caymanensis parkeri*. The Land Crab *Cardisoma guanhami* is decreasing. Endemic molluscs: *Cerion nanus* (EN), *Proserpinula lewisi*, *Alcaldia lewisi* and *C. pannosum*. Endemic insects to Little Cayman and Cayman Brac include *Diceroprocta caymanensis* and *Psammoleon reductus*.

### Conservation issues/threats

The encroachment on the south shore of Booby Pond by illegal hotel buildings that, to date, have escaped legal sanction, is thought to contribute to pollution in Booby

Pond. However, the major concern is the effects on the sulid colony that will result from construction and operation of a proposed new airport – in particular, disturbance from night lights, propeller and jet aircraft, and access roads too close to the booby colony, especially as the airport plan has recently been extended and moved closer to the colony. Predation from numerous rats, feral cats and domestic dogs would be a threat if colony numbers showed any decline.

### Further reading

*See full details at end of chapter.*

Askew (1994), Bangs (1916, 1919), Bartsch (1930, unpublished), Bradley (1986a, 1994, 1995, 1999, 2000), Brunt and Davis (1994), Buden (1972), Burton, Bradley, Schreiber *et al.* (1999), Clapp (1987), Cory (1889), Diamond (1980b), Hounsome (1994), Johnston (1975), Johnston *et al.* (1971), Lowe (1910, 1911), Maynard (1889a), Nicoll (1904), Proctor (1984, 1996), Seidel and Franz (1994), Stoddart (1980a, 1980b, 1980c).

# Site accounts

## KY002: Crown Wetlands

<b>Ref number</b>	KY002
<b>Admin region</b>	Little Cayman, Cayman Islands
<b>Coordinates</b>	19°41.367'N 80°01.450'W
<b>Area</b>	1,100 ha (40% island area)
<b>Altitude</b>	0–14 m
<b>IBA categories (details below)</b>	A1, A3, A4i
<b>Status</b>	Crown land; unprotected

### Site description

The pristine wetlands of Little Cayman comprise 1,100 ha (40%) of the island's area. The Crown Wetlands cover 1,094 ha and occur as four types.

- 1 On the north and south coasts, the 'mangrove' wetlands, each associated with a hypersaline lagoon, are Easterly Pond (3 ha), Rosetta Flats Pond (2 ha), Sandy Point Pond (3.5 ha), Tarpon Lake Complex (236 ha), Spot Bay Pond (5 ha), Jackson's Pond (9 ha) and Grape Tree Pond (10 ha). The fringe vegetation is of differing combinations of the four mangrove species mixed with *Cordia sebestena*, *Thespesia populnea* and *Rhizophora mangle*.
- 2 In the south-west, Preston Bay westerly ponds (8.4 ha) are brackish herbaceous wetlands on pavement ironshore; the vegetation is *Conocarpus*, *Laguncularia*, *Acrostichum aureum* and herbaceous species *Sesuvium portulacastrum*, *Salicornia bigelovii*, *Ruppia maritima* and *Rhachiallis americana*.
- 3 An inland wetland on the eastern bluff, Charles Bight Pond (8.5 ha) with monospecific *Conocarpus sp.*
- 4 A temporary freshwater wetland, Coot Pond (0.1 ha), on the south-east coast; the vegetation is *Conocarpus* and grassland.

All wetlands dry out seasonally, except Tarpon Lake.

### Birds

See the accompanying table for details of key species. The site has up to 135 pairs of the globally threatened West Indian Whistling-duck, which is more than 1% of the global population, with the largest sub-populations at Jackson's Pond, Grape Tree Pond and Charles Bight Pond.

A total of 16 taxa breed: the White-crowned Pigeon, Zenaida Dove, Yellow Warbler and the biome species Greater Antillean Grackle *bangsi*. This race is confined to Little Cayman, having become extirpated on Cayman Brac (around 1945) in the mangrove and migrant on pond edges. There is a mixed heronry of max 250 pairs of Snowy Egrets and Tricoloured Herons on Jackson's Pond; Yellow-crowned Night-herons (in small colonies or singly, with the highest numbers at Tarpon Lake, Jackson's Pond and Charles Bight Pond) and Green Herons (singly) breed throughout. Max counts are 16 pairs Pied-billed Grebes, 60 pairs Least Terns, 10 pairs Willets, 16 pairs American Coots, Common Moorhens, and 250 pairs of Black-necked Stilts.

A major wintering site for up to 1,500 Blue-winged Teals, 60 Northern Shovelers, 32 American Wigeons and 64 Lesser Scaups, 300 American Coots, 83 Great Blue Herons, 160 Great Egrets, 360 Greater Yellowlegs and Lesser Yellowlegs, and 250 Semipalmated Sandpipers and Least Sandpipers. Purple Gallinules, Soras and Wilson's Snipe occur on Coot Pond and the Preston Bay westerly ponds. Migrant raptor species include Ospreys, Merlins and Peregrine Falcons. Regular migrant landbirds, mainly warblers, include most commonly Northern Parula, Yellow-throated Warblers, Palm Warblers, Prairie Warblers, Black-and-white Warblers, American Redstarts, Ovenbirds and Northern Waterthrushes.

### Other threatened/endemic wildlife

Endemic reptiles as KY001. Other important species are *Cardisoma guanhami* and *Barbouria caymanensis*.

### Conservation issues/threats

In 2004, the wetlands remained almost pristine, except for

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1, A4i	West Indian Whistling-duck <i>Dendrocygna arborea</i>	135	300 individuals
A3	Greater Antillean Grackle <i>Quiscalus niger bangsi</i>	Not known	

## Important Bird Areas in the United Kingdom Overseas Territories

development of a circum-island road in 1994 and, since 1999, the construction of 10 raised observation platforms on the major ponds, part of an FCO-funded avitourism project. The two major concerns are that the Crown should allow development of the wetlands rather than include them as Protected Areas, and accept pending land claims that would place many hectares of the wetlands in private hands.

### Further reading

*See full details at end of chapter.*

Bradley (1986a, 1994, 1995, 1999, 2000), Brunt and Burton (1994), Brunt and Giglioli (1980), Cory (1889), Diamond (1980a), Johnston *et al.* (1971), Stoddart (1980a, 1980b, 1980c), Woodroffe (1982, 1983), Woodroffe *et al.* (1980).

## Site accounts

# KY003: Sparrowhawk Hill

<b>Ref number</b>	KY003
<b>Admin region</b>	Little Cayman, Cayman Islands
<b>Coordinates</b>	19°41.75'N 80°02.050'W
<b>Area</b>	255 ha
<b>Altitude</b>	10–20 m
<b>IBA categories (details below)</b>	A1, A2
<b>Status</b>	Privately owned; unprotected

### Site description

The site comprises 255 ha of pristine dry forest in the centre of the island, as characterised in the ‘General introduction’ to this chapter. At present, there is no public road into the interior of the islands near the forest, although the owners have built survey tracks on the west and south edge. The dominant trees are *Calypttranthes pallens*, *Sideroxylon salicifolium*, *Chionanthus caymanensis*, *Erythroxylum areolatum* and *Canella winterana*.

### Birds

See the accompanying table for details of key species. The main species of importance is the Near-threatened restricted-range Vitelline Warbler *crawfordi*. It is estimated that the forest covers about 3% of its range. Six taxa breed, including the Caribbean Elaenia *caymanensis*, Bananaquit *sharpei*, Zenaida Dove and the migrant White-crowned Pigeon and Black-whiskered Vireo.

A total of 86 migrant landbirds are recorded, including Yellow-bellied Sapsuckers, Grey Catbirds, White-eyed Vireos, and the warblers: Northern Parulas, Cape May Warblers, Yellow-throated Warblers, Yellow-rumped Warblers, Prairie Warblers, Black-and-white Warblers, American Redstart and Ovenbirds.

### Other threatened/endemic wildlife

Plants endemic to Little Cayman and Cayman Brac: *Chionanthus caymanensis* var. *caymanensis*, *Encyclia kingsii*, *Myremecophila thompsoniana* var. *minor* and *Phyllanthus caymanensis*. Endemic to Little Cayman: *Dendropemon caymanensis*. Phyllostomid Bat *Macrotus waterhousii minor* found in caves. Endemic reptiles as KY001 plus *Celestrus cruscus maculatus*. Lepidoptera endemic to the Cayman Islands: *Cyclargus ammon erembis* and *Memphis echemus danielana*.

### Conservation issues/threats

The owners are anxious to sell the land as a block for US\$7 million, which in the present economic climate will, it is hoped, prove a restraint on private development. However, they may accept an offer from the National Trust to purchase 33 ha, with possible additional purchases in the future.

### Further reading

See full details at end of chapter.

Bangs (1916), Bradley (1994, 1999, 2000), Buden (1972), Diamond (1980a), Stoddart (1980a, 1980b, 1980c).

### Key species

Criteria	Key species	Number of breeding pairs (if known)
A1, A2	Vitelline Warbler <i>Dendroica vitellina crawfordi</i>	Not known ~3% of global population

## Site accounts

# KY004: Bluff Forest

<b>Ref number</b>	KY004
<b>Admin region</b>	Cayman Brac, Cayman Islands
<b>Coordinates</b>	19°43.267'N 79°47.950'W
<b>Area</b>	427 ha
<b>Altitude</b>	0–30 m
<b>IBA categories (details below)</b>	A1, A2, A3
<b>Status</b>	National Trust (82 ha) protected; privately owned (345 ha) unprotected

### Site description

The site occupies 427 ha of tall dry forest on karstic limestone, of which 82 ha is protected as the Parrot Reserve, owned by the National Trust. The forest is highly diverse with *Cedrela odorata* (the majority are mature or dead trees, main parrot nesting habitat), *Sideroxylon salicifolium*, *Exothea paniculata*, *Chionanthus caymanensis* and *Bursera simaruba* as dominants. There has been a long history of disturbance by logging and the forest is a mosaic of primary and second growth trees with, on the south of the bluff, *Pilosocereus sp.*, *Agave sobolifera*, *Tillandsia sp.* and orchids.

### Birds

See the accompanying table for details of key species. These include 60–70 pairs of the Near-threatened Cuban Parrot *hesternus*. It is estimated that 29–42 nests per year may be necessary to sustain the population – a concern since all active parrot nests located in surveys (1999–2003) were in dead or dying *Cedrela odorata* cavities in the *Bursera-Exothea-Chionanthus* community, and while cedars were common there was no recruitment of seedlings or young trees. Since 1999, a total of 18 active nests have been located, together with other pairs holding territories but not nesting. Also, about 9% of the global population of the Near-threatened restricted-range Vitelline Warbler *crawfordi*. The restricted-range Thick-billed Vireo *alleni* is common and the biome species Loggerhead Kingbird *caymanensis* is uncommon.

A total of 19 taxa breed, three additional species with

endemic races: the Red-legged Thrush *coryi* (confined to Cayman Brac), Caribbean Elaenia *caymanensis* and Bananaquit *sharppei*. Indigenous species are the White-crowned Pigeon, Zenaida Dove, White-winged Dove, Common Ground-dove, Mangrove Cuckoo, Smooth-billed Ani, Barn Owl, Northern Mockingbird and Yellow-faced Grassquit; summer breeding migrants are the Grey Kingbird, Antillean Nighthawk and Black-whiskered Vireo.

Regular migrant landbirds include the Yellow-bellied sapsucker, Grey Catbird, White-eyed Vireo, Yellow-throated Vireo, and 28 species of warbler, most commonly the Northern Parula, Cape May Warbler, Yellow-rumped Warbler, Yellow-throated Warbler, Palm Warbler, Prairie Warbler, Black-and-white Warbler, American Redstart and Ovenbird.

### Other threatened/endemic wildlife

Plants endemic to the Cayman Islands: *Allophylus cominia* var. *caymanensis*; *Crossopetalum caymanense* and *Cocothrinax proctorii*. Endemic plants to Little Cayman and Cayman Brac: *Chionanthus caymanensis* var. *caymanensis*, *Encyclia kingsii*, *Phyllanthus caymanensis* and *Myremecophila thompsoniana* var. *minor*. *Verbesina caymanensis* endemic to Cayman Brac occurs on the north-eastern bluff. It is a priority site for cacti in a regional context *Pilosocereus sp.* Bats, Caribbean endemics: *Macrotus waterhousii minor* and *Erophylla sezekorni syops*. Amphibians: *Osatephilus septentrionalis* and *Eleutherodactylus p. planirostris*. Reptiles

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1	Cuban Parrot <i>Amazona leucocephala hesternus</i>	60–70	Max 430 birds
A1, A2	Vitelline Warbler <i>Dendroica vitellina crawfordi</i>	Not known	~9% of global population
A2, A3	Thick-billed Vireo <i>Vireo crassirostris alleni</i>	Not known	Common
A3	Loggerhead Kingbird <i>Tyrannus caudifasciatus caymanensis</i>	Not known	Uncommon



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endemic to Little Cayman and Cayman Brac: *Alsophis cantherigerus fuscicauda*, *Anolis sagrei luteosignifer*, *Aristelliger p. praesignis*, *Cyclura nubila caymanensis*, *Celestus cruscus maculates* and *Sphaerodactylus argivus argivus*. Lepidoptera endemic to the Cayman Islands: *Cyclargus ammon erembis* and *Memphis echemus danielana*.

### Conservation issues/threats

The major threat is insufficient protected breeding habitat to sustain the parrots and the failure to include any protected areas of forest in the proposed Sustainable Plan for Cayman Brac. For the parrots to survive, even in the short term, Wiley *et al.* (2004) consider it imperative that additional forest habitat is conserved as clearing and fragmentation of unprotected forest is resulting in the continuous loss of nest sites. Additional concerns are human disturbance, predation by escalating populations of rats and feral cats, illegal

capture of parrots as pets, the importation of the Grand Cayman race and the importation of exotic parrots. Disturbance to endemic landbirds caused by hunters shooting unprotected White-crowned Pigeons on the bluff during the summer breeding season is another threat.

### Further reading

*See full details at end of chapter.*

Bangs (1916, 1919), Barlow (1980, 1990), Barlow and Walker (1997), BirdLife International (2000), Bradley (1986b, 1994, 1995, 1997, 2000, 2002), Brunt (1994), Buden (1972, 1985), Burton, Wiley and Bradley (1999), Cory (1889), Johnston (1975), Johnston *et al.* (1971), Morgan (1994), Olson *et al.* (1981), Prescott (1997), Seidel and Franz (1994), Steadman and Morgan (1985), Walker (1998), Wiley (1991), Wiley *et al.* (1991, unpublished report), Wiley *et al.* (1992a, 1992b, 2004).

## Site accounts

# KY005: Mastic Reserve

<b>Ref number</b>	KY005
<b>Admin region</b>	Grand Cayman, Cayman Islands
<b>Coordinates</b>	19°19.517'N 81°11.183'W
<b>Area</b>	365 ha
<b>Altitude</b>	0–18 m
<b>IBA categories (details below)</b>	A1, A2, A3
<b>Status</b>	National Trust (162 ha); privately owned (203 ha) unprotected

### Site description

The site lies inland on North Side, bounded on the west and south by KY006, the Central Mangrove Wetland, and to the north by agricultural land. The dry forest has both primary- and second-growth trees with areas of grassland once used for agriculture. It comprises the largest area of contiguous dry forest in the Cayman Islands, with the highest degree of endemism and biodiversity, having been above the sea for 2 to 2.5 million years; it also includes the highest elevation on Grand Cayman (18 m). It has retained its pristine nature because there is no road access; only two footpaths bisect the site. Dominant trees are as characterised in the 'General introduction' to this chapter; rare species mainly confined to this site are *Casearia sp. nov.*, *Daphnopsis occidentalis*, *Sideroxylon foetidissimum*, *Terminalia*

*eriostachya*, *Celtis trinervia*, *Jacquininia sp. nov.*, *Jatropha divaricata*, *Dendropanax arboreus* and *Xylosoma bahamsense*. It is floristically distinct from Cayman Brac and Little Cayman and, due to slight variations in elevation and the high water table, there are distinct vegetation zones of differing tree heights. The Mastic trail, a 2.5-mile traditional footpath and public right of way from north to south, was opened for tourism in 1994 with a grant from the RARE Centre for Tropical Conservation.

### Birds

See the accompanying table for details of key species. The extinct Grand Cayman Thrush was collected at the site by W. W. Brown in 1911 and the last individual of the extirpated Jamaican Oriole was collected here by Bond in

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1	Cuban Parrot <i>Amazona leucocephala caymanensis</i>	Not known	250 birds
A1, A2	Vitelline Warbler <i>Dendroica vitellina</i>	Not known	~5% global population
A2, A3	Thick-billed Vireo <i>Vireo crassirostris alleni</i>	Not known	
A2	Yucatan Vireo <i>Vireo magister caymanensis</i>	Not known	
A2, A3	Cuban Bullfinch <i>Melopyrrha nigra taylori</i>	Not known	
A3	Caribbean Dove <i>Leptotila jamaicensis collaris</i>	Not known	
A3	Stripe-headed Tanager <i>Spindalis zena salvini</i>	Not known	
A3	Greater Antillean Grackle <i>Quiscalus niger caymanensis</i>	Not known	
A3	West Indian Woodpecker <i>Melanerpes superciliaris caymanensis</i>	Not known	
A3	Loggerhead Kingbird <i>Tyrannus caudifasciatus caymanensis</i>	Not known	

1930. Key species include the Near-threatened Cuban Parrot *caymanensis*, approx 25–350 birds, and the Vitelline Warbler *vitellina*, each more than 1% of the global population. Other common restricted-range species are the Thick-billed Vireo *alleni*, Yucatan Vireo *caymanensis* and Cuban Bullfinch *taylori*. Five biome species occur: the Caribbean Dove *collaris*, West Indian Woodpecker *caymanensis*, Loggerhead Kingbird *caymanensis*, Stripe-headed Tanager *salvini* and the Greater Antillean Grackle *caymanensis*. In total, 23 taxa breed, which are all of Grand Cayman's endemic races and indigenous landbirds except the Yellow-faced Grassquit: the Northern Flicker *gundlachi*, Caribbean Elaenia *caymanensis*, Bananaquit *sharpei*, and indigenous species the White-crowned Pigeon, Zenaida Dove, White-winged Dove, Common Ground-dove, Mangrove Cuckoo, Smooth-billed Ani, Barn Owl, La Sagra's Flycatcher and the Yellow Warbler. The Northern Mockingbird breeds uncommonly in cleared areas.

Regular migrant landbirds include the Yellow-bellied Sapsucker, Grey Catbird, White-eyed Vireo, Yellow-throated Vireo, Blue-grey Gnatcatcher, Swainson's Thrush and 27 species of warbler, most commonly the Northern Parula, Cape May Warbler, Yellow-rumped Warbler, Yellow-throated Warbler, Palm Warbler, Prairie Warbler, Black-and-white Warbler, American Redstart, Ovenbird and the rare Swainson's Warbler.

### Other threatened/endemic wildlife

Plants endemic to the Cayman Islands: *Allophylus cominia* var. *caymanensis*. Plants endemic to Grand Cayman: *Casearia* sp., *Chionanthus caymanensis* var. *longipetala*, *Daphnopsis occidentalis*, *Crossopetalum caymanense*, *Myrmecophila thompsoniana thompsonia*, *Dendrophylax fawcettii*, *Tolunnia caymanense*, *Jatropha divaricata* and *Dendropanax arboreus*. Reptiles endemic to Grand Cayman: *Anolis conspersus conspersus*, *Sphaerodactylus argivus lewisi*, *Tropidophis caymanensis caymanensis* and *Alsophis cantherigerus caymanensis*. Lepidoptera endemic to the Cayman Islands: *Cyclargus ammon erembis*, *Dryas iulia zoe* (with Cayman Brac

and *Memphis echemus danielana*. Endemic to Grand Cayman: *Heracles andraemon taylori* and *Brephidium exilis thompsoni*.

### Conservation issues/threats

This is the most important biodiversity site in the Cayman Islands, at present with no road access. There are plans for urban development on the northern, southern and eastern boundaries of the reserve and a proposed north–south road, which would allow access to all private land that would sell rapidly for development. Although named the Mastic Reserve, only 44% of the site is protected and purchase of the remainder is the focus of an urgent National Trust campaign (at press, the Trust is in the process of buying an additional 80 ha to add to the Protected Area). The long-term conservation plan aims to create a larger Protected Area, by combining two IBAs, the Mastic and the adjoining Central Mangrove Wetland. The other threats to this major parrot-breeding site include illegal felling of nesting trees and removal of young for the pet trade, predation by rats and feral cats, and illegal shooting as a crop pest on the northern boundary of the reserve.

### Further reading

See full details at end of chapter.

Bangs (1916, 1919), Barlow (1980, 1990), Barlow and Walker (1997), BirdLife International (2000), Bond (1956, 1957, 1972), Bradley (1986b, 1994, 1995, 1997), Brunt (1994), Buden (1972, 1985), Burton *et al.* (1999), Cory (1886a, 1886b), Cruz and Johnston (1979, 1984), English (1913, 1916), Garrido *et al.* (1991), Johnston (1969, 1975), Johnston *et al.* (1971), Lanyon (1967), Lowe (1909, 1911), Moore (1985), Morgan (1994), Nicoll (1904), Noegel (1980, 1983, 1985), Olson *et al.* (1981), Prescott (1997), Ridgway (1898), Schwartz and Klinikowski (1963), Seidel and Franz (1994), Short (1965, 1974), Walker (1998), Wiley (1991), Wiley *et al.* (1992b, 2004), Wunderle and Waide (1993). Also: National Trust parrot surveys (1992, 1995).

# Site accounts

## KY006: Central Mangrove Wetland

<b>Ref number</b>	KY006
<b>Admin region</b>	Grand Cayman, Cayman Islands
<b>Coordinates</b>	19°19.400'N 81°14.833'W
<b>Area</b>	3,440 ha
<b>Altitude</b>	0–2 m
<b>IBA categories (details below)</b>	A1, A3, A4i
<b>Status</b>	National Trust (240 ha); privately owned (2,240 ha); Marine Park (650 ha); 300 ha owned by the Crown, unprotected

### Site description

The site, a large, almost totally pristine wetland east of North Sound, covers 3,440 ha (30% of the island area) and includes Meagre Bay Pond (40 ha), Pease Bay Pond (6 ha), Malportas Pond (44 ha) and a mangrove islet, Booby Cay. The vegetation height and composition, of red, white and black mangrove and *Conocarpus*, varies in zones from dwarf monospecific red mangrove on the edge of North Sound to monospecific black mangrove forest on the outer southern boundary. There are many seasonal areas of open water and, interspersed throughout, are 'dry cays' with dry forest species. Malportas Pond is included in this site, although separated from the Central Mangrove Wetland, because Whistling-ducks breed in the mangrove fringe and a government-funded feeding station is located on the edge of the pond; it is also a major site for wintering and resident waterbirds. The site is 19% protected under Marine Conservation Law, 7% owned and protected by the National Trust, 9% owned by the Crown and unprotected, and 75% privately owned and unprotected. The wetland is economically important to Grand Cayman for rainfall generation, groundwater replenishment, nature tourism, agriculture, fisheries, the dive industry, hurricane protection and recreation.

### Birds

See the accompanying table for details of key species. The species of global significance are the Vulnerable West Indian

Whistling-duck, with at least 1,500 individuals or 83% of the Cayman Islands' population, and the Near-threatened Cuban Parrot *caymanensis* with a population of 253–379 birds (about 5% of the global population) that breeds in outer monospecific black, black/white and black/red mangrove zones (1,145 ha). There are three biome species: the Greater Antillean Grackle *caymanensis*, West Indian Woodpecker *caymanensis* and Loggerhead Kingbird *caymanensis*. A total of 22 taxa breed including, in a mixed heronry, 500 pairs of Snowy Egrets, Little Blue Herons and Tricoloured Herons; Green Herons and Yellow-crowned Night-herons breed throughout, and there are colonies of White-crowned Pigeons, White-winged Doves and Greater Antillean Grackles *caymanensis*, as well as the Northern Flicker *gundlachi*, Caribbean Elaenia *caymanensis*, La Sagra's Flycatcher, Barn Owl, Bananaquit *sharpei* and Yellow Warbler. Max counts on Meagre Bay, Pease Bay and Malportas Ponds are 55 pairs of Least Terns, 11 pairs of Pied-billed Grebes, 32 pairs of Green Herons, six pairs of American Coots, 700+ Common Moorhens (breeding and migrant), 143 pairs of Black-necked Stilts and five pairs of Willets.

It is a major wintering site for up to 75 Great Blue Herons, 233 Great Egrets, 1,200 Snowy Egrets, 800 Blue-winged Teals, 25 Northern Shovelers, 38 American Wigeons and 40 Lesser Scaups, 377 American Coots, 180+ Greater Yellowlegs and Lesser Yellowlegs, and flocks of up to 200

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1, A4i	West Indian Whistling-duck <i>Dendrocygna arborea</i>	Not known	1,500 birds
A1	Cuban Parrot <i>Amazona leucocephala caymanensis</i>	Not known	Max 1,000 birds
A3	West Indian Woodpecker <i>Melanerpes superciliaris caymanensis</i>	Not known	
A3	Greater Antillean Grackle <i>Quiscalus niger caymanensis</i>	Not known	
A3	Loggerhead Kingbird <i>Tyrannus caudifasciatus caymanensis</i>	Not known	

## Cayman Islands

Semipalmated Sandpipers. Migrant raptors include Ospreys, Merlins and Peregrine Falcons. Regular migrant landbirds include the Yellow-bellied Sapsucker, Grey Catbird, White-eyed Vireo, Yellow-throated Vireo, and 21 species of warbler, most commonly the Northern Parula, Cape May Warbler, Yellow-rumped Warbler, Yellow-throated Warbler, Palm Warbler, Prairie Warbler, Black-and-white Warbler, American Redstart, Ovenbird and Northern Waterthrush.

### Other threatened/endemic wildlife

Endemic to Grand Cayman: *Agalinis kingsii*, known only from this site and the Salina.

### Conservation issues/threats

This site is threatened by proposed road and urban development, despite efforts since 1986 to have it designated as a Ramsar site. The government removed all conservation zones from the 2001 Development Plan for Grand Cayman and, in 2004, this issue was still in the appeal process. The National Trust considers 'its long-term protection to be one of the fundamental requirements for

the well-being of the future generations in the Cayman Islands'. The *Avicennia* forest that forms the outer vegetation zone is the major breeding habitat for two globally threatened species, the Cuban Parrot and the West Indian Whistling-duck, and its removal for development would be a major threat to both species. Already, four areas have been cleared for marl-mining pits. Additional threats are the destruction of parrot nest sites during illegal trapping and shooting of parrots as a crop pest on the northern boundary of the wetland, and the packs of feral dogs and feral cats that predate on Whistling-duck young.

### Further reading

*See full details at end of chapter.*

Bangs (1916), BirdLife International (2000), Bond (1956), Bradley (1986a, 1986b, 1994, 1995, 2000), Brunt (1994), Brunt and Burton (1994), Brunt and Giglioli (1980), Burton (1997), Cory (1889), English (1916), Wiley (1991), Wiley *et al.* (1992b, 2004), Woodroffe (1982, 1983), Woodroffe *et al.* (1980). Also: National Trust for the Cayman Islands reports, 1995–1999, parrot surveys (1992, 1995).

## Site accounts

# KY007: Botanic Park and the Salina

<b>Ref number</b>	<b>KY007</b>
<b>Admin region</b>	<b>Grand Cayman, Cayman Islands</b>
<b>Coordinates</b>	<b>19°19.240'N 81°10.010'W (Botanic Park) 19°20.500'N 81°08.150'W (Salina)</b>
<b>Area</b>	<b>50 ha (Botanic Park) 260 ha (Salina)</b>
<b>Altitude</b>	<b>3–5 m</b>
<b>IBA categories (details below)</b>	<b>A1, A2, A3</b>
<b>Status</b>	<b>Botanic Park: 50% owned by the Crown and the National Trust Salina: owned and protected by the National Trust</b>

### Site description

The Botanic Park, 50 ha, immediately east of the Frank Sound Road in the centre of the island, comprises dry forest fragments interspersed with shrubland, *Conocarpus* wetlands with a lake and horticultural areas. It is protected, owned jointly by the National Trust and the Crown; 25 ha are open to the public.

The Salina, inland on the north-east coast, is 100% owned and protected by the National Trust. It is a large temporary, freshwater herbaceous wetland (125 ha) bounded by a mosaic of sedges, *Typha sp.*, *Conocarpus* shrubland with 135 ha of dry forest on the northern boundary, where *Swietenia mahagoni* is dominant. The pristine site is inaccessible and lies over the northern margin of the largest freshwater lens in eastern Grand Cayman. The Botanic Park is east of IBAs KY006 and KY005; the Salina is north-east of these sites.

### Birds

See the accompanying table for details of key species. The Botanic Park has sizeable populations of four restricted range species: the Vitelline Warbler *vitellina*, Thick-billed Vireo *alleni*, Yucatan Vireo *caymanensis* and Cuban Bullfinch *taylori*. Also breeding are more than 10 pairs each of the globally threatened West Indian Whistling-duck and the Cuban Parrot *caymanensis*. The Salina is a foraging site for West Indian Whistling-ducks, although breeding is reported, and an unknown number of Cuban Parrots *caymanensis* breed.

There are 29 breeding taxa at the two sites, of which five are biome species: the Caribbean Dove *collaris*, West Indian Woodpecker *caymanensis*, Loggerhead Kingbird *caymanensis*, Stripe-headed Tanager *salvini* and the Greater Antillean Grackle *caymanensis*. Others are the Northern Flicker *gundlachii*, Caribbean Elaenia *caymanensis* and Bananaquit *sharppei*; indigenous species include the White-crowned Pigeon, Zenaida Dove, White-winged Dove, Common Ground-dove, Mangrove Cuckoo, Smooth-billed Ani, Barn Owl, La Sagra's Flycatcher, Northern Mockingbird, Yellow Warbler and Yellow-faced Grassquit. Both sites have a few pairs of Pied-billed Grebes, Purple Gallinules, Common Moorhens and American Coots.

Both are also important wintering sites for migrant landbirds including the Yellow-bellied Sapsucker, Grey

Catbird, White-eyed Vireo, Yellow-throated Vireo and 30 species of warbler, most commonly the Northern Parula, Cape May Warbler, Yellow-rumped Warbler, Yellow-throated Warbler, Palm Warbler, Prairie Warbler, Black-and-white Warbler, American Redstart, Ovenbird and Northern Waterthrush. The Salina, when flooded, has Green Herons, American Coots, Common Moorhens, Black-necked Stilts, Great Blue Herons, Great Egrets, Snowy Egrets, Little Blue Herons, Blue-winged Teals, Northern Shovelers, Lesser Scaups, Greater Yellowlegs and Lesser Yellowlegs, and Least Sandpipers. Migrant raptors include Ospreys, Merlins and Peregrine Falcons.

### Other threatened/endemic wildlife

#### Botanic Park

The park is a centre for the captive breeding programme and a release site for the endangered Grand Cayman *Cyclura lewisi* since 1993, protected. Other reptiles endemic to Grand Cayman are *Anolis conspersus conspersus*, *Sphaerodactylus argivus lewisi*, *Tropidophis caymanensis caymanensis* and *Alsophis cantherigerus caymanensis*. Rare bats are *Phyllops falcatus* and *Lasiurus spp. unknown*. There is a plant conservation programme for Grand Cayman endemics: *Pisonia margaretae* and *Holenbergia caymanensis*, and the rare *Buxus bahamensis*. Plants endemic to the Cayman Islands: *Cordia sebestena* var. *caymanensis* and *Allophylus cominia* var. *caymanensis*. Plants endemic to Grand Cayman: *Chionanthus caymanensis* var. *longipetala*, *Crossopetalum caymanense*, *Myrmecophila thompsoniana thompsoniana*, *Dendrophylax fawcettii* and *Tolumnia caymanense*. Rare tree: *Colubrina arborescens*. Lepidoptera endemic to the Cayman Islands: *Memphis echemus danielana*, *Dryas iulia zoe* (with Cayman Brac) and *Cyclargus ammon erembis*. Endemic to Grand Cayman: *Heraclides andraemon tailori* and *Brephidium exilis thompsoni*.

#### Salina

Grand Cayman endemics: *Agalinis kingsii* and *Tadarida brasiliensis muscularus*.

### Conservation issues/threats

The Botanic Park is likely to become an island surrounded by urban development, which is a potential threat to the released iguana.

# Cayman Islands

## Key species

Criteria	Key species	Number of breeding pairs (if known)
A1	West Indian Whistling-duck <i>Dendrocygna arborea</i>	>10
A1	Cuban Parrot <i>Amazona leucocephala caymanensis</i>	>10
A1, A2	Vitelline Warbler <i>Dendroica vitellina</i>	Not known
A2, A3	Thick-billed Vireo <i>Vireo crassirostris alleni</i>	Not known
A2	Yucatan Vireo <i>Vireo magister caymanensis</i>	Not known
A2, A3	Cuban Bullfinch <i>Melopyrrha nigra taylori</i>	Not known
A3	Caribbean Dove <i>Leptotila jamaicensis collaris</i>	Not known
A3	West Indian Woodpecker <i>Melanerpes superciliosus caymanensis</i>	Not known
A3	Loggerhead Kingbird <i>Tyrannus caudifasciatus caymanensis</i>	Not known
A3	Stripe-headed Tanager <i>Spindalis zena salvini</i>	Not known
A3	Greater Antillean Grackle <i>Quiscalus niger caymanensis</i>	Not known

## Further reading

See full details at end of chapter.

Bangs (1916, 1919), Barlow (1980, 1990), Barlow and Walker (1997), BirdLife International (2000), Bond (1956, 1957, 1972), Bradley (1986b, 1994, 1995, 1997), Brunt (1994), Buden (1972, 1985), Burton *et al.* (1999), Cory (1886a, 1886b), Cruz and Johnston (1979, 1984), English (1913,

1916), Garrido *et al.* (1991), Johnston (1969, 1975), Johnston *et al.* (1971), Lanyon (1967), Lowe (1909, 1911), Moore (1985), Morgan (1994), Nicoll (1904), Olson *et al.* (1981), Prescott (1997), Ridgway (1898), Schwartz and Klinikowski (1963), Seidel and Franz (1994), Short (1965, 1974), Walker (1998), Wiley (1991), Wiley *et al.* (1992b, 2004), Wunderle and Waide (1993). Also: National Trust parrot surveys (1992, 1995).

## Site accounts

# KY008: Franklin's Forest

<b>Ref number</b>	<b>KY008</b>
<b>Admin region</b>	<b>Grand Cayman, Cayman Islands</b>
<b>Coordinates</b>	<b>19°17.050'N 81°08.223'W</b>
<b>Area</b>	<b>250 ha</b>
<b>Altitude</b>	<b>3–10 m</b>
<b>IBA categories (details below)</b>	<b>A1, A2, A3</b>
<b>Status</b>	<b>Crown and privately owned, unprotected</b>

### Site description

The site, south of the Salina and east of the Botanic Park (KY007), in the centre of the eastern districts, comprises dry forest bordered by *Conocarpus* wetlands and agricultural plantations. Part of the site, area yet unknown, has recently been purchased by the Crown; the remainder is privately owned and all is unprotected.

### Birds

See the accompanying table for details of key species. The major species are the Near-threatened Cuban Parrot *caymanensis* and the Vitelline Warbler *vitellina*, each more than 1% of the global population. The largest flocks (150+) of Cuban Parrots on Grand Cayman congregate on the edge of a fruit plantation. There are three restricted-range species: the Thick-billed Vireo *alleni*, Yucatan Vireo

*caymanensis* and Cuban Bullfinch *taylori*. The Grand Cayman Thrush was last seen here in 1938. There are five biome species: the Caribbean Dove *collaris*, West Indian Woodpecker *caymanensis*, Loggerhead Kingbird *caymanensis*, Stripe-headed Tanager *salvini* and the Greater Antillean Grackle *caymanensis*.

There are 19 breeding taxa: endemic races of Northern Flickers *gundlachi*, the Caribbean Elaenia *caymanensis* and Bananaquit *sharppei*; indigenous species are the White-crowned Pigeon, Zenaida Dove, White-winged Dove, Barn Owl and La Sagra's Flycatcher; Mangrove Cuckoos and Northern Mockingbirds breed on the forest edge. Wintering migrants include the Yellow-bellied Sapsucker, Grey Catbird, White-eyed Vireo, Yellow-throated Vireo and several species of warbler, most commonly the Northern

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1	Cuban Parrot <i>Amazona leucocephala caymanensis</i>	Not known	170 birds
A1, A2	Vitelline Warbler <i>Dendroica vitellina</i>	Not known	
A2, A3	Thick-billed Vireo <i>Vireo crassirostris alleni</i>	Not known	
A2	Yucatan Vireo <i>Vireo magister caymanensis</i>	Not known	
A2, A3	Cuban Bullfinch <i>Melopyrrha nigra taylori</i>	Not known	
A3	Caribbean Dove <i>Leptotila jamaicensis collaris</i>	Not known	
A3	West Indian Woodpecker <i>Melanerpes superciliaris caymanensis</i>	Not known	
A3	Loggerhead Kingbird <i>Tyrannus caudifasciatus caymanensis</i>	Not known	
A3	Stripe-headed Tanager <i>Spindalis zena salvini</i>	Not known	
A3	Greater Antillean Grackle <i>Quiscalus niger caymanensis</i>	Not known	



## Cayman Islands

Parula, Cape May Warbler, Yellow-rumped Warbler, Yellow-throated Warbler, Palm Warbler, Prairie Warbler, Black-and-white Warbler, American Redstart and Ovenbird.

### Other threatened/endemic wildlife

Plants endemic to Grand Cayman: *Chionanthus caymanensis* var. *longipetala*, *Crossopetalum caymanense*, *Allophylus cominia* var. *caymanensis*; *Myrmecophila thompsoniana thompsonia*, *Dendrophylax faucettii* and *Tolumnia caymanense*. Reptiles endemic to Grand Cayman: *Anolis conspersus lewisi*, *Sphaerodactylus argivus lewisi*, *Tropidophis caymanensis caymanensis* and *Alsophis cantherigerus caymanensis*; the endangered *Cyclura (nubile) lewisi* occurs in adjacent shrubland.

### Conservation issues/threats

The threats of habitat loss are similar for all privately owned and unprotected forest in the eastern half of Grand Cayman as clearing and fragmentation cause loss of parrot and other avian breeding habitat. Young parrots are taken as captives from the nest and the nest site is usually destroyed, also illegal shooting of parrots as a crop pest continues (over 200 were shot in 2000).

### Further reading

See full details at end of chapter.

As for KY005, specifically Bradley (1986b).

## Site accounts

# KY009: Frank Sound Forest

<b>Ref number</b>	KY009
<b>Admin region</b>	Grand Cayman, Cayman Islands
<b>Coordinates</b>	19°20.00'N 81°09.650'W
<b>Area</b>	226 ha
<b>Altitude</b>	5–20 m
<b>IBA categories (details below)</b>	A1, A2, A3
<b>Status</b>	Privately owned, unprotected

### Site description

The site, east of Frank Sound Road, surrounds but is not connected to the Botanic Park (KY007). It comprises dry forest bordered by *Conocarpus* wetlands, dry shrubland and agricultural land. The site is 100% privately owned and unprotected, and parts are being cleared for agriculture and urban development.

### Birds

See the accompanying table for details of key species. These are the Near-threatened Cuban Parrot *caymanensis* and the Near-threatened restricted-range Vitelline Warbler *vitellina*, each more than 1% of the global population. There are three

restricted-range species: the Thick-billed Vireo *alleni*, Yucatan Vireo *caymanensis* and the Cuban Bullfinch *taylori*. Other biome, breeding and migrant taxa are as for KY008.

### Other threatened/endemic wildlife

As for KY008, except *Cyclura* sp. is not recorded, although releases from the Botanic Park may eventually occur.

### Conservation issues/threats

As for KY008.

### Further reading

As for KY005.

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1	Cuban Parrot <i>Amazona leucocephala caymanensis</i>	Not known	150 birds
A1, A2	Vitelline Warbler <i>Dendroica vitellina</i>	Not known	
A2, A3	Thick-billed Vireo <i>Vireo crassirostris alleni</i>	Not known	
A2	Yucatan Vireo <i>Vireo magister caymanensis</i>	Not known	
A2, A3	Cuban Bullfinch <i>Melopyrrha nigra taylori</i>	Not known	
A3	Caribbean Dove <i>Leptotila jamaicensis collaris</i>	Not known	
A3	West Indian Woodpecker <i>Melanerpes superciliaris caymanensis</i>	Not known	
A3	Loggerhead Kingbird <i>Tyrannus caudifasciatus caymanensis</i>	Not known	
A3	Stripe-headed Tanager <i>Spindalis zena salvini</i>	Not known	
A3	Greater Antillean Grackle <i>Quiscalus niger caymanensis</i>	Not known	

# Site accounts

## KY0010: Eastern Dry Forest

<b>Ref number</b>	KY010
<b>Admin region</b>	Grand Cayman, Cayman Islands
<b>Coordinates</b>	19°19.900'N 81°06.000'W
<b>Area</b>	216 ha
<b>Altitude</b>	5–20 m
<b>IBA categories (details below)</b>	A1, A2, A3
<b>Status</b>	Privately owned, unprotected

### Site description

The site, north of East End town and the most easterly of all IBA sites, is dry forest that is rapidly being cleared and fragmented. Although similar to KY008 and KY009 it is the only tract of dry forest remaining on the east side of the island. It is 100% privately owned and unprotected. In the 1980s, this site contained some of the largest trees on Grand Cayman and was a major parrot breeding site; there have been no recent population counts.

### Birds

See the accompanying table for details of key species. These are the Near-threatened Cuban Parrot *caymanensis* and the Near-threatened and restricted-range Vitelline Warbler *vitellina*, each with more than 1% of the global population; and three restricted-range species: the Thick-billed Vireo *alleni*, Yucatan Vireo *caymanensis* and the Cuban Bullfinch

*taylori*. All five biome species occur at the site. Other endemic, indigenous and migrant taxa are as for KY008.

### Other threatened/endemic wildlife

As for KY008.

### Conservation issues/threats

This is the most fragmented forest site on Grand Cayman and, being close to East End town, has traditionally been a source of young parrots for the cage bird trade; this illegal practice continues, causing loss of nesting trees when the bole is cut open to reach into the deep-cavity nests. Predation by feral cats is a further threat.

### Further reading

See full details at end of chapter.

As for KY005. Specifically Bradley (1986b).

### Key species

Criteria	Key species	Number of breeding pairs (if known)	Notes
A1	Cuban Parrot <i>Amazona leucocephala caymanensis</i>	Not known	150 birds
A1, A2	Vitelline Warbler <i>Dendroica vitellina</i>	Not known	
A2, A3	Thick-billed Vireo <i>Vireo crassirostris alleni</i>	Not known	
A2	Yucatan Vireo <i>Vireo magister caymanensis</i>	Not known	
A2, A3	Cuban Bullfinch <i>Melopyrrha nigra taylori</i>	Not known	
A3	Caribbean Dove <i>Leptotila jamaicensis collaris</i>	Not known	
A3	West Indian Woodpecker <i>Melanerpes superciliaris caymanensis</i>	Not known	
A3	Loggerhead Kingbird <i>Tyrannus caudifasciatus caymanensis</i>	Not known	
A3	Stripe-headed Tanager <i>Spindalis zena salvini</i>	Not known	
A3	Greater Antillean Grackle <i>Quiscalus niger caymanensis</i>	Not known	

# References

- Askew, R. R. (1994) Insects of the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: Natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 333–56.
- Bangs, O. (1916) A collection of birds from the Cayman Islands. *Bulletin of the Museum of Comparative Zoology* 60(7): 303–20.
- Bangs, O. (1919) A collection of birds from the Cayman Islands. *Bulletin of the Museum of Comparative Zoology* 62(11): 493–5.
- Barlow, J. C. (1980) Patterns of ecological interaction among migrant and resident vireos on wintering grounds. In A. Keast and E. S. Morton, eds., *Migrant birds in the Neotropics: ecology, behavior, distribution, and conservation*. Washington, DC: Smithsonian Institution Press: 67–79.
- Barlow, J. C. (1990) *Songs of vireos and their allies. Family Vireonidae: vireos, peppershrikes, shrike-vireos and greenlets*. Gainesville, Florida: ARA records.
- Barlow, J. C. and Walker, M. (1997) A study of inter-island song variation in the thick-billed vireo (*Vireo crassirostris*). *El Pitirre* 10(1): 35–6.
- Bartsch, P. (1930) (unpublished) Field notes of visits to the Cayman Islands, September 1930. Library of the Smithsonian Institute.
- BirdLife International (2000) *Threatened birds of the world*. Cambridge, UK: BirdLife International.
- BirdLife International (2004) *Threatened birds of the world 2004*, CD-ROM. Cambridge, UK: BirdLife International.
- Bond, J. (1956) *Check-list of Birds of the West Indies* (4th edn). Philadelphia: Academy of Natural Sciences of Philadelphia.
- Bond, J. (1957) *Second supplement to the check-list of birds of the West Indies* (1956). Philadelphia: Academy of Natural Sciences of Philadelphia.
- Bond, J. (1972) *Seventeenth supplement to the check-list of birds of the West Indies* (1956). Philadelphia: Academy of Natural Sciences of Philadelphia.
- Bradley, P. E. (1986a) The Cayman Islands. In D. A. Scott and M. Carbonell, eds., *A directory of neotropical wetlands*. Gland and Cambridge: International Union for Conservation of Nature and Natural Resources: 468–71.
- Bradley, P. E. (1986b) A census of *Amazona leucocephala caymanensis*, Grand Cayman and *Amazona leucocephala hesternana*, Cayman Brac. Cayman Islands Government Technical Publication 1, George Town, Grand Cayman.
- Bradley, P. E. (1994) The avifauna of the Cayman Islands: an overview. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 377–407.
- Bradley, P. E. (1995) *Birds of the Cayman Islands* (with photographs by Y.-J. Rey-Millet) (2nd edn). Italy: Caerulea Press.
- Bradley, P. E. (1997) *Report on the birds of Cayman Brac*. Report for the Department of the Environment, CI Government, Cayman Islands.
- Bradley, P. E. (1999) *Report on the birds and their habitats on Little Cayman*. Report for the Department of the Environment, CI Government, Cayman Islands.
- Bradley, P. E. (2000) *The birds of the Cayman Islands: BOU checklist series 19*. Tring, UK: British Ornithologists Union.
- Bradley, P. E. (2002) *Management plan to conserve the Brown Booby colony and its habitat on Cayman Brac, 2002–2006*. Cayman Islands Government Publications.
- Brunt, M. A. (1994) Vegetation of the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 245–83.
- Brunt, M. A. and Burton, F. J. (1994) Mangrove swamps of the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 283–307.
- Brunt, M. A. and Davis, J., eds (1994) *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers.
- Brunt, M. A. and Giglioli, M. E. C. (1980) Cayman Islands swamp maps, sheets 1–3, 1:25,000 scale. Land Resources Centre, ODA, London.
- Buden, D. W. (1972) A taxonomic reappraisal of *Dendroica vitellina* (Aves: Parulidae) of the Cayman Islands and Swan Islands, West Indies. MSc Thesis. Louisiana State University, Baton Rouge.
- Buden, D. W. (1985) New subspecies of Thick-billed Vireo (Aves: Vireonidae) from the Caicos Islands, with remarks on taxonomic status of other populations. *Proceedings of the Biological Society of Washington* 98: 591–7.
- Burton, F. J. (1994) Climate and tides of the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 51–61.
- Burton, F. J. (1997) *Wild trees in the Cayman Islands*. National Trust for the Cayman Islands.
- Burton, F. J., Bradley P. E., Schreiber, E. A., Schenk, G. A. and Burton, R. W. (1999) Status of Red-footed Boobies *Sula sula* on Little Cayman, British West Indies. *Bird Conservation International* 9: 227–33.
- Burton, F. J., Wiley, J. and Bradley, P. E. (1999) National Trust census of the breeding population of the Cayman Brac Parrot *Amazona leucocephala hesternana*. Unpublished report, National Trust for the Cayman Islands, Grand Cayman, Cayman Islands.
- Clapp, R. B. (1987) Status of the Red-footed Booby on Little Cayman Island. *Atoll Research Bulletin* 304: 1–15.
- Clench, W. J. (1964) Land and freshwater mollusca of the Cayman Islands, WI. *Occ. Pap. Mollusks. Mus. Comp. Zool. Harvard* 2(31): 345–80.

## Cayman Islands

- Cory, C. B. C. (1886a) Descriptions of thirteen new species from the island of Grand Cayman, WI. *Auk* 3: 497–501.
- Cory, C. B. C. (1886b) A list of birds collected on the island of Grand Cayman, WI, by W.B. Richardson, during the summer of 1886. *Auk* 3: 501–2.
- Cory, C. B. C. (1889) A list of birds collected by Mr C.J. Maynard in the islands of Little Cayman and Cayman Brac, West Indies. *Auk* 6: 30–2.
- Cruz, A. and Johnston, D. W. (1979) Occurrence and feeding ecology of the Common Flicker on Grand Cayman Island. *Condor* 81 (4): 370–5.
- Cruz, A. and Johnston, D. W. (1984) Ecology of the West Indian Red-bellied Woodpecker on Grand Cayman: distribution and foraging. *Wilson Bulletin* 96: 366–79.
- Davis, J. E. (1994) Rare and endemic plants, animals and habitats in the Cayman Islands, and related legislation. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 527–41.
- Diamond, A. W. (1980a) Ecology and species turnover of the birds of Little Cayman. *Atoll Research Bulletin* 241: 141–64.
- Diamond, A. W. (1980b) The Red-footed Booby colony on Little Cayman: size, structure and significance. *Atoll Research Bulletin* 241: 165–70.
- English, T. M. Savage (1913) Some notes on the natural history of Grand Cayman. *Handbook of Jamaica for 1912*. Kingston: 598–600.
- English, T. M. Savage (1916) Notes on some birds of Grand Cayman, West Indies. *Ibis* series 10(4): 17–35.
- Garrido, O. H., Parkes, K. C., Reynard, G. B., Kirkconnell, A. and Sutton, R. L. (1991) Taxonomy of the Stripe-headed Tanager, genus *Spindalis* (Aves: *Thraupidae*), in the West Indies. *Wilson Bulletin* 103(4): 561–94.
- Hounscome, M. V. (1994) Terrestrial invertebrates (other than insects) of the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 307–31.
- Johnston, D. W. (1969) The thrushes of Grand Cayman Island, BWI. *Condor* 71: 120–8.
- Johnston, D. W. (1975) Ecological analysis of the Cayman Islands avifauna. *Bulletin of the Florida State Museum of Science* 19(5): 235–300.
- Johnston, D. W., Blake, C. H. and Buden, D. W. (1971) Avifauna of the Cayman Islands. *Quarterly Journal of the Florida Academy of Science* 34(2): 141–56.
- Lanyon, W. E. (1967) Revision and probable evolution of the *Myiarchus* flycatchers of the West Indies. *Bull. Amer. Mus. Nat. Hist.* 136: 329–70.
- Lowe, P. R. (1909) Notes on some birds collected during a cruise in the Caribbean Sea. *Ibis* Ser 9(3): 304–47.
- Lowe, P. R. (1910) The ornithology of Grand Cayman. In G. S. S. Hirst, ed., *Notes on the history of the Cayman Islands*. Kingston, Jamaica: PA Benjamin Manf Co (1967 printing).
- Lowe, P. R. (1911) On the birds of the Cayman Islands, West Indies. *Ibis* Series 9(5): 137–61.
- Maynard, C. J. (1889a) Description of a supposed new species of gannet (*Sula coryi*) from Little Cayman. *Contributions to Science* 1: 40–8, 51–7.
- Maynard, C. J. (1889b) Description of a supposed new species of gannet. *Ornitholog. Oologist* 14: 40–2, 59.
- Moore, A. G. (1985) Winter status of birds on Grand Cayman Island. *Bulletin of the British Ornithological Society* 105(1): 8–17.
- Morgan, G. S (1994) Late Quaternary fossil vertebrates from the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 465–509.
- Moyne, W. E. G. (1938) *Atlantic circle*. London and Glasgow: Blackie & Sons Ltd.
- Ng, K. C. and Beswick, R. G. B. (1994) Ground water in the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 61–75.
- Nicoll, M. J. (1904) On a collection of birds made during the cruise of the 'Valhalla' RYS in the West Indies (1903–04). *Ibis* Series 8(4): 555–91.
- Noegel, R. (1980) *Amazona leucocephala*: status in the wild and potential for captive breeding. In R. Pasquier, ed., *Conservation of New World parrots*. Washington DC: Smithsonian Institution Press (ICBP Techn. Publ. 1): 73–9.
- Noegel, R. (1983) Caribbean island amazons, captive breeding for conservation. In A. C. Risser and F. S. Todd, eds., *Proceedings of the Jean Delacour/ICFCB Symposium on breeding birds in captivity*. Los Angeles, California: International Foundation for the Conservation of Birds: 187–92 .
- Noegel, R. (1985) The Grand Cayman island amazon on the increase. *Parrot Soc* 19: 250–3.
- Olson, S. L., James, H. F. and Meister, C. A. (1981) Winter field notes and specimen weights of Cayman Island birds. *Bulletin of the British Ornithological Society* 101(3): 339–46.
- Prescott, K. (1997) *The Birds of Cayman Brac and where to find them*. George Town, Cayman Islands: National Trust for the Cayman Islands.
- Proctor, G. R. (1984) *The flora of the Cayman Islands*. London: HMSO.
- Proctor, G. R. (1996) Additions and corrections to 'Flora of the Cayman Islands'. *Kew Bulletin* 51(3): 483–507.
- Ridgway, R. (1898) New species of American birds. *Auk* 15: 319–24.
- Schwartz, A. and Klinikowski, F. (1963) Observations on West Indian birds. *Proceedings of the Academy of Natural*

# Important Bird Areas in the United Kingdom Overseas Territories

*Sciences of Philadelphia* 115(3): 53–77.

Seidel, M. E. and Franz, R. (1994) Amphibians and reptiles (exclusive of marine turtles) of the Cayman Islands. In M. A. Brunt and J. Davis, eds., *The Cayman Islands: natural history and biogeography*. The Netherlands: Kluwer Academic Publishers: 407–33.

Short, L. L. Jr (1965) Variations in West Indian Flickers (*Aves, Colaptes*). *Bull. Fl. State Mus.* 10 (1): 1–42.

Short, L. L. Jr (1974) Habits of three endemic West Indian woodpeckers (*Aves, Picidae*). *Am. Mus. Nat. Hist. Nov.* 2549: 44.

Steadman, D. W. and Morgan, G. S. (1985) A new species of bullfinch (*Aves: Emberizidae*) from a late Quaternary cave deposit on Cayman Brac, West Indies. *Proceedings of the Biological Society of Washington* 98(3): 544–53.

Stoddart, D. R. (1980a) Geology and geomorphology of Little Cayman. *Atoll Research Bulletin* 241: 11–16.

Stoddart, D. R. (1980b) Vegetation of Little Cayman. *Atoll Research Bulletin* 241: 11–16.

Stoddart D. R. (1980c) Little Cayman: ecology and significance. *Atoll Research Bulletin* 241: 11–16.

Stokes, A. V. and Keegan, W. F. (1993) A settlement survey from prehistoric archeological sites on Grand Cayman. *Miss project report* No 52, Florida Museum of Natural History, Gainesville.

Walker, M. R. (1998) Inter-island genetic and cultural variation in the Thick-billed Vireo (*Vireo crassirostris*). MSc Thesis, University of Toronto, Canada.

Wiley, J. W. (1991) Status and conservation of parrots and parakeets in the Greater Antilles, Bahama Islands, and Cayman Islands. *Bird Conservation International* 1: 187–214.

Wiley, J. W., Gnam, R. S., Burton, F., Walsh, M., Weech, J., Strausberger, B. and Marsden, M. (1992a) *Report on observations of the Cayman Brac Parrot (Amazona leucocephala hesternus) on Cayman Brac, June 1991*. Report for the International Council for Bird Preservation, Cambridge.

Wiley, J. W., Snyder, N. F. R. and Gnam, R. S. (1992b) Reintroduction as a conservation strategy for parrots. In S. Beissinger and N. F. R. Snyder, eds., *New World parrots in crisis. Solutions from conservation biology*. Washington DC: Smithsonian Institution Press: 165–200.

Wiley, J. W., Ground McCoy, D., Cross, S., Scharr, P., Burton, F. J., Ebanks-Petrie, G., Marsden, M., Butler, P. and Prescott, K. (1991) *Report on surveys of the Cayman Brac Parrot (Amazona leucocephala hesternus) on Cayman Brac, February 1991* (unpublished report). George Town, Grand Cayman: National Trust for the Cayman Islands.

Wiley, J. W., Gnam, R. S., Koenig, S. E., Dornell, A., Galvez, X., Bradley, P. E., White, T. and Zamore, M. (2004) Status and conservation of the family *Psittacidae* in the West Indies. *El Pitirre. Journal of Caribbean Ornithology* 17: 94–154.

Wiley, J. W. et al. (1991) (unpublished) Field notes of visit to Cayman Brac, February.

Woodroffe, C. D. (1982) Geomorphology and development of mangrove swamps, Grand Cayman Island, WI. *Bull. Mar. Sci.* 32: 381–398.

Woodroffe, C. D. (1983) Development of mangrove swamps behind beach ridges, Grand Cayman Island, West Indies. *Bull. Mar. Sci.* 33(4): 928.

Woodroffe, C. D., Stoddart, D. R. and Giglioli, M. E. C. (1980) Pleistocene patch reefs and Holocene swamp morphology, Grand Cayman Island, West Indies. *Journal of Biogeography* 7: 649–52.

Wunderle, J. M. and Waide, R. B. (1993) Distribution of overwintering Nearctic migrants in the Bahamas and Greater Antilles. *Condor* 95: 904–33.

## Further reading

Beard, J. S. (1955) The classification of tropical American vegetation-types. *Ecology* 36: 89–100.

BirdLife International (2004) *Threatened birds of the world*. BirdLife International, Cambridge.

Bond, J. (1936) *Handbook of birds of the West Indies* (1st edn). Academy of Natural Sciences of Philadelphia, Philadelphia.

Bradley, P. E., – Population counts of wetland birds on Grand Cayman and Little Cayman, 1982–1986 (unpublished report).

Brunt, M. A. (1984) Environment and plant communities. *The flora of the Cayman Islands* (ed. G. R. Proctor). London: HMSO: 5–58.

Brunt, M. A., Giglioli, M. E. C., Mather, J. D., Piper, D. J. W. and Richards, H. G. (1973) The Pleistocene rocks of the Cayman Islands. *Geological Magazine* 110(3): 209–21.

Collar, N. J., Gonzaga, L. P., Krabbe, N., Madrono Nieto, A., Naranjo, L. G., Parker, T. A. III and Wege, D. C. (1992) *Threatened birds of the Americas the ICBP/IUCN red data book* (3rd edn), Pt 2. Washington DC: Smithsonian Institution Press.

Cory, C. B. C. (1887) A new vireo from Grand Cayman, West Indies. *Auk* 4: 6–7.

Doran, E. B. (1953) *A physical and cultural geography of the Cayman Islands*. PhD Thesis. University of California, Berkeley.

Fewkes, J. W. (1922) A prehistoric island culture area of America. *Bur. Amer. Ethn. Ann. Rep.* 34: 49–281.

Garrido, O. H., Reynard, G. B., Kirkconnell, A. and Sutton, L. (1991) The taxonomic status of the Stripe-headed Tanager, *Spindalis zena* (*Aves: Thraupidae*), in the West Indies. *El Pitirre* 4: 11.

Garrido, O. H., Parkes, K. C., Reynard, G. B., Kirkconnell, A. and Sutton, R. L. (1991) Taxonomy of the Stripe-headed Tanager, genus *Spindalis* (*Aves: Thraupidae*), in the West Indies. *Wilson Bulletin* 109(4): 561–94.

Halewyn, R. Van and Norton, R. L. (1984) The status and

## Cayman Islands

- conservation of seabirds in the Caribbean. In J. P. Croxall, P. J. H. Evans and R. W. Schreiber, eds. *Status and conservation of the world's seabirds*, Cambridge, UK: ICBP Techn. Publ. 2.
- Hartert, E. (1896) Description of a new finch from the West Indies. *Nova Zoologica* 3(3): 257.
- Hirst, G. S. S. (1910) *Notes on the history of the Cayman Islands*. Kingston, Jamaica: PA Benjamin Manf Co.
- Hirst, G. S. S. (1912) Report on the Cayman census. *Census of Jamaica and its dependencies, 1911*. Jamaica: Government Printing Office: 89–93.
- Histoire Naturelle des Indes*. Illustrated manuscript [c. 1586]. New York: Pierpont Morgan Library.
- Jones, B. (1994) The geology of the Cayman Islands. In M. A. Brunt and J. Davis, eds, *The Cayman Islands: natural history and biogeography*. The Netherlands, Kluwer Academic Publishers: 13–51.
- Jones, B. and Hunter, I. G. (1989) The Oligocene–Miocene bluff formation on Grand Cayman. *Caribbean Journal of Science* 25: 71–85.
- Jones, B. and Hunter, I. G. (1990) Pleistocene paleogeography and sea levels on the Cayman Islands, British West Indies. *Coral Reefs* 9: 81–91.
- Jones, B. and Smith, D. (1988) Open and filled karst features on the Cayman Islands: implications for the recognition of paleokarst. *Canadian Journal of Earth Sciences* 25: 1277–91.
- Jones, B., Hunter, I. G. and Ng, K.-C. (1990) Geological evolution of the Oligocene–Miocene bluff formation, Grand Cayman. In K. Larue and G. Draper, eds., *Transactions of the 12th Caribbean Conference, St Croix*. Miami, Florida: Miami Geological Society: 125–132.
- Jones, B., Hunter, I. G. and Kyser, R. T. K. (1994) Stratigraphy of the bluff formation (Miocene–Pliocene) and the newly defined brac formation (Oligocene), Cayman Brac, British West Indies. *Caribbean Journal of Science* 30: 30–51.
- Jones, B., Hunter, I. G. and Kyser, R. T. K. (1994a) Revised stratigraphic nomenclature for the Tertiary strata of the Cayman Islands. *Caribbean Journal of Science* 30: 54–69.
- Keeler, M. F., ed. (1981) Primrose journal (BL Royal MS 7C xvi), Vol. 148, *Sir Francis Drake's West Indian voyage 1585–86*. Hakluyt Society, 2nd series. London: 204–5.
- Klein, N. K. (1997) Evolutionary relationships among island forms of the Stripe-headed Tanager. *El Pitirre* 10(1): 29.
- Klein, N. K. (1998) Recent advances in the study of avian evolution in the Caribbean and their implications for conservation. *El Pitirre* 11(3): 91–3.
- Klinkenborg, V. (1988) *Sir Francis Drake and the age of discovery*. New York: Pierpont Morgan Library.
- Knobel, E. M. (1926) Amazon parrots. *Aviculture Magazine* Series 4,(4): 229–34.
- Knobel, E. M. (1948) Amazon parrots. *Aviculture Magazine* 54: 138–50.
- Matley, C. A. (1924) Reconnaissance geological survey of Cayman Islands, British West Indies. *The Pan-American Geologist* 42: 313–31.
- Matley, C. A. (1926) The geology of the Cayman Islands (British West Indies) and their relation to the Bartlett Trough. *Quarterly Journal of the Geological Society of London* 82: 352–87.
- Morgan, G. S. (1977) Late Pleistocene fossil vertebrates from the Cayman Islands, British West Indies. *Florida Science* 40: 21.
- Morgan, G. S. and Woods C. A. (1986) Extinction and zoogeography of West Indian land mammals *Biological Journal of the Linnean Society* 28: 167–203.
- National Trust for the Cayman Islands (1992) Census of *Amazona leucocephala caymanensis* on Grand Cayman. George Town, Cayman Islands.
- National Trust for the Cayman Islands (1995) Census of *Amazona leucocephala caymanensis* on Grand Cayman. George Town, Cayman Islands.
- Nature Conservancy, The (1999) *A guide to Caribbean vegetation types: classification of systems and descriptions*. Nature Conservancy.
- Noegel, R. (1976) The Cayman Brac Amazon *Amazona leucocephala hesterna*. *Aviculture Magazine* 82: 202–8.
- Noegel, R. (1977) Captive breeding of *Amazona leucocephala*. *Aviculture Magazine* 83: 126–30.
- O'Brien, F. (1995) *Ecology of the West Indian Whistling-duck on Grand Cayman: a study of a wild population of Dendrocygna arborea under human influence*. MSc thesis, Queen's University, Belfast.
- Pashley, D. N. (1988a) Warblers of the West Indies, II. The western Caribbean. *Caribbean Journal of Science* 24(3–4): 112–26.
- Pasquier, R. F. (1980) Conservation strategy for parrots of the Caribbean islands. In R. Pasquier, ed., *Conservation of New World Parrots*. Washington DC: Smithsonian Institute Press, ICBP Techn. Publ. 1: 1–6 .
- Patton, T. H. (1966) Occurrence of fossil vertebrates on Cayman Brac, BWI. *Caribbean Journal of Science* 6(3–4): 181.
- Paynter, R. A. Jr (1956) Birds of the Swan Islands. *Wilson Bulletin* 68(2): 103–10.
- Perfit, M. R. and Heezen, B. C. (1978) The geology and evolution of the Cayman Trench. *Bulletin of the Geological Society of America* 89: 1155–74.
- Perfit, M. R. and Williams, E. E. (1989) Geological constraints and biological retrodictions in the evolution of the Caribbean Sea and its islands. In C. A. Woods and P. Baker, eds., *Biogeography of the West Indies: past, present and future*. Gainesville: Sandhill Crane Press: 47–102.
- Peters, J. L. (1921) A review of grackles of the genus

## Important Bird Areas in the United Kingdom Overseas Territories

*Holoquiscalus*. *Auk* 38(3): 435–53.

Peters, J. L. (1926) A review of the races of *Elaenia martinica* (Linne). *Occasional Papers Boston Society of Natural History* 5: 197–202.

Raffaele, H. A., Wiley, J., Garrido, O., Keith, A. and Raffaele, J. A. (1998) *Guide to birds of the West Indies*. New Jersey: Princeton University Press.

Reynard, G. B. (1982) A whisper song of the Stripe-headed Tanager. *Gosse Bird Club Broadsheet* 38: 2–4.

Richards, H. G. (1955) *The geological history of the Cayman Islands*. Notulae Naturae No 2284. Philadelphia: Academic Nat. Sci.

Ricklefs, R. E. and Bermingham, E. (1997) Molecular phylogenetics and conservation in the Caribbean. *El Pitirre* 10(3): 85–92.

Ridgway, R. (1887) Catalogue of a collection of birds made by Mr Chas H. Townsend on islands in the Caribbean Sea and in Honduras. *Proceedings of the United States National Museum* 10: 572–97.

Sauer, J. D. (1982) *Cayman Island seashore vegetation: a study in comparative biogeography*. Geography 25, University of California Press.

Schreiber, E. A., Schreiber, R. W. and Schenk, G. (1996) The Red-footed Booby (*Sula sula*). In A. Poole and F. Gill, eds., *The birds of North America*, no. 241. Philadelphia: Academy of Natural Sciences; Washington DC: American Ornithologists' Union.

Seutin, G., Klein, N. K., Ricklefs, R. E. and Bermingham, E. (1994) Historical biogeography of the bananaquit (*Coereba flaveola*) in the Caribbean region: a mitochondrial DNA assessment. *Evolution* 48(4): 1041–61.

Sharpe, R. B. (1904) Notes on a voyage to the West Indies. *Bulletin of the British Ornithological Society* 14: 63–9.

Sibley, C. G. and Ahlquist, C. G. (1990) *Phylogeny and classification of birds. A study in molecular evolution*. Yale University Press.

Sibley, C. G. and Monroe, B. L. Jr (1990) *Distribution and taxonomy in birds of the world*. Yale University Press.

Spector, D., Notes on birds seen on Grand Cayman, 15 April to 3 June 1987 (personal communication).

Walker, M. R. (1996) The Thick-billed Vireo: a conservation perspective for a West Indian endemic. *El Pitirre* 10(3): 112.

Wetmore, A., Field notes of visits to Grand Cayman, 1972, 1973, 1975. Library of the Smithsonian Institute.

Wiley, J. W. and Wunderle, J. M. (1993) The effects of hurricanes on birds, with special reference to Caribbean islands. *Bird Conservation International* 3: 319–49.

Wingate, D., Field notes from a visit to Grand Cayman, Little Cayman and Cayman Brac, 8–13 May 1984 (personal communication).

Woodroffe, C. D., Stoddart, D. R., Harmon, R. S. and Spencer, T. (1983) Coastal morphology and late Quaternary history, Cayman Islands, West Indies. *Quat. Res* 19: 64–84.



# Appendix 1

## Late Quaternary avian fossils from Cayman (Morgan 1994)

	Grand Cayman	Cayman Brac	Zoogeographic affinities
* <i>Puffinus lherminieri</i>	–	x	indet. <sup>1</sup>
<i>Phaethon lepturus</i>	–	x	indet. <sup>1</sup>
<i>Nycticorax violaceus</i>	–	x	indet. <sup>1</sup>
* <i>Eudocimus c.f. E. albus</i>	x	x	indet. <sup>1</sup>
+ <i>Titanohierax gloveralleni</i>	x	–	indet. <sup>1</sup>
<i>Falco columbarius</i>	–	x	indet. <sup>1</sup>
+ <i>Polyborus creightoni</i>	x	–	indet. <sup>1</sup>
<i>Porphyryula martinica</i>	x	–	indet. <sup>1</sup>
<i>Porzana carolina</i>	–	x	indet. <sup>1</sup>
* <i>Rallus longirostris</i>	x	–	indet. <sup>1</sup>
<i>Charadrius vociferous</i>	–	x	indet. <sup>1</sup>
+ <i>Capella sp.</i>	–	x	indet. <sup>1</sup>
* <i>Columba inorata</i>	–	x	indet. <sup>1</sup>
<i>Columba leucocephala</i>	x	x	indet. <sup>1</sup>
<i>Columbia passerina</i>	–	x	indet. <sup>1</sup>
* <i>Geotrygon c.f. G. chrysis</i>	–	x	Cuba
<i>Leptotila jamaicensis</i>	x	–	Jamaica
<i>Zenaida aurita</i>	x	x	indet. <sup>1</sup>
<i>Amazona leucocephala</i>	–	x	Cuba
<i>Coccyzus minor</i>	–	x	indet. <sup>1</sup>
* <i>Saurothera merlini</i>	x	–	Cuba
* <i>Athene cunicularia</i>	x	x	indet. <sup>1</sup>
<i>Tyto alba</i>	x	x	indet. <sup>1</sup>
<i>Colaptes auratus</i>	–	x <sup>2</sup>	Cuba
<i>Elaenia martinica</i>	–	x	Middle America
<i>Tyrannus caudifasciatus</i>	–	x	indet.
<i>Tyrannus dominicensis</i>	–	x	indet. <sup>1</sup>
* <i>Hirundo fulva</i>	–	x	indet. <sup>1</sup>
* <i>Corvus nasicus</i>	x	–	Cuba
<i>Coereba flaveola</i>	–	x	indet. <sup>1</sup>
* <i>c.f. Icterus sp.</i>	–	x	indet. <sup>1</sup>
<i>Spindalis zena</i>	–	x <sup>2</sup>	indet. <sup>1</sup>
+ <i>Melopyrrha latirostris</i>	–	x	Cuba
<i>Melopyrrha nigra</i>	–	x <sup>2</sup>	Cuba

+ Extinct species.

\* Extinct in Cayman Islands but still survives in Greater Antilles.

1 indet. (indeterminate) zoogeographic affinities cannot be determined because of widespread distribution in the West Indies.

2 Extinct on Cayman Brac but still survives on Grand Cayman.

