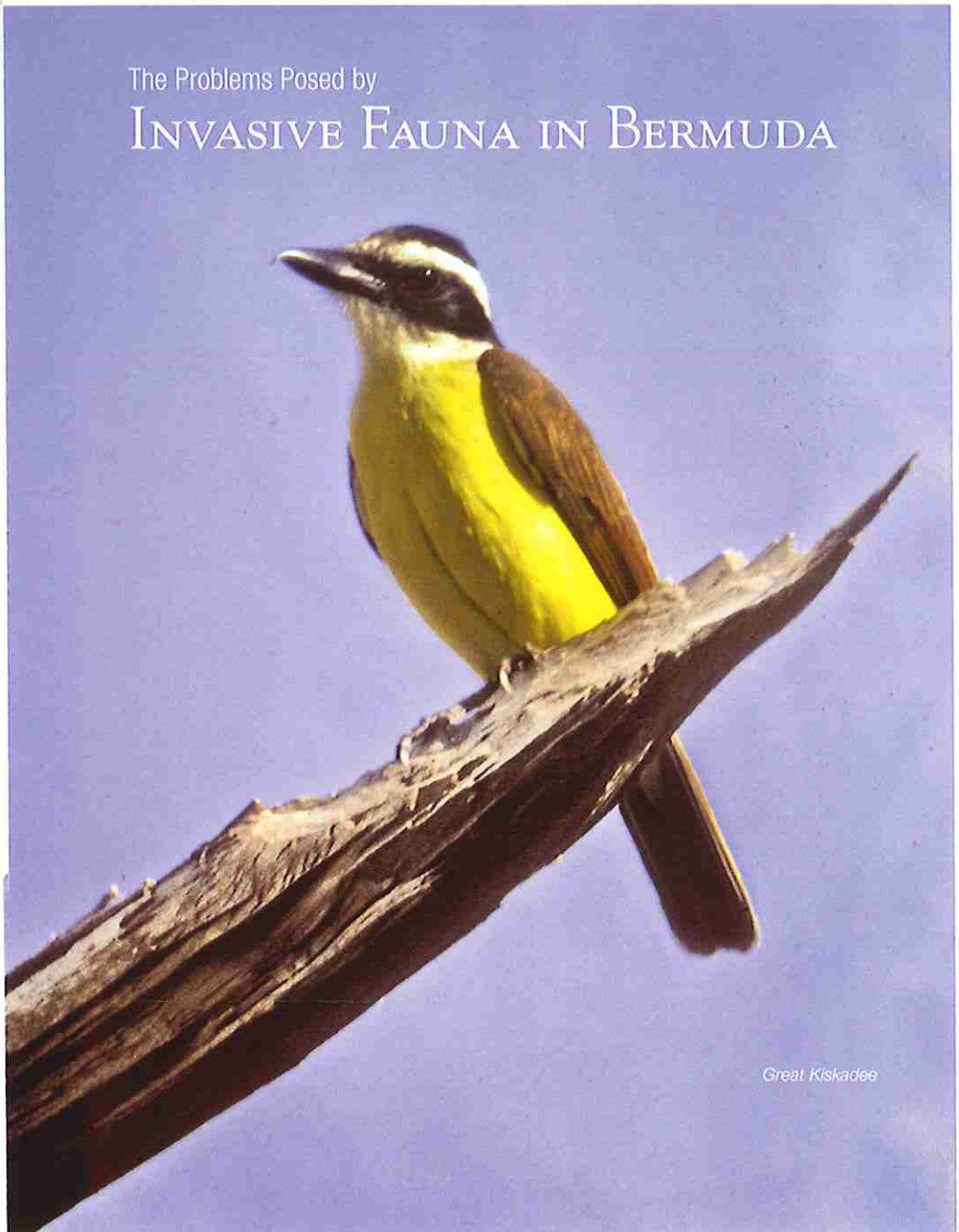
The following article is based on a paper presented by Andrew Dobson at the Society for the Conservation and Study of Caribbean Bird's conference in Tobago (July 2003)

HABITAT LOSS AND INVASIVE SPECIES ARE THE TWO MAIN THREATS TO THE SURVIVAL OF BERMUDA'S BIRDS. SINCE THE FIRST INVASIVES WERE DELIBERATELY INTRODUCED SOME 500 YEARS AGO, INVASIVE SPECIES OF FAUNA AND FLORA HAVE RESULTED IN A DRAMATIC CHANGE IN THE AVIFAUNA OF BERMUDA. TODAY, 94 PERCENT OF VEGETATION COVER IS THE RESULT OF INTRODUCTIONS. WHILE BENEFITING SOME BIRD SPECIES, SEVERAL OF BERMUDA'S NATIVE SPECIES HAVE BEEN SERIOUSLY AFFECTED BY THIS VEGETATION CHANGE. FIFTY PERCENT OF BERMUDA'S BREEDING SPECIES ARE NON-NATIVE, WITH FOUR SPECIES BEING AGGRESSIVE INVASIVES. THIS PAPER CONSIDERS THE PROBLEM OF INVASIVES AND POSSIBLE SOLUTIONS.

The Problems Posed by
INVASIVE FAUNA IN BERMUDA



Great Kiskadee

As far as invasive animals are concerned - humans come at the top of the list – because they are directly or indirectly responsible for all the other invasives that have arrived in Bermuda. Prior to Bermuda's discovery some 500 years ago, the vegetation was dominated by cedar and palmetto forest –the endemic Bermuda Cedar *Juniperus bermudiana* and Bermuda Palmetto *Sabal bermudiana.* Avifauna prior to man's arrival was interesting. Fossil records show that there were a number of species that no longer breed here. These include Short-tailed Albatross (presently breeding in the Pacific) and several extinct species, which may well have been endemic. They included a crane *(Grus latipes)*, a duck *(Anas pachyscelus)*, a heron, a flightless rail *(Rallus ibycus)*, a small flightless rail *(Porzana piercei)*, a large flightless rail *(Rallus recessus)*, a hawk, an owl, a woodpecker and a large-billed passerine. The owl, passerine and also a probable endemic crow were all mentioned by the early settlers. Other native breeding birds have been lost, including Audubon's Shearwater *Puffinus lherminieri*, Roseate Tern *Sterna dougallii* and Least Tern *Sterna antillarum.*

Although Bermuda wasn't settled until 1609, the first settlers found wild hogs on the island, no doubt left as an insurance policy by earlier ships. The first settlers gratefully ate the pigs, virtually all the turtles, almost all the Cahows or Bermuda Petrels *Pterodroma cahow* and other species

A familiar sight in the early 17th century?

of birds. The accompanying rats, cats and dogs put paid to many of the ground-nesting and flightless birds.

Today, there are only 19 species of permanent resident birds, of which 8 are native and the remainder introduced or naturalized. A further three species visit Bermuda to breed:

Cahow (Bermuda Petrel), White-tailed Tropicbird (Longtail) *Phaethon lepturus* and Common Tern *Sterna hirundo*. There are only two endemic species, the Cahow and the White-eyed Vireo *Vireo griseus* (which is considered an endemic sub-species of its North American counterpart). The remaining 348 species, or 94 percent of Bermuda's avifauna are either migrants or vagrants to the island.

Hogs, dogs and rats were amongst the early invasives. The hogs may have gone and dogs are generally under control, but the animal invasives are still a huge problem today. Feral cats are estimated at 10, 000 – or about 500 per sq. mile. The Bermuda Feline Assistance Bureau (BFAB) has established cat-feeding stations around Bermuda and has even received financial support from government. BFAB's intentions may be good (to neuter or spay all wild cats) but a failure to neuter as little as 5% of the population has maintained the feral cat population at its present level for over 10 years. Although the solution would seem obvious, the BFAB versus conservationists debate remains highly emotive.

The island is also over-run with feral chickens and despite the trapping and killing of thousands of chickens – the problem remains. They can decimate large areas of habitat very quickly. Terrapins are the latest invader. Red-eared slider turtles (terrapins) are to be found in every pond in Bermuda, from small ornamental garden ponds to large lakes. Their appearance can be directly linked to the 'Teenage Mutant Ninja Turtles' and the craze to have your own turtle. The terrapins were then abandoned into the wild. The effect on birdlife is as yet unclear. However, their habit of sunning themselves out of the water must pose a threat to nesting waterfowl if they decided to settle on nests. Some of the terrapins are now in excess of a foot in length.

Invasive birds are of considerable concern. Starlings, sparrows, pigeons and kiskadees are invasive and together they accounted for about 60% of all birds recorded on Christmas birds counts. The problem of Feral Pigeons *Columba livia* is worsening. They pose a serious threat is to the tropicbirds. Longtails returning to Bermuda to breed find their cliff nest holes occupied by pigeons. The solution would appear straightforward – a cull of the pigeons. The pigeons congregate on farms where they do considerable damage to crops. The farmers are in support of eliminating the pigeons, but ironically it is the farming practices of feeding grain to cattle outside in the open that attracts so many pigeons. Households and businesses are concerned because they contaminate rooftops that are used for water collection. Culling takes place from time to time, but guns are illegal in Bermuda and a very few people are licenced to shoot. Cannon nets are now being considered.

The Great Kiskadee *Pitangus sulphuratus* was introduced in 1957, now an abundant naturalised breeding bird and an aggressive invasive. Bermuda probably has the highest density of kiskadees anywhere in the world. To understand why it was introduced, one has to go back to the 1940s when a tiny scale insect was accidentally introduced into Bermuda on imported vegetation. The scale insect attacked the endemic Bermuda Cedar, which provided forest cover for much of Bermuda. By the 1950s, about 95% of the cedars were dead. Biological controls were attempted including the Ladybird Beetle. They ate the scale insect but were quickly eaten themselves by the introduced Anolis lizards. The kiskadee was introduced from Trinidad as a biological control to eat the lizards and allow the beetles to do their work. Unfortunately, not only was it far too late in the day but the kiskadees found a lot of other food to their liking other than just lizards. (Ironically, the lizards were brought in as a biological control on the Mediterranean Fruit Fly in 1905!). The kiskadee is now a pest itself. It is a threat to native breeding birds by eating eggs or predating on young. It is worth mentioning that the cedars were replaced with casuarina trees – being fast growing, but they are now an invasive species and a threat to the coastline where they hasten erosion.

The House Sparrow *Passer domesticus* was introduced into Bermuda in 1870 and 1874 in the belief that they would help to control flies in towns! It is the chief threat to the breeding success of the bluebirds as they nest in bluebird boxes and kill bluebirds on the nest. A small number of sparrow traps have had little effect on the sparrow population.

The European Starling *Sternus vulgaris* appeared as a vagrant in Bermuda from the USA. It was introduced into New York City in the 1890. A change in Bermuda's habitat in the 1950s was favourable to colonisation by the starling. Urban development and the creation of closely cut lawns and golf courses were ideal for the starling. First nesting in the early 1950s,

the starling is now super-abundant. It is a pest species as its feeding habitat is in direct competition with the bluebird.

Two pet American Crows *Corvus brachyrhynchos* introduced from Nova Scotia in1838 are thought to be responsible for today's population of crows. They cause damage to crops and affect the breeding success of local birds, including Longtails, by taking their eggs and chicks. Unlike most birds, they are not protected by law and there are periodic culls.

Several pairs of European Goldfinch *Carduelis carduelis* escaped from a shipwrecked steamer in St. George's in 1890. Now an abundant naturalized finch, it would appear to be filling an available niche in the habitat. However, as it is particularly adept at eating the seeds from casuarina cones, it may well be responsible for the spread of casuarinas throughout the island.

So which of our native breeding birds can be helped?

The Cahow recovery programme is a feature of a separate article in the magazine.

The Longtails face the following threats:

•Nests are occupied by invasive feral pigeons.
•Some nest sites are vulnerable to dogs and cats that kill them.
•Breeding sites are being destroyed by house and dock construction.
•Hurricane Fabian in 2003 destroyed many nest sites.

The Bermuda Audubon Society has pioneered the development of artificial nest 'igloos' for Longtails, which have proved to be a great success. Full details of this igloo can be found at www.audubon.bm or Dobson (2002)

Common Terns are an increasingly rare breeding bird in Bermuda. Only about 20 pairs breed, confined to rocky islets in the sheltered sounds and harbours. Plans were in hand to develop artificial floating nesting platforms and nest sites on the old railway bridge supports, however, since the devastation affects of Hurricane Fabian, very few pairs returned in 2004 (see magazine article).

Bermuda is the only location outside North America where the Eastern Bluebird *Sialia sialis* breeds. Threats to its survival are enormous since the bluebird lost its main cedar tree nest site as a result of the cedar blight in the late 1940s and 1950s:

•The invasive House sparrow takes over nestboxes and will kill adult and young birds.
•The invasive European Starling colonised in the 1950s and increased competition for nesting cavity species.
•The invasive Great Kiskadee introduced in 1956 will take young bluebirds.
•There increasing number of invasive feral cats, especially since the introduction of cat feeding stations in the 1990s.
•Bermuda's human population has increased three-fold since 1900 to about 62,000. The resulting ubanisation means there are far fewer open spaces.

However, great efforts have been made to halt the decline in bluebird numbers:

•A nest box scheme has been in place for many years. The campaign was initiated by the Bermuda Audubon Society in the 1950s.
•Workshops and publicity campaigns are regularly mounted.
•Hundreds of bluebird nestboxes have been erected around Bermuda. The boxes keep out starlings but must be monitored constantly to remove sparrows.
•Bluebird boxes have been erected in 'trails' on most of the golf courses.
•A small number of sparrow traps have been used to remove sparrows from bluebird nest-sites.

Full details of the nestbox scheme can be found at www.audubon.bm or Dobson (2002). Other native species of birds such as the Common Mooorhen *Gallinula chloropus,* Common Ground-Dove *Columbina passerina,* White-eyed Vireo and Grey Catbird *Dumetella carolinensis* are all threatened by invasive species of flora and flora. Their best chance of survival lies in the restoration of habitat.

There is a growing environmental awareness in Bermuda – but the main NGOs have a real challenge to educate many sections of society. In the past, organizations like the Bermuda National Trust, Bermuda Audubon Society and Bermuda Zoological Society have tended to work in isolation – but in recent years there has been a desire and eagerness to work together. One of the great successes has been the planning and final launch in 2003 of the Bermuda Biodiversity Strategy and Action Plan, which has involved all sections of the community. Its implementation offers hope for Bermuda's fauna and flora.

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A Birding Photo Diary

Andrew Dobson

Feb 13th 04 - Okay, so its not Bermuda! While attending a conference in Vancouver, this magnificent Great Grey Owl was a real poser, perched in the open during the day.

July 7th 04 - A two-man kayak allowed me to photograph this Green Heron nest in Trott's Pond. With Mark Outerbridge paddling behind, I just tried to keep the camera dry and hope for the best. This species has only bred in Bermuda since 2002. *(no scope)*

When birding in Bermuda, there is always a sense of expectation, because there is always the chance of seeing something unusual. Even though only about 20 species of birds regularly breed in Bermuda, an astonishing 370 species have been recorded here. Many come as deliberate migrants, but most are vagrants, lucky individuals that are fortunate to find our small group of islands isolated in the Atlantic. More than 200 species are recorded in an average year. Shooting birds in order to identify them is hopefully a thing of the past. Shooting with a camera is not only an aid to identification but immensely satisfying in maintaining a record of one's own sightings. Now that we have digital cameras, bird photography has grown tremendously as you can take as many shots as you like and just keep the best. At the moment I have yet to make the complete switch. I still have my trusted Nikon SLR for colour slides, but am increasingly taking digital images with my digital Nikon Coolpix 4500 that has a special attachment to my telescope. If I am birding with my telescope, then there is no effort in carrying a digital camera on my belt. Lugging around a camera and also lenses becomes a little cumbersome. No doubt the complete switch will come as the Bermuda mold on the lens takes over!

The following photos show just a sample of the birds that I have photographed over the past twelve months. Every picture invariably has a story to go with it. All were digital photos taken through the telescope, unless otherwise indicated.

A. Jan 14th 04 - Up to three Northern Gannets appeared in Bermuda waters during the winter – a record! This immature bird ended up in rehab at BAMZ, but was successfully released into the wild, remaining into June! *(no scope)*

B. Nov 28th 03 - Deciding to check the small pond at Cloverdale, I was amazed to find this Tundra Swan, only the fourth to be recorded in Bermuda. On such a small body of water, it was possible to photograph from a few metres. *(no scope)*

C. Feb 1st 04 - Canada Geese may get a bad press on the continent with hoards of them roaming in urban parks. The occasional one in Bermuda is the genuine thing! This one hung out with the mallards on Jubilee Road. *(colour slide)*

D. Jan 18th 04 - The winter will be remembered for the influx of Common Redpolls. These small finches were part of a flock of 30 birds in arable fields at Shelly Hall.

E. Mar 19th 04 - This Glossy Ibis spent the winter at Kindley Field, often hidden in the mangroves. It probes for food with its sickle-shaped bill.

A. Apr 3rd 04 - A vacation to Florida – to explore the Everglades. This bird was unexpected, a Crested Caracara near Corkscrew Swamp. When it came up from the ground with a snake, I couldn't believe my luck.
(colour slide)

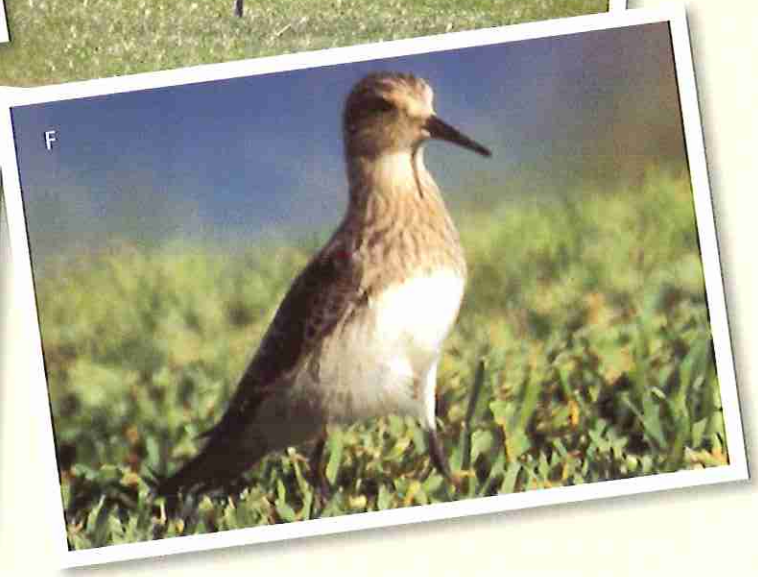
B. Apr 3rd 04 - Limpkins are always hoped for in Corkscrew Swamp, and this one duly obliged. This species is in a family by itself with no close relatives.

C. Apr 26th 04 - Perhaps my favourite shorebird, with its strangely proportional head. Rarely seen in spring, this Upland Sandpiper was discovered by David Wingate at East End Dairy where it remained for several days.

D. Apr 29th 04 - When young Audubon member Bertie Horsfield said he was convinced he had a male Scarlet Tanager in his garden at Tamarind Vale, I was certainly armed with a camera, especially as I had never seen one in its splendid spring plumage.

E. May 4th 04 - On 1st May, Paul Watson found a new species for Bermuda, a California Gull - in the wrong ocean! Spending its time on the outer arm at Dockyard, this was the best I could do from 250 metres in 20 knots of wind. But at least I have a record shot!

F. May 15th 04 - I never get tired of seeing something as spectacular as a Black-necked Stilt. This one at Spittal Pond is typical of many that 'overshoot' in the spring and arrive too far north.



A. May 16th 04 - A potential 'first' for Bermuda. This heron was thought to be a Great Blue Heron rather than the Old World counterpart Grey Heron, despite its lack of rufous plumage. Thank goodness for digital cameras, having taken hundreds of shots of this bird across Spittal Pond.

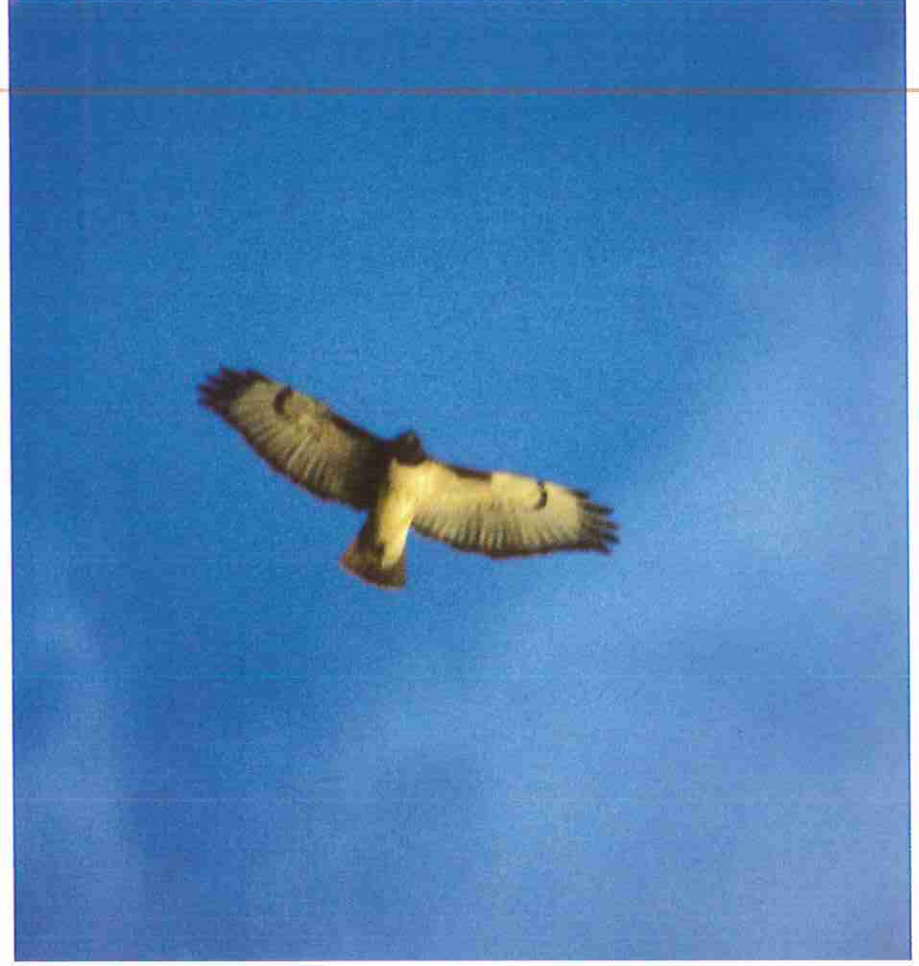
B. Aug 27th 04 - An adult Yellow-crowned Night-Heron at Spittal Pond where I have seen up to 30 birds roosting in the winter. *(colour slide)*

C. May 22nd 04 - This Little Egret, only the third for Bermuda was somewhat elusive in the East End. Eventually I managed to photo it at Spittal Pond. Very similar to the Snowy Egret, it comes from the Old World.

D. Sept 18th 04 - I went to watch a game of cricket at the National Stadium. Spectators must have assumed I was taking photos of the players rather than these handsome American Golden-Plovers.

E. June 10th 04 - An unforgettable experience in seeing my first Cahow on Nonsuch Island. One of the translocated chicks and only a day or so from departing. *(no scope)*

F. Sept 23rd 04 - With the intention of taking photos of the coastline at Astwood Park, I was surprised to find a rare Baird's Sandpiper feeding actively on the cliff top. This was the second of the fall. *(colour slide)*



The enigmatic status of the Red-tailed Hawk in Bermuda:

was it once resident and is history about to repeat itself?

David B. Wingate

The ornithological history of Bermuda includes a number of records suggesting that the Red-tailed Hawk *Buteo jamaicensis* was once a resident breeding species. Fossil bird bones of Holocene age that I collected from soil talus in the Walsingham caves include at least one bone attributable to the genus Buteo, albeit smaller than B. *jamaicensis*, according to Storrs Olson of the Smithsonian Institution (Olson, in litt.). William Strachey, in his narrative of the Sea Venture shipwreck and marooning on Bermuda 1609-10, (Lefroy, 1877) mentioned *"Hawkes, of which we found divers ayres"*. John T. Bartram, in his Commentarium, written between 1860 and 1878, and first published in the Bermuda Historical Quarterly Magazine (Wingate, 1965), was referring to the Red-tailed Hawk under the mistaken name Square-tailed Kite *Falco Mississippiensis, when he wrote the following: "Several of those birds has made there appearance here from time to time within the last six or seven years back, it has been said that a pair took up their aboad in the clefts by Harrenton sound and realey bred there one year, whether true or not I cannot say, but I was told by a gentleman that he saw the old bird upon the nest more than once, and threw stones at her, it was in such a situation that he could not get at it to see being on the face of the cleft on a projecting ledge. I saw one on Cribs island that is at the South Side of St. David's isle, in November 1860, and I had a long shot at it on the wing and it dropt a half grown chicken with the head, neck and breast gone, thay have been seen to attact full grown fowls and even turkeys, I have one that was shot at Baylies-bay on the 19th of November 1861 there was but one shot in her bodey and that was lodged in the upper joint of the thigh bone, and when the young man picked her up, he held her by the points of her wings when she seised him by the lower jaw and it was as much as two men could do to break her hold and set the man at liberty, thay then opened her bill and thrusted a knife in the roof of her mouth, and out the crown of her head, but could not kill her, and three or for hours afterwards she was brought to me, and to all appearance as well as if nothing had ever happened unto her, she is 22 inches in length from end of bill to end of tail, and is four feet three inches in exstent of wing....* Bartram goes on to provide a detailed plumage description which confirms the identity as a Red-tailed Hawk beyond doubt, and he ends by stating that: *"the stomuck a strong muscular sack had in it five mice, and the weight of the bird was two and a halfe pounds, and is a female"*. Another specimen in Bartram's collection, No. 290, was collected after 1878, as recorded in his handwritten catalogue after the main catalogue was published in 1875. (Wingate, 1965)

Bartram's account was later supported by Saville Reid (Reid, 1884), who wrote under the heading of Red-tailed Hawk on p. 220-221: *"Mr. Bartram has one specimen, an adult, with fine chestnut tail, shot at Bayli's bay, about twelve years ago, by a man named Hollis, who is still residing in the islands. About the same time a nest of this buzzard containing young is said to have been found in the cliffs of Harrington sound, but what became of this nest and its occupants history saith not. I see no reason to doubt the story, especially as it is corroborated by a genuine specimen of the bird; but I unfortunately did not see the man Hollis, as I meant to have done. Large hawks are mentioned as common in Bermuda by the old historians, and this species may have once been resident and numerous. The high cliffs on the north side of Harrington sound offer great attractions to raptorial birds, in default of large timber, for nesting, and this species is known to breed in Jamaica"*.

Harold Bowdich (1904) reports a hawk, probably Buteo, as seen by several persons in July 1903, and Louis L. Mowbray shot a female specimen on Cooper's Island on 14 February 1909. Lastly, Dr. William Beebe saw one on Nonsuch Island on 16 March 1929. These last two records are in Bradlee, Mowbray and Eaton, (1931).

Despite this obvious frequency of records into the early 20th century, I was disappointed never to have obtained a record during the greater part of my ornithological career on Bermuda between 1950 and 2000, although Eric Amos was fortunate enough to record a spring vagrant Red-tail over Luke's Farm, Southampton on 1 May 1983 (Amos, 1991). I could only conclude that the Red-tailed Hawk, like most Buteos which depend on thermals over land for migrating, was at best a rare vagrant to Bermuda, and that the frequency of records before my time could only be explained by assuming the existence of a small resident population that ultimately died out. Imagine my delight, when after fifty years of waiting, I finally encountered my first personal Bermuda record of a Red-tail at Highpoint Cliffs, Southampton, while prospecting the walk route for a Bermuda Audubon field trip on 25 November 2001. Many members of the society, including most of the keen birders, got to see that bird during that fieldtrip. Unlike the Amos record, this bird was obviously a fall vagrant and we fully expected it to remain for the winter, which it did. What we didn't anticipate, however, was just how difficult it was going to be to re-locate, and how long it was going to end up staying. Every time we had more or less concluded that it must have departed or died, one of the birders would sight it again, either over Southampton or among the islands of Hamilton Harbour.

By the summer of 2003, it was obvious that this Red-tail had decided to settle permanently on Bermuda, and that the seclusion of the Hamilton Harbour islands in combination with the reverting wilderness of Morgan's Point following the closing of the American military bases, were providing all the requirements for its survival. Enter a second Buteo record at Morgan's Point late in the fall of 2003! This bird was recorded by Eric Amos during the annual Christmas bird count on 14 December 2003. His brief observation was only sufficient to confirm that it was a Buteo, but definitely different from the original one (which was recorded elsewhere on the bird count). Subsequent sightings by Paul Watson and Andrew Dobson eventually confirmed that it was another Red-tailed Hawk, much paler in plumage than the first. It wasn't until 20 March 2004, however, that the two hawks were first seen flying together by Andrew Dobson, suggesting that they were different sexes and coming together as a pair. They have continued cosily together ever since, and can now often be observed from the ferry stop at Somerset Bridge, soaring or hovering motionless over the dense casuarina forest of the old Naval Annex dumpsite which was originally a munitions storage depot during the Second World War.

It has finally begun to dawn on me that a most incredible combination of events has coincided to make it possible that Red- tailed Hawks could begin breeding on Bermuda again. Consider this: What was the likelihood that two records of such a rare vagrant should overlap, and that they should just happen to be of opposite sex? Who could have predicted that the once intensely garrisoned US Naval Annex would be abandoned and revert to a 250-acre wilderness since 1995, providing sufficient habitat for a nesting territory for Red-tails, no matter how temporary this may prove to be? And who could have predicted that the invasive casuarina, now abundant on Morgan's Point, would provide the "large timber" referred to by Saville Reid as probably necessary for Red-tails to nest in, or that Hurricane Fabian would fell a lot of these trees to block the network of roads on the former base, making it temporarily even more inaccessible to humans and an even more secluded wilderness for the hawks! In consideration of the fact that Red-tails, although primarily rodent eaters, will also take free-roaming poultry, who could have predicted that the domestic chicken was going to become feral and abundant on Bermuda, providing another source of prey? Given the nuisance problem that feral chickens are causing, a re-colonization by Red-tails could be the best thing that has happened since the colonization of the barn owl as a rodent predator in the early 20th century! If nothing else, this evolving scenario makes a powerful statement about the resilience of nature in an increasingly human-dominated world.

For those who have not already seen it, there is a marvelous documentary on DVD entitled "Pale Male", about a pale plumaged Red-tailed Hawk that colonized New York City's Central Park and subsequently attracted a mate and began nesting on the most exclusive of all residential apartment buildings on the edge of the park. It is tempting to fantasize that the pale Red-tail that arrived here in 2003 might be the offspring of that pair. After all, where else would the children of a resident of the most exclusive apartment building in New York be likely to establish an exclusive winter home but in Bermuda. Move over, Mayor Bloomberg, you are not alone!

(The two local Red-tailed Hawks were still frequenting Morgan's Point and the Paradise Lakes area in late November. Ed.)

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. ~Aldo Leopold, A Sand County Almanac

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Bermuda Bird Report
Fall 2004 (July to November)

Andrew Dobson

The fall period in Bermuda starts in July, with the first shorebirds heading south, and continues through to November with ducks and sparrows. All observers agree that this has been a very poor year in terms of total numbers of birds seen. Although weather systems were not favourable over Bermuda for much of the peak migration period, alarm bells have been sounding for some time on the North American continent for the decline in breeding birds. Nevertheless, a large variety of birds was recorded in Bermuda this fall.

Top: Jeremy Madeiros with adult Cahow.
Left: Common Nighthawk
Bottom: Latest news! Eric Amos discovered Bermuda's first Kirtland's Warbler at Hog Bay Park during the annual Christmas Bird Count on 18 Dec. The estimated 1,200 breeding pairs of Kirtland's Warbler are restricted to Jack Pine plantations in central Michigan. It is only known to winter in the Bahamas. The photo is a still from Eric's video footage.

Petrels to Rails

The first Cahow returned 14 Oct (JM). About 16 Cahows were seen from Cooper's Point late afternoon 3 Nov (AD, PH). An adult Red-billed Tropicbird was seen at Nonsuch Is. 21 Jul (JM), possibly the same bird as in 2001 and 2003. Double-crested Cormorants were not noted until 25 Oct (EA). An American Bittern was at Seymour's Pond 3 Nov (EA). The long-staying Little Egret was at the Causeway 30 Sept (EA). A Canada Goose seen over St.David's 4 Oct (GA) settled at Outerlea Dairy. A male Eurasian Wigeon joined American Wigeons at Spittal Pond 25 Oct (EA). A flock of 12 Ring-necked Ducks was on Parsons Road Pond 1 Nov (DW). Two Lesser Scaup females were at Princess GC Pond and Warwick Pond 22 Aug (EA). A summering Hooded Merganser remained into the fall. October birds of prey included at least two Ospreys and four or five Peregrine Falcons. Northern Harrier and American Kestrel were at Southside, St.David's 20 Aug (EA). The two 'resident' Red-tailed Hawks were present until at least 21 Nov when seen near Paradise Lakes (NB). A Virginia Rail was taken into captivity at BAMZ 8 Nov (JG).

Shorebirds to Terns

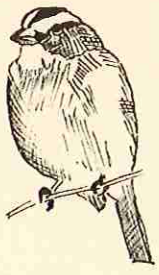
Summering Black-necked Stilts remained to 23 Jul (EA). The shorebird passage was not as dramatic as in some years, although a big fall of shorebirds 8 Aug provided impressive numbers for some species: Semipalmated Plover (40) at the Airport (PW); Lesser Yellowlegs (142); Solitary Sandpiper (100) – a record; Willets (4); Semipalmated Sandpiper (more than 300 island-wide); Least Sandpiper (more than 300 island-wide) – a record; and Pectoral Sandpiper (133) – a record, including 94 at one Airport rainpool). Other notable shorebird sightings included: Western Sandpiper 19 Jul (DBW), Baird's Sandpiper 12 to 13 Sept at East End Dairy (DBW) and another 23 to 26 Sept at Astwood Park (AD), Curlew Sandpiper at Spittal Pond 17 Oct (AD), and a Ruff at Riddell's Bay GC 16 Aug (EA). A Black-headed Gull 29 Oct to 17 Nov was first seen in Castle Harbour (DBW). Most other gulls, including Lesser Black-backed, arrived from late Sept. A Roseate Tern was in Castle Harbour 10 Jul & 21 Jul (DW, JM). A Black Tern was seen off Cambridge Beaches 29 Sept (PW).

Nighthawks to Swallows

A flock of six Common Nighthawks was over Belmont Hills GC 17 Oct (AD). A Ruby-throated Hummingbird was a lucky find at Stokes Point NR 27 Sept to 15 Oct (AD), while a second was well seen in Jenningsland 11 Nov (per JM). Yellow-bellied Sapsuckers were noted in a number of locations in the late fall. Northern Flicker was calling loudly at Port Royal GC 29 to 22 Nov (DW). It has been a good year for flycatcher records. More than a dozen Eastern Wood-Pewees were scattered widely. Amongst the empidonax species, there was one Yellow-bellied Flycatcher 17 to 21 Oct at Coral Beach Club (DW) and single Acadian Flycatchers at Ferry Point 16 to 18 Oct (AD) and Hog Bay Park 18 Oct (AD). A Great Crested Flycatcher remained at Stokes Point Reserve 26 Sept to 3 Oct (DBW). A Yellow-throated Vireo was at Coral Beach Club 17 Oct (DW), while a Blue-headed Vireo was in Walsingham Jungle 15 Oct (JM). The number of swallows has been disappointing. A Northern Rough-winged Swallow was at Wreck Road 5 Oct (EA, DW). A late Bank Swallow was over Daniel's Head Farm 6 Nov (AD, DBW).

Nuthatch to Buntings

A rare Red-breasted Nuthatch was video-taped at Fort Scaur 16 to 17 Oct (EA). Single Golden-crowned Kinglets were at Fort Scaur 13 Oct (DW) and the Arboretum 16 Nov (DW). Thrushes are now so scarce that it will soon be possible to record all sightings in the report. An early American Robin was at Port Royal GC 16 Oct (DW). A Northern Mockingbird was a surprise at Spittal Pond 17 Oct (DBW). An American Pipit was seen at the Airport 3 Nov (PW). Although 35 warbler species have been recorded this fall, their numbers have been depressingly low. Individual Golden-winged Warblers were reported, at Cemetery Hill 16 Oct (AD) and Riddell's Bay GC 30 Oct (DW). A smattering of migrant sparrow species arrived in October, including five White-throated Sparrows *(see illustration, right)* at Ferry Point. A Snow Bunting was on Horn Rock 30 Oct (JM). Indigo Buntings have been very common, with one flock containing about 150 birds at Heydon Trust 18 Oct (DW). Bermuda's third Eastern Meadowlark was seen at Ferry Point 24 Nov (GH), the first since 1976!



Observers:

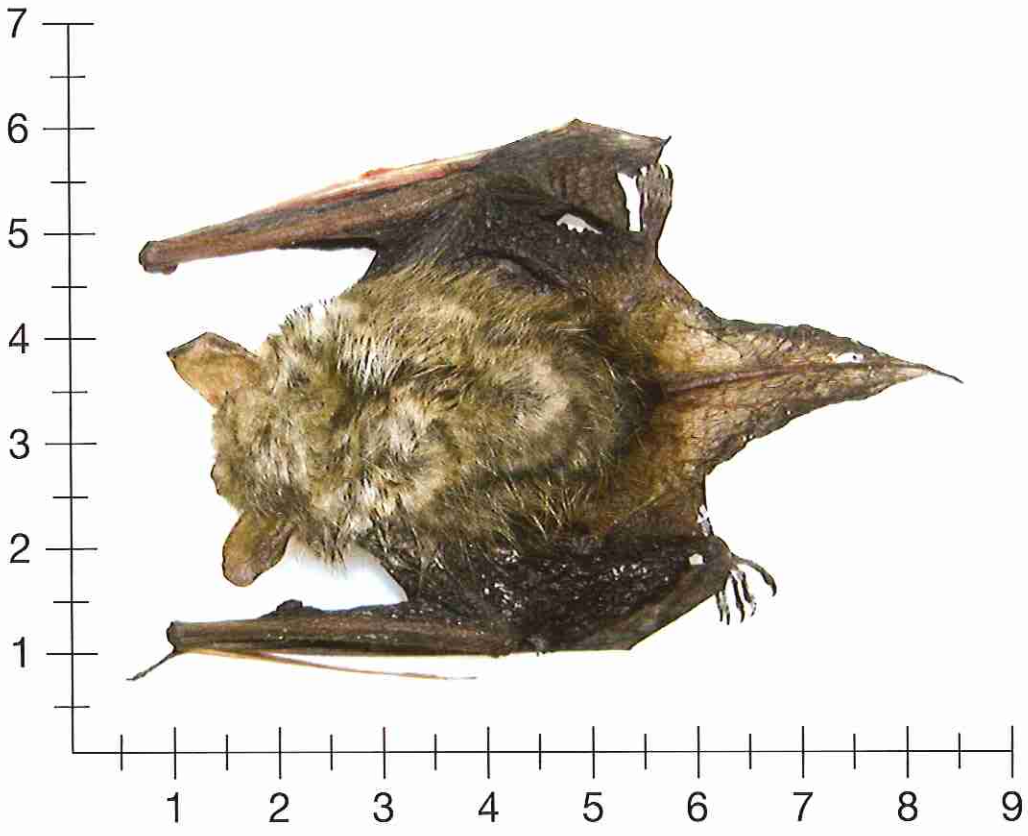
Eric Amos, Gerry Ardis, Nicholas Barton, Andrew Dobson, Wendy Frith, Jennifer Gray, Gene Harvey, Peter Hopkin, Jeremy Madeiros, David Wallace (DW), Paul Watson, David Wingate (DBW).

A New Bat Species for Bermuda

David B. Wingate

At 5.00 pm on 5 Nov Ricky Sousa found a tiny bat roosting under the mudguard of his moped which had been parked in a valley just east of Bailey's bay overnight and all day on the 5th. He captured it and took it to BAMZ, noting that its wing membrane was somewhat tattered making it unlikely to be able to fly. It died in the zoo at BAMZ on 7 Nov and I got to examine this specimen today and prepared it as a study skin. It weighed only 4.4 gms and proved to be a new record for Bermuda, an Eastern Pipistrelle *Pipistrellus subflavus*, almost the smallest species in North America. This is a cave roosting and hibernating species and not known to migrate extensively, so its occurrence in Bermuda is unexpected. Moreover, we cannot say that it made the crossing on its own because bats are known to come aboard ships in transit to Bermuda and fly ashore at night after the ships dock here. I would venture to guess that this is the most likely explanation for its occurrence and indeed it might even have been on a ship before it left dock in America. The only other non-migratory and hibernating bat recorded from Bermuda was a single Big Brown Bat *Eptesicus fuscus* which arrived aboard a container ship in a container on 6 Nov 1989 and was likewise preserved as a study skin and now on public display with all four of our regularly visiting forest roosting and migratory bat species in the BAMZ museum. It is intriguing to think that very small bat seen on 4 Nov by Eric Amos might have been another Pipistrelle, thus I urge all birders to keep an eye out for any bats in the evenings and report them to me as I have been documenting records over many years. On 30 May 1975, I even obtained a baby bat, too young to fly, believed to be a Hoary Bat Lasiurus cinereus, which had to have been born on Bermuda. I am convinced there is still much to learn about these hard to find creatures in Bermuda and other potential new records are out there waiting for us to find them!

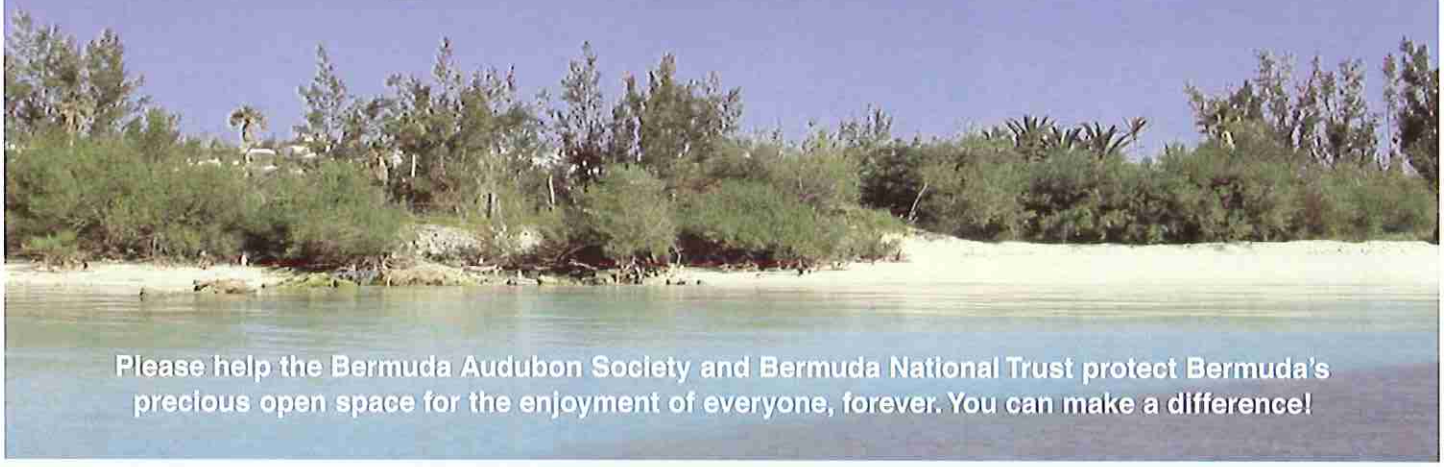
Steve Rodwell also reported a very small bat 'probably Pipistrelle' in the fall of 2003 – (Ed.)



(scale in centimetres)

The passage of time and development pressures have seen our Island's legacy of natural open space come under threat. In Bermuda, where new prospects for protecting open space are rare, the Bermuda Audubon Society and Bermuda National Trust are working hard to preserve the Island we all love. We plan to buy 2.86 acres of unspoiled open space at Long Bay, Sandys, which otherwise may be lost to future generations. Please help us: see details overleaf

Buy Back Bermuda



Please help the Bermuda Audubon Society and Bermuda National Trust protect Bermuda's precious open space for the enjoyment of everyone, forever. You can make a difference!

THE CAMPAIGN TO BUY BACK BERMUDA

Bermuda National Trust

The Trust is a non-profit registered charity, founded in 1969 for the preservation of Bermuda's historic and environmental heritage. In its care are 76 properties, covering 250 acres and representing much of the best of Bermuda's heritage — historic buildings, islands, gardens, cemeteries, nature reserves and coastline. The Trust has a strong education programme, focused on encouraging an appreciation of our history and what it means to our future.

Bermuda National Trust
P.O. Box HM 61
Hamilton HM AX
Bermuda
Tel. (441) 236-6483
Fax. (441) 236-0617
Email: palmetto@bnt.bm
Website: www.bnt.bm

Bermuda Audubon Society

The Bermuda Audubon Society is a non-profit registered charity, founded in 1954. The Society, run by an Executive Committee of volunteers, was established to educate and raise public awareness of the need to protect Bermuda's wildlife and natural environment. The Society works closely with other conservation agencies and private associations to achieve these goals.

The Bermuda Audubon Society
P.O. Box HM 1328
Hamilton HM FX
Bermuda
Email: info@audubon.bm
Website: www.audubon.bm


The pond

Buy Back Bermuda

You can help save Bermuda's natural heritage for everyone, forever.

In Sandys Parish lies 2.86 acres of unspoiled open space. Located next to an Audubon Nature Reserve and National Park, the property features a freshwater pond, woodlands, grassland and beachfront which provide a diverse range of habitats for local wildlife. This is truly a piece of Bermuda worth saving.

Locator map © Works & Engineering. All rights reserved

MAKING A DIFFERENCE

The **Buy Back Bermuda** campaign is a joint initiative by the Bermuda Audubon Society and the Bermuda National Trust to purchase and safeguard this significant property. The addition of the land to the National Park and Audubon Reserve will create an extended protected area of nearly 10 acres. The beach, woodland and pond will provide a retreat for both residents and visitors, and a sanctuary for local and migratory birds.

YOUR CONTRIBUTION MATTERS

The **Buy Back Bermuda** campaign must raise $1.7m to buy and protect this significant land for the long term. Together, the Trust and Audubon have contributed $300,000 to the campaign. Your contribution will go a long way towards raising the additional funds necessary to purchase this property.


View looking west from the site

A PLAQUE RECORDING THE NAMES OF THOSE WHO MAKE A DONATION WILL BE ERECTED AT THE SITE IN APPRECIATION OF THEIR CONTRIBUTION — A LASTING REMINDER OF YOUR COMMITMENT TO PROTECT OUR NATURAL HERITAGE

Buy Back Bermuda

YES, I WILL HELP BUY BACK BERMUDA

One-Time Donation
I wish to support the Buy Back Bermuda Appeal with a one-time donation of:

❑ $20 ❑ $50 ❑ $100 ❑ $150 ❑ $200 ❑ $500
❑ $1,000 ❑ $10,000 ❑ $20,000 ❑ Other $ _____

Two-year Pledge
I wish to make a donation of (2004) $ _____
(2005) $ _____

Company name _____
Title & Name _____
Address _____
_____ Postal Code _____
Phone (day) _____ (evening) _____
Email _____

Payment Methods
a) Cheque: in $BDA or $US, payable to **Buy Back Bermuda**, P.O. Box HM 61, Hamilton HM AX, Bermuda

b) Credit Card
❑ Visa ❑ MasterCard ❑ EasyLink

Card number _____
Expiry Date (mm/yy) _____
Card Holder's Name _____
Authorised payment amount $ _____
Signature _____

Donor's name as it should appear on plaque
_____

❑ I do not wish for my name to be made public

For more information, contact Marnsae Parker (441) 236-6483 or email: marnsae@bnt.bm

THANK YOU

I am delighted with the Society's commitment to this film about the restoration of Nonsuch Island and the remarkable story of the Cahow. Included in the story will be the re-introduction of the Yellow-crowned Night-Heron, the translocation of the endemic White-eyed Vireo, challenges facing the tropicbird, and the 45 years of the Cahow conservation project. I have spent the last four years preparing for its creation and am passionate about telling the success of conservation in Bermuda. The purpose of the film is to educate Bermudians, visitors to Bermuda, and the vast international natural history audience about this extraordinary story. It will teach people that they can make a difference in the world (as Dr. David Wingate and Jeremy Madeiros have) and create an international awareness to a uniquely Bermudian story.

Bermuda's Treasure Island

Deirdre Brennan

To ensure that this is the finest film possible, I have retained the acclaimed Irish wildlife filmmaker, Eamon de Buitlear and his team. The combination of this extraordinary story and Eamon's prominence in Europe will give the finished piece a meaningful presence at international film festivals as well as high visibility with broadcasters. The credibility of a veteran filmmaker will dramatically increase the exposure of the story well beyond Bermuda's shores.

Eamon de Buitlear has been called the 'David Attenborough' of Ireland. He has filmed and produced wildlife documentaries for over forty years for Irish television, RTE (the Irish national station) and TG4, the BBC and National Geographic. His films on Ireland for the BBC Natural History Unit have been seen coast to coast in the USA, Canada, Australia, and New Zealand. Eamon de Buitlear was also the past president of Birdwatch Ireland. He will direct the film. Cian de Buitlear, Director of Photography, has worked on natural history films and documentaries with his father for 20 years. He has worked on feature films in Ireland winning several awards. Cian shot all the underwater sequences for *Saving Private Ryan*, which won an Academy Award for cinematography. The sound recordist, Brendan Deasey, has worked on documentaries, commercials and feature films including *The Tailor of Panama* starring Pierce Brosnan, *The Count of Monte Cristo*, a Disney production, and *Intermission*, released internationally this summer. I am a twice Emmy nominated designer for television. I have worked for ten years in theatre, film, and television. Film credits include You've Got Mail, starring Tom Hanks and Meg Ryan and The Imposters, directed by Stanley Tucci and starring Isabella Rossellini.

The team was in Bermuda this past May to begin filming. The shoot was a great success and the team was able to capture extraordinary footage of Cahows never caught before on film. I am very pleased with what we were able to accomplish in our first days of filming.

We look forward to returning to Bermuda for several times over the next year to complete the film.

My personal commitment to the film is significant. I have financed the film through its first shoot in May if this year. Along with logistical support, the Society is helping to raise the balance of the financing and will in turn benefit from any profits of the film. The Audubon Society will have use of the film for educational purposes. All Audubon members are invited to join in support of a film that is ultimately your film. There are many different levels of support: details are available through the president of Audubon. I ask that you consider being a part of this project for Audubon's banner year.

Bermuda's Treasure Island is way to celebrate the 50th anniversary of the Bermuda Audubon Society and to honor the commitment your organization has shown for the Cahow Recovery Program. I am honored to be a part of your efforts on behalf of Bermuda's birds, wildlife, and the natural habitats that support them.

The Society would like to thank those organisations that have already agreed to become sponsors for the documentary – American International Group, ChevronTexaco International, Butterfield & Vallis (Barbour Holdings), Capital G, Dept. of Conservation Services, Goslings Ltd , Ministry of the Environment, Orbis Investment Management, Platinum Underwriters Ltd., and Starr International Charitable Trust. Any other persons or businesses who would like to become sponsors are invited to contact the Society at info@audubon.bm or write to P.O. Box HM 1328, Hamilton HM FX.

The 'Cliff Walk'

Fiona Doe

Coral Beach property becomes the Alfred Blackburn Smith Nature Reserve. 1993 – 2004

"There is a part of this property that we are going to manage as a conservation site. It is over 20 acres of almost untouched coastal hillside". I was told this in 1993 by my new employer, David Wallace, the horticulturist for the Coral Beach Club, and so began a ten-year (and counting) experience with a fantastic piece of Bermuda's natural environment. I was working at Coral Beach as an assistant horticulturist, and David gave me the task to go out to the 'Cliff Walk' as it was known, every Monday, to begin to cull out invasive plants and replant with natives and endemics.

We had started with a good walk through of the area, with David Wingate providing guidance, from the developed section of Coral Beach, west across the unspoiled coastal hillside to the boundary with the Surfside Club. What an experience! Here was a massive chunk, by Bermuda standards, of wild Bermuda, almost unspoiled, a fantastic representation of coastal hillside. There were swathes of seaside golden-rod *Solidago sempivirens* nodding in the shade of casuarinas, groves of baygrape *Cocos nucifera* sculpted by the wind, isolated pockets of the rare box brier *Randia aculiata* lurking next to the path, Jamaica dogwood *Dodonaea jamaicensis* claiming pioneers rights, an abundance of Bermudiana *Sysrinchium bermudiana* carpeting the ground, Bermuda cedars *Juniperus bermudiana* struggling for a comeback against the wind, and wax myrtle Myrica cerifere showing off at the crest of the hill. Not a house to be seen, barely an engine to be heard, small birds twittering and flitting through the trees, longtails soaring out from the cliffs, the muffled thump of waves, the wind a constant companion ruffling the water, the grass, the trees. Sounds perfect, but wait, the casuarinas Casuarina equisetifolia are shading out those cedars and threaten to topple and crush anything below; Brazil pepper *Schinus terebinthifolius*, though yellow and fairly small, is gradually increasing in abundance; asparagus fern *Asparagus densiflorus* is attempting to claim the understorey; the odd oleander is beginning to spread its progeny; and on the backslope of the hill, massive fiddlewoods and more casuarinas, and a whole host of small introduced herbs and shrubs.

What was to be done? In its simplest form, begin to remove the invasives and replant with natives and endemics. But we couldn't just clear cut, the casuarinas were helping to support migratory and resident birds, as well as being a windbreak for smaller plants and the back slope of the hill was cloaked in secondary forest, a delight of shade and peace. It would have to be done carefully, and would take many years.

Once we had been shown the site, David would discuss with us which casuarinas were to come down, and where we would plant new cedars, snowberry, palmettos and several extremely rare yellow wood trees. What a way to make Mondays a joy to go to work! Off we would go, wheelbarrows laden with chainsaws, hoes, plants and buckets of water. The saw would roar, down comes a casuarina (with bets on exactly where it would fall). Silence returns, then punctuated by the sound of a hoe chopping a hole in the ground, the scrape of a cedar or palmetto coming out of its pot, a thud as it goes in the hole and the shifting of sand and soil and gurgle of water as we settle it into the ground.

How many times has this scenario been repeated? I can't say for sure. Since my time as an employee at Coral Beach, I have returned to the 'Cliff Walk' and continued the work in different forms and with different people. I became a teacher at the College and one of my courses was on chainsaw operation. I would bring the group of students and show them the walk as I had been shown, pointing out to them the natives and endemics, and the invasives that were threatening and causing harm. Although the course was purely in techniques to safely fell trees, what an opportunity to have several positive outcomes, assist in the removal of large and bulky casuarinas, and infuse a bit of conservation ethic in folks who had never had the opportunity before.

I also went back to the 'Cliff Walk' with youth groups such as the Youth Environmental Conferences, and BZS Junior Volunteers who were coming out to the site on fieldtrips and workshops. Again, the charm and uniqueness of the site was passed on with the first walk through, pointing out the special features, plants and views and encouraging them to 'just be quiet and listen'. And not just a dry guided walk, in every case they left the place better than they found it, participating in culling activities, pulling up small casuarinas, bashing pepper groves and then planting their own cedars, palmettos, sophoras and randias. I hope they come back to visit them too!

Each time I return to the 'Cliff Walk', I visit those plants I put in 10 years ago. They are growing well, cedars are ten feet tall, palmettos are starting their upward growth, snowberries are carpeting the ground, they are a reminder of what is possible.

In 2002 the 'Cliff Walk' formally became what it always had been to so many, a nature reserve, preserved for perpetuity as a fine sample of coastal hillside, when Mrs. Elfrida Chappell donated 8.2 acres to the Audubon Society, to be called the 'Alfred Blackburn Smith Nature Reserve' (ABS) in memory of her father. The ABS Reserve will now have a proper management plan, it has been mapped and surveyed, and we can move forward with greater purpose with the removal of invasives and restoration of the overall habitat.

For me it was the crowning moment for a piece of Bermuda I had come to love, safe to do for others what it has done for me for 10 years, it gave me a reason to be involved in conservation, a tangible, measurable example of what can be done over time to preserve and restore our precious natural environment.

Postscript
'Fabian' 2003. The damage was restricted to windblown and shattered casuarinas. Several medium sized trees had blown across the main path and pulled up large chunks of rock and soil in their rootballs. These trees were severed and made safe, any branches were cleared where they had fallen on natives, and the trunks were cut up to decay on site. Hanging branches near the path were also removed least they fall on unwary walkers! Several areas have opened up as a result and now offer ideal sites for replanting. Native plants were largely unscathed, a few cedars are leaning, and the Jamaica dogwood is springing up all over the place where the shade of the casuarinas is now gone. The randia also appears to appreciate the absence of casuarinas with several specimens putting on good growth, and seedlings popping up since the storm.

We do not inherit the earth from our ancestors,
we borrow it from our children.

~Native American Proverb

The Value of Trees

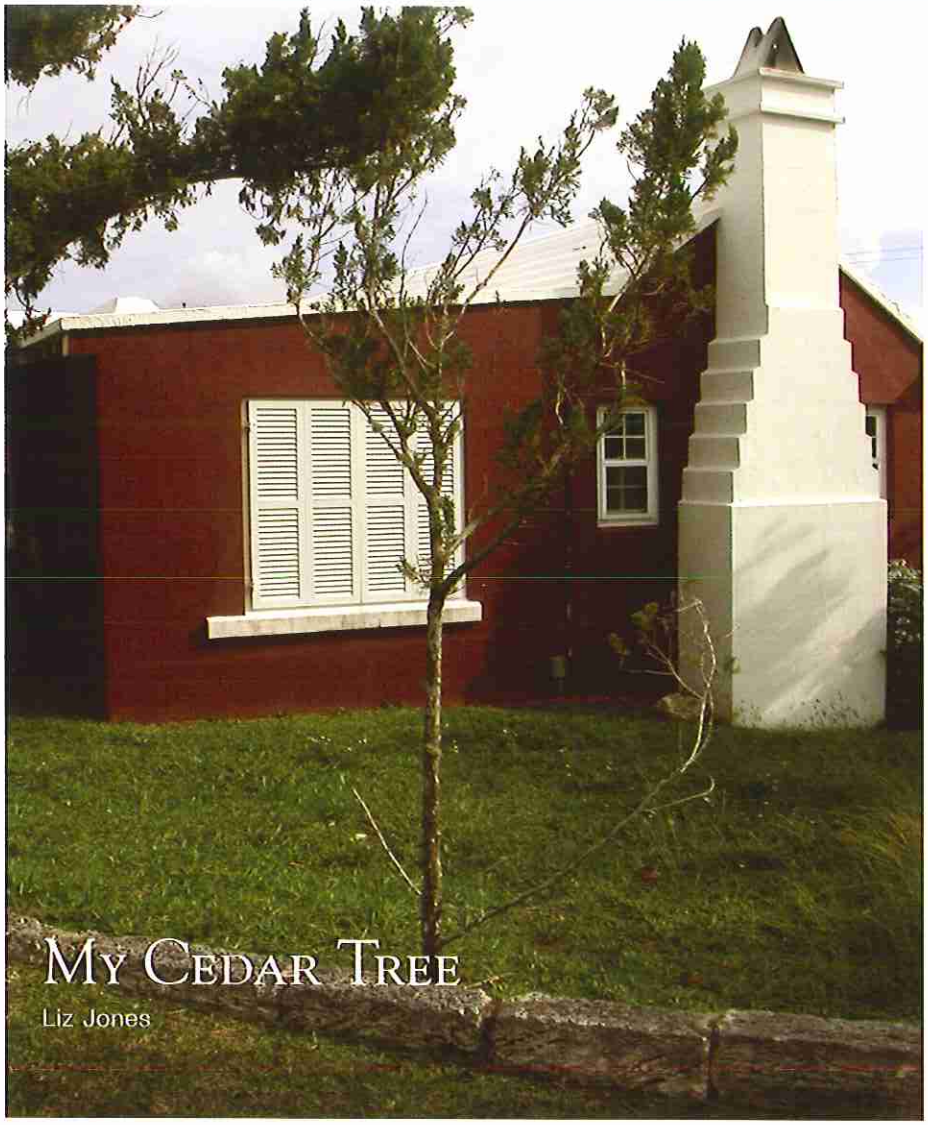
Andrew Dobson

The most serious environmental problem facing the world is climate change – and the need to reduce the amount of greenhouse gases released into the air. What should be Bermuda's role? We may be a small population in the world, but that's no excuse for not doing our bit to solve the problem. Where do trees and hedgerows come into the picture? They take in carbon dioxide and produce oxygen. One acre of forest soaks up 5.5 tons of CO_2 per year! So both our Government and residents should be planting trees, not removing them. I would like to see a policy of two trees being planted for every one that is felled due to housing or commercial development. The pruning of trees and trimming of hedges along roadsides is necessary but it must be done with expertise and supervision. Some hedgerows and trees have been almost completely cleared along roadsides – the exposed soil will inevitably be washed away in heavy rain.

The benefits of trees and other plants are often under-estimated. Their benefit as a wildlife habitat is well known; as is the protection they afford us from strong winds. Roads that are attractively bordered by lush vegetation are a hallmark of Bermuda and an asset to tourism. Our quality of life and general well being are closely linked to the environment. Promoting the appreciation of Bermuda's fauna and flora by regular walking can help reduce stress, obesity, heart disease and other medical problems that could save Bermuda millions of dollars each year.

Rather than just trimming the hedgerows, perhaps the same work crews could become skilled planters, restoring areas of Bermuda now lacking tree cover. The benefits could be enormous: a boost for jobs in horticulture in order to supply and plant more trees and shrubs; a more attractive island encouraging tourism; a positive action by the Government in its support for biodiversity; and a better quality of life for local people.

On vacation in California, my family and I had the opportunity to walk through the Giant Sequoia groves in Yosemite National Park. An incredible experience, a real privilege even though lingering snow necessitated a 2-mile walk just to reach the first tree. We may not have the majesty of these huge cypress trees in Bermuda, but we gain much pleasure from planting trees that we do have. A Bermuda Cedar we planted two years ago already has berries. An enormous Poinciana in our front garden dominated the whole neighbourhood until it crashed to the ground revealing a hollow trunk. The disappointment has been short-lived. A sapling soon appeared from the stump producing a tree that is already over 15 feet tall and a regular perch for bluebirds. Why not plant some (more) trees and shrubs in your garden, especially natives and endemics. Better still, create a wildlife garden as part of your garden where a far greater diversity of animal species can thrive – and you can enjoy. The article written by Liz Jones eloquently expresses how much benefit a small cedar tree can provide.



My Cedar Tree

Liz Jones

We are fortunate enough to have a few trees in our garden – a gigantic crinoline of a poinciana, for example, a couple of lucky nuts, plus three or four old, dusky cedars that were here before the house was built in the 1950s. But there's one tree I'm particularly fond of: another cedar, albeit an extremely sickly one.

When we first moved into our home in 1987, I had dreams of our planting groves of cedars to add to the ones already there. What I didn't realise, however, was that our house was built upon solid rock. From a biblical point of view I suppose that's a good thing. But from a gardener's point of view, it's not good news at all as we discovered when we planted our first two saplings. Both died excruciatingly slowly and painfully. So when we planted the third one, we thought it would inevitably meet the same fate. Sure enough the needles started to go brown and drop off. And while a tree planted at the same time in our friend Claire's garden was burgeoning, ours grew more and more reproachfully skeletal. However, I resisted the urge to avoid watching its slow demise by uprooting it. And what do you know? Over the years it has clung to life, its branches oh so slowly lengthening, its pitifully thin trunk stretching. Now it stands some eight feet tall and having survived Fabian looks as if it's definitely here to stay.

I suppose I feel the same protective affection for it I might feel for the runt of a litter of puppies or pigs. But there's more to it than that. You see, I'm not the only presence on the property to appreciate the tenacity of this tree. Frail and spindly it may be, but the birds love it. Take for instance, the male bluebird, which nested in our neighbour's bird box this year. Does he on his swoop into our garden make for the showy poinciana? Absolutely not. Nor does he go for the mature cedars. When he wants to relieve himself, it's the stunted tree he chooses. This is wonderful for us because we get such a clear view of him. Other birds also see the cedar as their restroom –cardinals, kiskadees and catbirds. Even our resident chick-of-the-village likes it. Often he'll emerge from the cherry hedge and perch on a branch for a little chatter and spatter. In fact, I swear that if this tree were to disappear altogether, these birds would feel the same as I do about the way the Par-la-Ville public washrooms have been destroyed. You know, disoriented and desperate.

If such an emaciated, insignificant looking tree can make a difference to the lives of our birds, I can't help wondering what difference all the recent building is going to make to them. After all, our cedar is merely a perching point – no bird would be stupid enough to try and nest in it. But what about all the trees and bushes that have disappeared from the hillside on St. Anne's Road, for example, or on the smallish plots of land on Middle Road that are now sprouting waterside condos? What bird disorientation has that caused? What homelessness?

Now that we have more time to work on garden tasks, perhaps my dream of a thriving cedar grove will come to reality with the help of more topsoil and deeper digging. But even if it does, our little cedar will be left alone. To me it sums up what Bermuda's remaining natural environment is doing: hanging on but only just. Besides, if the birds like it, then so do I.

The Value of Birds

Andrew Dobson

Imagine Bermuda without birds. The Longtail – the harbinger of spring – which by summer thrills us with avian antics around the coast. The mysterious Cahow, a living legend, part of our heritage and only just back from the brink of extinction. The Bluebird, a sheer delight with its plaintive song and fabulous colour. Then there is the ever-present White-eyed Vireo, our special 'chick-of-the-village'. I have only highlighted four species of more than 350 that have graced our islands over the ages – but all are threatened with real problems for their survival.

Loss of habitat and invasive species are seen as the main causes of decline and threats to survival. In Bermuda we have lost most of our woodland and marshes. There are few undisturbed islands and cliffs, almost the last refuge for many species. Invasive species of plant overwhelm the native species, while birds also have to run the gauntlet of feral cats and rats.

What is the real value of birds? As an economist, the question of economic value is easy to explain but very difficult to quantify. In many societies, domesticated birds provide food and many wild birds, if managed wisely, provide a sustainable food source. In science, birds are one of the most studied groups in the animal kingdom. New findings are constantly being made. Birds are important distributors of seeds and pollinators of plants. They control plagues and are excellent indicators of a healthy environment. The value of birds to eco-tourism is immense. Some 78 million birdwatchers have travelled abroad on birdwatching trips and it is estimated that they spend around $78 billion1[1] in the countries visited. Our own web site is receiving hundreds of 'hits' from potential eco-tourists eager to find out what is to be found in Bermuda.

Birds have a great role in folklore and mythology. Emphasis is placed on birds in many religions and they are frequently seen as national symbols and emblems. Birds appear in literature and the arts, featuring strongly in novels, poetry, music and dance. Artists like Botticelli and Rubens have assigned important roles to birds in their paintings.

To many of us, it is the aesthetic value of birds that is so important. The sheer pleasure and relaxation we get from seeing a Longtail fly along the coastline or a Cardinal perched on top of the tree.

There are nearly 10,000 species of birds in the world. BirdLife International has revealed that about 1,200 species have a real risk of being extinct in the next 100 years. The main threats are habitat destruction, introduced species and exploitation. It is not too late to act. BirdLife has identified and monitors Important Bird Area (IBAs). Action plans exist for threatened species and habitats. Biodiversity benefits from the protection, management and restoration of sites. Groups in Bermuda including the Bermuda Audubon Society are carrying out action plans. The Society is fully supportive of the Bermuda Biodiversity Project. The Society is an associate member of the UK Overseas Territories Conservation Forum and also has close links with the Royal Society for the Protection of Birds and BirdLife International. The Society will continue to lobby for conservation measures in Bermuda. We rely on the support of you our members. You can always express your views via email: info@audubon.bm or our mailing address – we would be pleased to hear from you.

Conservation Measures for the Eastern Bluebird in Bermuda

Andrew Dobson

The Eastern Bluebird *Sialia sialis* is a native species to Bermuda - the only location outside North America where this species breeds. Before man first settled in 1609, forest growth dominated the landscape. Bluebirds fed on coastal grasslands, nesting in old cedars and cliff cavities. There was an absence of non-avian predators. In the last 50 years, the pressures put on the bluebirds to find suitable nest-sites have been immense:

• House sparrow *Passer domesticus* introduced in 1870-74 increased rapidly and began to displace bluebirds from natural cliff and tree cavities.

• In the late 1940's and 1950's, a scale insect caused the elimination of over 90% of the cedar trees in Bermuda.

• European Starling *Sternus vulgaris* colonised in the 1950's and increased competition for nesting cavity species.

• House Sparrows use bluebird nestboxes and are responsible for the slaughter of numerous bluebird chicks but starlings can be kept out by keeping an entrance hole size of 1.5 ins.

• The Great Kiskadee *Pitangus sulphuratus* was introduced in 1956 (to control the anolis lizard population) but proved to have a wide-ranging food preferences including taking young bluebirds from their nests.

• Pesticides such as DDT were widely used in Bermuda in the 1950's and 60's especially on golf courses and gardens. Being an insectivorous species, one can only assume the bluebird must have suffered a decline.

• There has been a dramatic increase in the number of feral cats, especially since the introduction of cat feeding stations in the 1990's.

• The tropical fowl mite *Ornithonysus bursa* has caused a significant number of deaths in bluebird nestlings.

• Bermuda's human population has increased three-fold since 1900 to about 60,000. The resulting urbanisation means there are far fewer open spaces. Bluebirds disappear in favour of sparrows when housing densities reach 2 per acre (the mean housing density on Bermuda today!)

• Vandalism by mindless individuals has resulted in broken nestboxes and dead bluebirds.

However, great efforts have been made to halt the decline in bluebird numbers:

• A nest box scheme has been in place for many years. The campaign was initiated by the Bermuda Audubon Society in the 1950's.

• Workshops and publicity campaigns are regularly mounted.

• Efforts have been made to educate the public as to the plight of the bluebird and the part that individuals can play.

• Hundreds of bluebird nestboxes have been erected around Bermuda. The boxes keep out starlings but must be monitored constantly to keep out sparrows.

• Bluebird boxes have been erected in 'trails' on most of the golf courses.

• A small number of sparrow traps have been used to remove sparrows from bluebird nest-sites.

The current population of bluebirds in Bermuda is estimated to be about 500 individuals. The bluebird is now totally dependent on artificial nestboxes for breeding success and its survival in Bermuda can only be guaranteed with human help.

Bermuda Bluebirds

The Eastern Bluebird *Sialia sialis* is a native species to Bermuda - the only location outside North America where this species breeds. With the continual loss of critical habitat, the Bluebird's survival in Bermuda is now totally dependent on man.

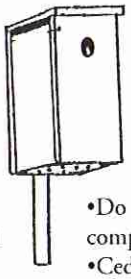
Before man first settled in 1609, forest growth dominated the landscape. Bluebirds fed on coastal grasslands, nesting in old cedars and cliff cavities. They would fly across our woodlands in flocks of fifty or more. In the last 50 years, a combination of factors has caused a severe decline in this population.

Bluebirds suffered extreme loss of nesting habitat when the local cedar forest was wiped out by a scale insect in the late 1940's and 1950's. The invasive sparrow and starling, being cavity nesters are major nest site competitors evicting bluebirds from their nest sites and often killing chicks and adults in the process. This is mainly a problem from March through June. The larger starling can be excluded from nest boxes by making the nest hole size 11/2" but the sparrow is the same size as the bluebird and cannot be excluded this way.

Bermuda's human population has increased three-fold since 1900 resulting in far fewer open spaces. Bluebirds disappear in favour of sparrows when housing densities reach 2 per acre, the mean housing density on Bermuda today! Bluebirds also face food competition from the starling and the kiskadee which hunt the same food sources.The increasing number of roaming cats, are known to lurk in wait for fledgling bluebirds as they depart from their nests. Bluebirds are frequently poisoned by eating insects contaminated by pesticide sprays.

Even though the bluebird population has greatly decreased, the future can still be promising for them. The most important step we can take to help bring back the bluebird is to provide nesting sites by setting out a bluebird box or starting a bluebird trail.

A bluebird trail is a series of bluebird boxes placed along a prescribed route. In areas where nesting boxes have been put up in suitable habitat, bluebird populations are increasing. 'Bluebirding' is a great environmental, hands-on project that people of all ages can enjoy. By following the instructions here, chances are good that you will be able to attract and enjoy bluebirds.

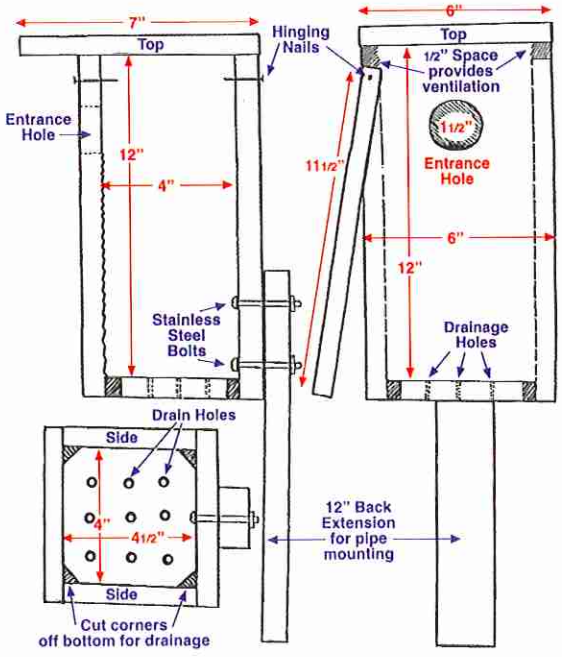


Nest boxes can be purchased from the Bermuda Aquarium Museum and Zoo Gift Shop, The Audubon Society or you can easily make your own.

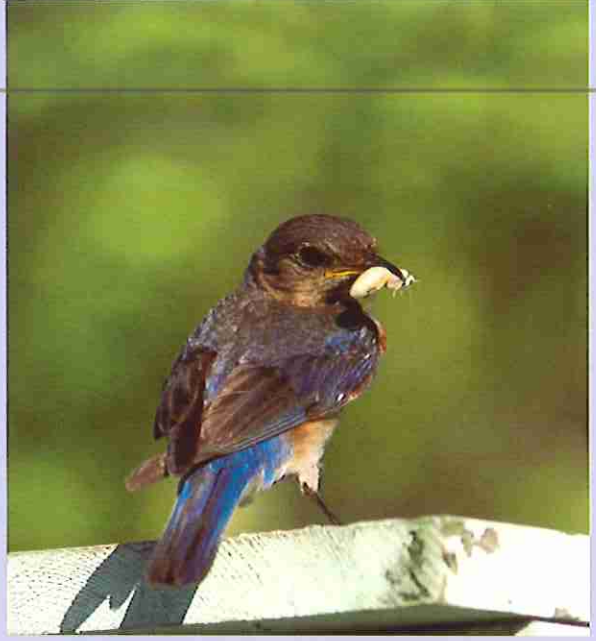
Materials

- 3/4 inch wooden boards or pieces of shelving are commonly used for bluebird boxes.
- Do not use pressure treated wood because they include toxic compounds
- Cedar is long-lasting even when left natural
- 11/2 inch round entry hole
- Floors in wooden boxes should be approximately 4 x 4"
- Two 2" stainless steel bolts and two hinging nails
- 7 foot Mounting Pipe (sink 2 feet into ground).

It is imperative that bluebird boxes open readily from the top, side, or front to facilitate box monitoring and cleaning.



A symbol of love, hope and happiness, it is said that the Bluebird 'carries the sky on its back and the earth on its breast' With its delightful warbling song and affinity for devouring grubs and caterpillars that attack our vegetables and gardens, we could hardly wish for a lovelier bird to grace our island



If box sides pivot to allow access to the box, they should do so at as high a point as possible to ensure that you can observe tall nests without the door obstructing your view.

A screw or angled nail in a pre-drilled hole should be provided to ensure that mammalian predators can not readily open the nest box. Natural wood is acceptable. If painted or stained, use light colours to minimize having the box overheat during warm weather. Interior walls should not be painted or stained.
The interior front wall below the entrance hole should feature a rough surface to facilitate chicks climbing to the entry hole. Drainage holes must be provided in the bottom to allow rain entering the box to drain and to provide air circulation to nesting material. The box should be water-tight. The roof should provide sufficient overhang beyond box entrance or vent holes to minimize possibility of rain entering these openings. The roof should cover the top edge of the box back to eliminate any possibility of rain entering the joint between back and roof. Vents providing cross ventilation should be present near the box peak. These openings should be protected from rain by having the box roof overhang a sufficient amount. Four to six 1/4" ventilation holes can be drilled at the upper level of each side panel. Boxes should be designed so that they may readily and securely be mounted on a support post such as 2" galvanized pipe. Mounting boxes on trees and walls is discouraged. Do not mount boxes less than 5 feet from the ground as this increases the opportunities for climbing or jumping predators to raid the nest.

Habitat is the key factor to consider when setting up a bluebird trail. Open grassy areas with scattered trees and low or sparse ground cover is best. Look for perch sites, such as a fence line, wires, or tree branches where bluebirds may perch to look for food. Monitor the young in the nest and remove unhatched eggs or dead chicks to prevent ants from invading the nest. Trees and shrubs provide a landing spot for the young bluebirds when they first leave the box. This will keep them off the ground, away from predators. Be sure that boxes are mounted in areas where pesticides are not used. Boxes should be spaced at least 100 yards apart. Check your bluebird boxes at least once a week during the nesting season. Birds do not mind being checked. Have your bluebird boxes in place by mid-March when bluebirds are looking for nesting sites. Bluebirds nest from March until early August and are usually left alone by sparrows from July on. They usually have two broods per season, but three broods are possible.

Recognize a bluebird nest - it is a tidy and neat cup-shaped nest that is usually made up of 100% woven grass or casurina needles. A sparrow nest is untidy, made up of mixed foliage and often strewn with bits of trash. Always remove sparrow nests immediately.

Bluebirds usually lay 3 to 5 light blue eggs. The incubation period for bluebird eggs is 12 to 14 days. Nestlings remain in the nest 18 to 21 days before they fledge. Remove bluebird nests as soon as the young birds have fledged and sterilize the box with boiling water

Keep records of the activity in your boxes. This information is valuable to the Bermuda Audubon Society, a non-profit organization, which compiles data on bluebird populations in Bermuda.

Don't be discouraged if your nesting boxes are not used the first year. If bluebirds are not common in your area, it may take them a few seasons to find your new box. Bluebirds generally return to the same area each year.

For more information contact the
Bermuda Audubon Society
P.O. Box HM 1328, Hamilton HM FX
or email: info@audubon.bm
Bluebird Hotline: 734-9856 • www.audubon.bm

Assisting the Disadvantaged Longtail

Jennifer Gray

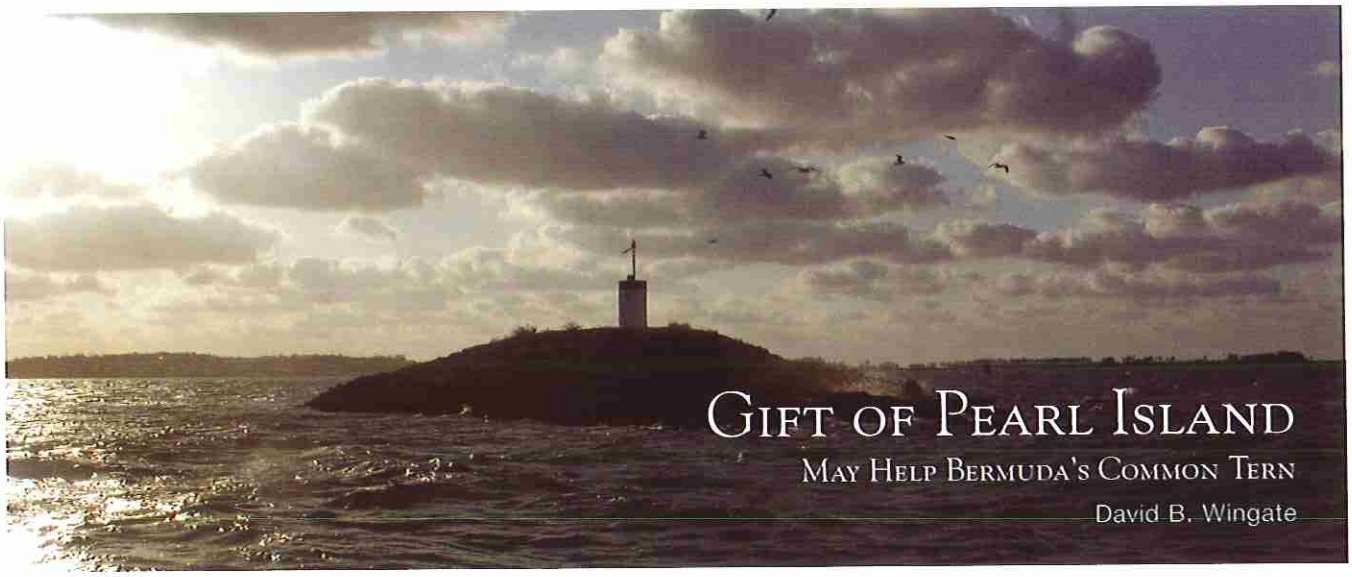
As Bermuda's special harbingers of spring, the longtails have often been regarded as our national bird stealing the limelight from the true owner of that honour, the Cahow. We all delight in the summer calls and tireless aerial acrobatics of the longtails as they soar along the coastlines and in harbours and bays. Our jewellery stores and local products are adorned with their images and our visitors now regard the longtail as our emblem of beauty and happiness. The Bermuda population of longtails is believed to be the largest in the Atlantic, making it vitally important for the continued survival of the species. With their aesthetic, spiritual and economic value we believe we must do our utmost to protect this remarkable species.

The White-tailed Tropicbird or 'longtail' as we have come to know it has slowly been declining due to coastal development and the destruction of the limestone cliffs around much of the island. These birds nest in natural cracks and hollows found in our cliff faces. As the availability of these cavities becomes fewer, they begin to fight over the remaining available space or choose less suitable sites leaving themselves vulnerable to predation and or flooding. Storm surge from near-miss hurricanes in 1995 and 1999 had a damaging consequence on longtail nesting sites and in the fall of 2003, Hurricane Fabian caused immense damage to cliff faces on the southern coast of Bermuda where the greatest number of longtails nest each year.

There is certainty that the longtail population is in decline and faces additional threats with each new year. In 1975 it was suggested that the longtail population had declined fivefold since primeval times, from an estimated 10,000 plus pairs to an estimated 3,000 pairs. Now three decades later their numbers teeter on a ballpark 2000 pairs. In addition to loss of habitat they have suffered competition with feral pigeons, predation or invasion by feral cats and dogs and undeniably the unfavourable impact of declining bait stocks and ever-increasing marine pollution. The Bermuda Audubon Society continues, in its 50th anniversary year, to bring action to aid the longtail. A recent fundraising drive yielded $40,000 specifically to create habitat or nesting shelter for this threatened species. Artificial nests for longtails, developed and fabricated initially in 1996, have proven to be highly acceptable replacements for natural cliff crevices and nest sites. These dome-like igloos made from styrofoam are coated with cement base fibreglass chop slurry for strength and durability in the harsh marine environment. A longtail igloo is typically set into an ocean-facing cliff with cement and camouflaged with natural rock and coastal plantings. The Departments of Conservation Services and Planning have joined the Audubon Society in encouraging developers in coastal areas to include the fabricated nests in their structures. Those who have installed such nests on their properties enjoy countless hours of gratification watching over nesting longtails and their young.

The committee and our partners in the Department of Conservation Services have worked very hard to prepare and install igloos along the coast, especially on the Castle Harbour islands which were so badly damaged by Fabian. The artificial nests are available to the public from the Society along with information on instillation. Why not add longtails to your coastal view this summer? Longtails are beautiful and entertaining and if you live on the coast, they need your help. Longtails are unable to walk on land and consequently do their nest searching on the wing. It is this constant searching back and forth along the cliffs, combined with their aerial courtship display, which involves touching the tips of the long tail feathers in paired flight, which makes them so conspicuous on our coastline. The single purplish-red speckled egg is laid in April and hatches in late May. The chick takes approximately 65 days to fledge and departs to sea on its own in late July or early August. It is not uncommon for some chicks to depart as late as October. Longtails do all of their feeding far out at sea where they plunge from a height onto unsuspecting fish and squid. During the winter months, the population disperses throughout the Sargasso Sea and remains out of sight of land. Longtails sleep on the wing or on the water if it is calm.

Great pleasure can be derived from monitoring your own igloo as Audubon member Gareth Davies discovered on his property at Harrington Sound. He produced a marvellous power point presentation based on photos taken throughout a longtails chick's stay in one of his igloos.



Gift of Pearl Island

May Help Bermuda's Common Tern

David B. Wingate

There are no records of breeding terns from the late 19th and early 20th centuries, but the Common Tern either re-colonized, or clung on, and was first recorded as nesting again by Hilary Moore and William Bourne on small islets of Harrington Sound and Hamilton Harbour in the 1930s and '40s, along with a few Least Terns *Sterna antillarum*. I vividly remember encountering and photographing my first breeding Common Terns in Harrington Sound in the early 1950s, but it was not until the 1960s that I undertook the first island-wide surveys of the population. From 1973 until the present, the number of breeding pairs has been carefully counted each year and an attempt has been made to band (or ring) each year's fledgling crop. During this thirty-year period the population has fluctuated between 17 and 30 nesting pairs and the fledgling crop between 20 and 60 birds. They nest only on the smallest and least vegetated rocky islets of our sheltered harbours and sounds. Our population is unique in that it prefers to breed territorially rather than colonially and the pairs space themselves apart, insofar as possible, at one per islet. At their peak population in 1984 they were nesting on 24 islets spanning the length of Bermuda from Ely's Harbour and Great Sound through Harrington Sound and Bailey's Bay to St. George's and Castle Harbour! The chick-banding programme has resulted in four very interesting band recoveries, revealing that our local birds winter all across South America just south of the equator (see map).

Following a revision of the Protection of Birds Act in 1975, the most important of the tern breeding islets were designated as nature reserves in 1976, and other conservation measures such as rat control and habitat management involving vegetation control, (such as the removal of invasive casuarinas), actually helped the population to increase for a while, but since the mid-1980s it has gone into a steady decline again. Part of this decline is undoubtedly due to greatly increased recreational boating activity and human disturbance, but it is becoming increasingly evident that another factor is disruption of nesting by hurricanes during cycles of increased hurricane activity, now becoming more frequent and severe due to global warming.

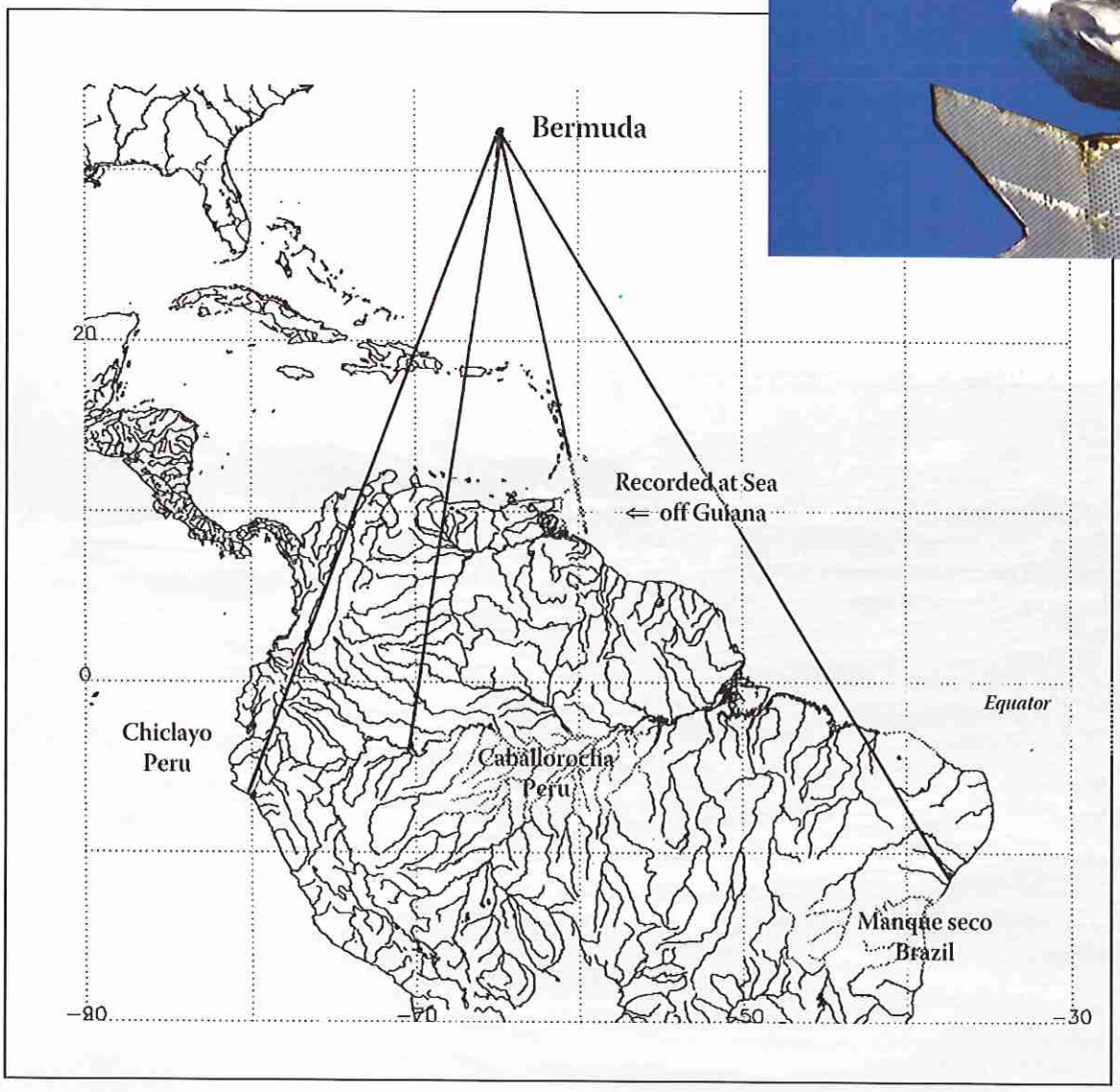
The Common Tern is primarily a temperate breeding species and it would appear that it is poorly adapted for the hurricane belt of the tropics and sub-tropics (within which Bermuda lies), because it is rare and largely replaced by other species of terns in the Bahamas and West Indies. Our birds return to breed about the first of April, lay between May and mid-July, and fledge between early June and early August. In most years the fledglings remain in Bermuda waters through September and early October. Thus they are especially vulnerable during the peak of the hurricane season. I have previously noted sharp declines in the population in years following direct hit hurricanes such as Arlene in 1963 and Emily in 1987, but no previous decline was as catastrophic as that which followed hurricane Fabian on 5 September 2003. Out of the 17 pairs that bred in 2003, only 6 pairs returned in 2004, and for the first time since the breeding population began to be monitored in the 1950s, not one of these surviving pairs bred successfully. The reason for this total breeding failure, ironically, was not a failure to lay eggs, but rather the laying of over-sized clutches which were infertile. This curious phenomenon has been recorded in other Common Tern populations in times of population stress and is not yet fully explained. Hopefully our birds will do better next year following a summer without any hurricanes in our area.

This Society has endeavoured to do all it can to prevent the loss of Common Terns from Bermuda. In 1969, we negotiated a rent-free lease of Pearl Island in the Great Sound for management as a tern nesting sanctuary. This lease was from Mr. Dudley Butterfield, (who incidentally received the prestigious Silver Palmetto award posthumously from the Bermuda National Trust for gifts of land for nature reserves in Point Shares, Pembroke). Then in 1985 we were the beneficiaries of nearby Lambda Island as a bequest from the estate of Gladys Marion Collison. We are delighted, now, to announce that the trustees of Dudley Butterfield's estate have likewise decided to donate Pearl Island outright to the Society as a nature reserve. Hopefully, these and other measures by the Conservation Services Department of Government will enable us to save these graceful seabirds as a permanent and conspicuous feature of our harbour waters in summer.

The Common Tern *Sterna hirundo* is now our rarest breeding seabird, and the only survivor of several species of terns that were breeding on Bermuda in pre-colonial times. The earliest settlers on Bermuda reported "Sandie birds or Egge birds and Noddies", (probably Sooty Terns *Sterna fuscata* and Brown Noddy *Anous stolidus*), from which thousands of eggs were annually harvested "around the first of May". Roseate Terns *Sterna dougallii* were recorded as nesting along with Common Terns on Gurnet Rock at the entrance to Castle Harbour in the mid-19th century, but were exterminated by ornithological collectors of the time.

There is nothing in which the birds differ more from man than the way in which they can build and yet leave a landscape as it was before.

~Robert Lynd, The Blue Lion and Other Essays



Ever wondered about the origin of common bird names?

Some are translations from, or corruption of, foreign or ancient words:

Loon – corruption of loom or lame – Scottish (Shetlands) – meaning to walk awkwardly
Gannet – Anglo-saxon 'little goose'
Bittern – old English 'bellowing like a bull'
Egret – French 'small heron'
Flamingo – Spanish 'flame'
Goose, Swan – Anglo-saxon
Merganser – Latin 'diving goose'
Sora – native American name
Gallinule – Latin 'little hen'
Phalarope – from a Greek word meaning coot-footed
Dowitcher – from Dutch and German word for snipe

Others are named after people – often eminent ornithologists:

Audubon (Shearwater, Warbler) – John James (1785-1851) – artistic father of US ornithology
Baird (Sandpiper) – Spencer (1823-87) – established Smithsonian Institution
Bonaparte (Gull) – Charles (1803-57) – younger brother of Napoleon
Forster (Tern) – Johann Reinhold (sailed with Capt. Cook in the 18th C)
Wilson (Warbler, Phalarope etc) – Alexander (1766-1813) – scientific father of US ornithology

Many are named due to colour:

Plumage - northern cardinal, purple finch, green heron, indigo bunting, sooty shearwater
Body parts – yellowlegs, white-throated, yellow-crowned, blue-winged, yellow-bellied

The name may include characteristics or habits of the bird:

Sandpiper – birds that chirp in the sand
Solitary Sandpiper – not usually found in flocks
Stilt Sandpiper – long legs
Shoveler – bill
Cattle Egret – found in company of cattle
Least Bittern, lesser yellowlegs, great cormorant - Indicates relative size of bird
Parasitic Jaeger – harasses other seabirds
Hermit Thrush – spends its winters alone
Ovenbird – shape of its nest
Worm-eating Warbler

Occasionally where it was first discovered:

Sandwich Tern – first shot
Caspian Tern – first shot

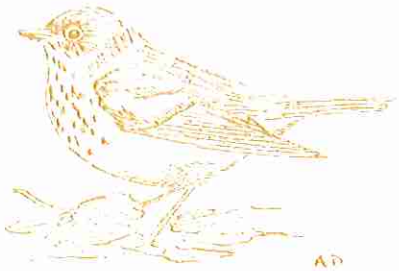
Frequently named where it is found (place, habitat)

Western Sandpiper, Bermuda Petrel, Eastern Wood-Pewee, Woodcock,
Wood Thrush, Swamp Sparrow

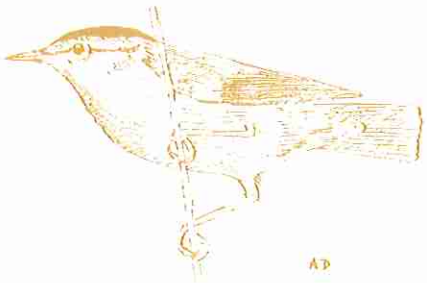
May be named after its call:

Cuckoo, Curlew, Killdeer, Kiskadee, Owl, Pewee, Phoebe, Willet

Hooded Warbler



Hermit Thrush



Worm-eating Warbler

'A Birdwatching Guide to Bermuda'

'A Birdwatching Guide to Bermuda' by Andrew Dobson (Arlequin Press, 2002) provides a wealth of information on Bermuda's bird life, with species accounts, birding localities, rare bird sightings, bird checklist, conservation measures and much more. There are tips for the novice birder as well as hints on how to attract birds to your garden. There is information on other wildlife and a comprehensive bibliography. 173 pp. 32 colour photos and 16 location maps complement the text. Available in all local bookshops.

priced **$23.95**

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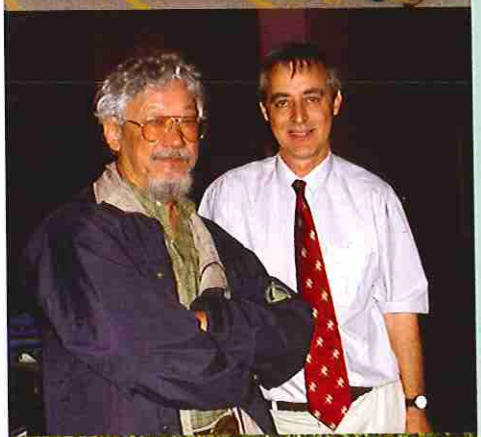
audubon NEWS

(Clockwise from top left)
Nicholas Barton receives an Audubon certificate of recognition for his bird watching efforts from Past-President Jennifer Gray (left) and Lady Vereker
11 February 2003

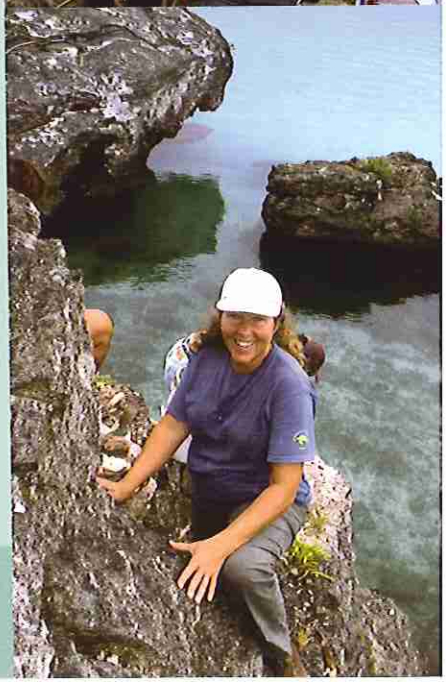
Jeremy Madeiros leads an Audubon fieldtrip on Nonsuch Island, 18 July 2004

A memorial bench installed at the Alfred Blackburn Smith nature reserve, September 2004

Andrew Dobson (left) and Jeremy Madeiros (lower right) were invited to show HRH The Earl of Wessex some of the effects of Hurricane Fabian on the natural environment. Pictured here with Lady Vereker on 25 October 2003



Jennifer Gray installing longtail igloos on Cockroach Island, 6 November 2004



Warwick Academy students make a large selection of colourful bluebird nest boxes at part of a design and technology course.

Andrew Dobson and David Suzuki, guest speaker at the UK Overseas Territories Conservation Forum conference in Bermuda, March 2003

Delegates attending the UK Overseas Territories Conservation Forum conference at Elbow Beach, Bermuda, March 2003

His Excellency The Governor and Lady Vereker plant a cedar on the Alfred Blackburn Smith nature reserve, 22 February 2003

BIRD TRIVIA

Compiled by Andrew Dobson for the 50th Anniversary Dinner

1. Where have the greatest number of exotic bird species been introduced, and how many species were introduced?

2. What was one of the initial tasks assigned to John Gould (1804-1881), the famous 19th ornithologist and bird artist when he commenced work at the Zoological Society of London at the age of 20?

3. Which is the smallest bird that migrates across the Gulf of Mexico?

4. What is a gathering of larks called?

5. The most important species for UK Overseas Territories Governors?

6. Which shorebird has the most extensive distribution?

7. What is a PUMA?

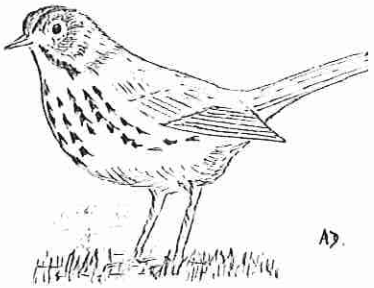
8. How did the writer Ian Fleming come up with the name of the Secret Agent 007?

9. When and where did the last Passenger Pigeon die?

10. Which ornithologist once said "it was not really a good day unless he shot 100 birds?"

11. Which are the only two birds that have occurred naturally on all 7 continents and Bermuda

12. Which very large white bird made its debut in Bermuda in 2002? *(see photo above)*



13. Why is the Ovenbird so named? *(see illustration, right)*

14. Which species of Bermuda bird is the state bird of seven US states? (and name one of them!)

15. What is the origin of the word 'bird'?

16. What is this bird?

(Answers: see page 62)

Bird Trivia

1. Hawaii, 162 species. (2 marks)
2. He had to stuff King George IV's pet giraffe. He gained a reputation as a taxidermist!
3. Ruby-throated Hummingbird 1000 kms and 3-4 gm. or 0.14 oz. (2 marks)
4. An exaltation.
5. Ostrich – for the hat feathers.
6. Sanderling.
7. Purple Martin – 4-letter computer code for this species
8. From a copy of 'Birds of the West Indies' by ornithologist James Bond – that sat on his bookshelf.
9. Sept 1st 1914 at about 1pm in Cincinnati Zoo. (2 marks)
10. John James Audubon – later regretted this – and his loss of hearing!
11. Cattle Egret and Arctic Tern. (2 marks)
12. White Pelican (being viewed in photo by Lady Vereker and Fiona Dobson at North Pond)
13. The name ovenbird comes from its oven-shaped nest.
14. Northern Cardinal – Illinois, Indiana, Kentucky, North Carolina, Ohio, Virginia, West Virginia. (2 marks)
15. No-one seems to know! send your thoughts to: info@audubon.bm
16. White-eyed Vireo (Endemic sub-species of Bermuda) - our 'Chick-of-the-Village'

Score:

21 – You need to write the next quiz
15-20 – Either you were at the dinner or you're an expert
10-14 – Outstanding effort but surprised you didn't know the time of the passenger pigeon's death!
5-9 – Probably need a new pair of binoculars!
Under 5 – Good effort but perhaps its time for a new hobby.

Bermuda Audubon Society Membership

If you wish to join the Society, please provide the details shown below. Membership renewals are due on June 1st of each year. As a special offer to new members – if you join now, your membership will be until June 2006.

Please mail your details and subscription to:

The Treasurer
The Bermuda Audubon Society
P.O. Box HM 1328
Hamilton HM FX
Bermuda

Title : Mr. ☐ Mrs. ☐ Ms. ☐

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☐ **Student $5** ☐ **Adult $20** ☐ **Family $30 (two or more persons)** ☐ **Life $500** ☐ **Donation** _____

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