

Seabird Monitoring Field Guide



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Monitoring guidelines

The **Department of Environment (DoE)** is responsible for ensuring the sustainable use and management of the natural environment and resources of the Cayman Islands.

All seabirds are protected under the **National Conservation Law (2013)**, and many of their breeding sites are also designated as protected areas.

All seabird monitoring activities, and related site access, must be conducted with the permission and guidance of the DoE.

Guidelines: Aim to minimise disturbance to birds and nests at all times

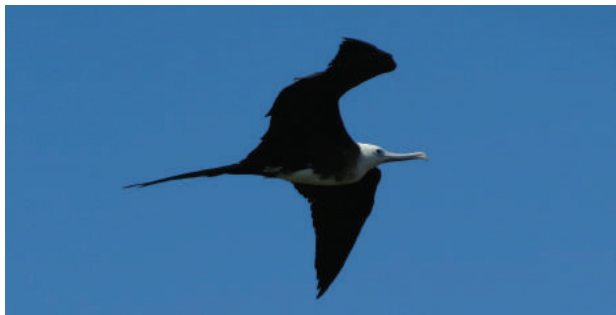
- Information should not be recorded directly at the nests - keep your distance, using the binoculars provided to monitor the birds more closely. Take GPS locations parallel to nest sites.
- Do not linger in nesting areas for too long – young chicks and eggs can die if left unattended following disturbance.
- Keep noise to a minimum when near nesting areas.
- Stay away from nest sites at night-time and do not shine lights directly on nests or birds.

Why monitor seabirds?

Seabirds, as marine vertebrates, can be highly sensitive to changes in food availability, and are thus excellent indicators of marine ecosystem health, with potential to provide information on fish stocks and pollutants.


Seabirds predominantly feed in marine environments and are capable of travelling over large stretches of the oceans. However, they are constrained to breed on land and are therefore relatively easy to access and study.

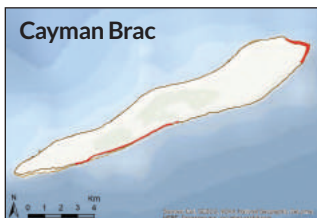
Regular counts and monitoring of colonies are crucial for assessing the health of seabird populations, and for identifying conservation priorities for this group.



Resident seabirds of the Cayman Islands



 Location of booby and frigatebird breeding colonies



Species	Grand Cayman	Little Cayman	Cayman Brac
Brown booby	-	-	■
Red-footed booby	-	■	-
Magnificent frigatebird	-	■	-
White-tailed tropicbird	■	-	■
Least tern	■	■	■
Bridled tern	■	-	-

■ = species recorded breeding on island

Seabird annual cycles

Species	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
BB	B	B	B	B	B	B	B	B		P	P	B
RFB	B	B	B	B	B	B	B	B	P	P	P	P
MFB	B	B	B	B	B	B	B	P	P	P	P	B
WTTB	P	P	B	B	B	B	B	B	P			P
LT						P	B	B	B	P		
BT						P	B	B	B	P		

BB = Brown booby, RFB = Red-footed booby, MFB = Magnificent frigatebird, WTTB = White-tailed tropicbird, LT = Least tern, BT = Bridled tern

B = Breeding season, P = present at colonies

■ = appropriate times to conduct population surveys

Note: the core timing of the breeding season can vary from year to year

Brown booby

Sula leucogaster

Brown boobies lay one or two eggs during breeding attempts, although rarely rear more than one chick per year. In the Cayman Islands, they nest on beaches and cliff edges on Cayman Brac. This seabird incubates eggs for ~39-48 days, and once the egg hatches adults continue to brood chicks for varying periods that decline as the chick grows. Chicks fledge at ~12-15 weeks, after which adults continue to feed them for a number of months (up to 17 weeks).





Adult female

Bigger than males, yellow skin on face, pink-grey bill, black-grey spot in front of the eye.



Adult male

Smaller than females. Blue-grey skin on face and bill.



Immature

Mottled brown-white underparts. Bill is muddy yellow with a varying number of dark flecks.

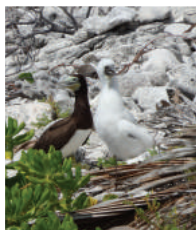
Brown booby - chick ages



Newly hatched



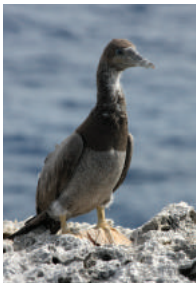
1-3 weeks



4-6 weeks



7-9 weeks



10-12 weeks



13-15 weeks

Red-footed booby

Sula sula

The Red-footed booby is the smallest booby species in the world, and lays a single egg annually. This species has two plumage colour morphs (brown and white), although some intermediate colourations occur. The sexes appear similar, however, the female is larger on average.

Red-footed boobies build stick nests in mangrove and dry forest habitats and, on Little Cayman, share their colony with frigatebirds. Young fledge after approximately 13-15 weeks, and parents continue to feed fledglings for a number of months after they can fly.



Adult (brown morph)



Adult (white morph)

Red-footed booby - chick ages



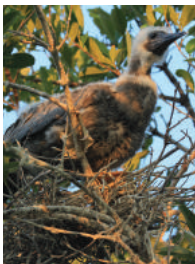
~3-4 weeks



~7-8 weeks



~10-11 weeks



~12 weeks



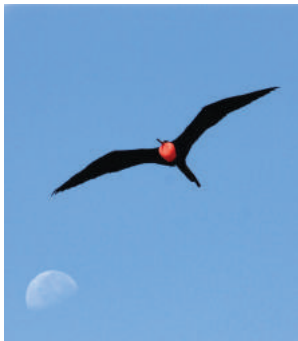
13+ weeks

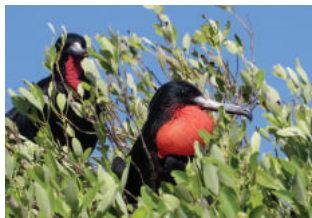
Magnificent frigatebird

Fregata magnificens

The Magnificent frigatebird is the largest frigatebird species in the world. Despite their marine lifestyle, they are incapable of landing on the water, due to a lack of waterproofing on their feathers.

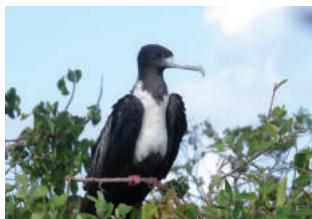
They are capable of spending long periods in flight, and are believed to sleep on the wing while at sea. On Little Cayman, this species nests in mangrove trees, and broods a single egg annually. Chicks fledge at around 5-6 month and continue to be fed by adults for up to 15 months.





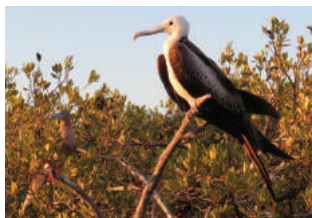
Adult male

Black body with red neck pouch that is inflated during courtship displays.



Adult female

Black body with white chest.



Immature

Black body with white head and chest.

White-tailed tropicbird

Phaethon lepturus

The White-tailed tropicbird is a small pelagic seabird with a long central tail streamer (used for displays) and yellow bill, which only comes ashore to breed. Most prey are caught by plunge-diving, but flying fish are also taken in the air.

This seabird nests in crevices in cliff faces on Cayman Brac and Grand Cayman, from late January onwards, and raises a single chick annually.



Least tern

Sterna antillarum

The Least tern is the smallest of the American terns. It has a pale grey mantle, black cap, yellow bill and white underparts. This species is ground nesting, and raises one or two chicks per breeding attempt.

On the Cayman Islands, the Least tern breeds in small numbers on all three islands between April and October.



Bridled tern

Sterna anaethetus

The Bridled tern is a slender tern, with a dark grey mantle and white forehead during the breeding season. This species is widespread in the tropics, nesting in marine sounds, cays and lagoons.

In the Cayman Islands, a small colony breeds on Vidal Cay (North Sound, Grand Cayman) between May and July.



Monitoring protocols

Brown boobies, Red-footed boobies and Frigatebirds

Follow monitoring protocols on pages 18 – 19. Arboreal species require additional aerial monitoring on a routine basis to obtain population estimates.

White-tailed tropicbirds

Locate and count nests by watching for birds in flight that enter or leave cliff faces at peak activity times (early morning & late afternoon).

Least terns and Bridled terns

Visit colonies during the incubation period and walk carefully around nest sites to count the number of apparently occupied nests (adult incubating or egg seen). If ground counts cause too much disturbance, count the number of flushed adults in the air. Keep time at colony to a minimum.

Recording data: see example recording form (page 21).

Note: All monitoring activities to be performed under guidance from the DoE.

For more information on seabird monitoring see the Seabird Breeding Atlas (www.epicislands.org) and/or Seabird Monitoring Handbook of Britain and Ireland (www.jncc.defra.gov.uk).

Breeding success (for boobies and frigatebirds)

1. Visit the colony every 7-10 days (where possible) from the time of egg-laying until the chicks are fledged.
2. According to colony size and accessibility, either check all visible nest sites or choose sample plots that cover the range of habitat types that birds nest in.
3. If possible, take GPS locations and photographs of the nests to aid identification during subsequent visits.
4. On each visit, record the status of the nest and its contents, and whether adults appear to be incubating or brooding a chick. Record the bird's ring number if visible. If chicks are present estimate their age using the photographs in this guide. Chicks can fledge from 12-13 weeks onwards, so count missing young that could have reached this age during the 7-10 days of observer absence as having fledged.

Population estimates (for boobies & frigatebirds)

1. Visit the colony up to 3 times (approximately 5 days apart) during the main incubation period when one adult will always be in nest attendance.
2. For each potential nest site, record the status of the nest (e.g. egg seen, adult apparently incubating, nest empty, broken egg, adult brooding newly hatched chick). If a chick is present, estimate its age.
3. A good estimate of the number of breeding pairs is the number of nests where either the egg/chick was seen, or adult appeared to be incubating, on all of the repeated visits.
4. Where possible take GPS locations and photographs of the nests to aid identification during subsequent visits.

Example recording form

Date _____ Surveyors _____

Colony _____ Recorder _____

Habitat type _____ Species _____

Nest status Mark a tick (✓) in appropriate box for each recorded nest

Apparently incubating adult					
Adult/nest with intact egg(s)					
Adult/nest with 0-4wk chick (small, naked & downy)					
Adult/nest with 5-8wk chick (downy, wing & tail feathers in growth)					
Adult/nest with 9-12wk chick (large, scattered down)					
Adult/nest with 13wk+ chick (no down, adult plumage)					
Failed nest (i.e. egg broken/dead chick)					
Number of airborne flushed adults					
Additional notes (e.g. ring number, empty/predated nests, GPS locations)					

This field guide was produced as part of the *Assessment and Conservation Actions for Cayman Islands' Seabird Populations* project, and funded by the UK Government's Darwin Initiative. The project is led by the Department of Environment (DoE), Cayman Islands' Government, in collaboration with the Universities of Liverpool and Exeter, UK, and the National Trust of the Cayman Islands.

Methods outlined in this guide are based on, and adapted from, the *Seabird Monitoring Handbook of Britain and Ireland* (www.jncc.defra.gov.uk).

Please contact the **DoE** on **+(345) 949-8469** or by email: **doe@gov.ky** if you would like to get involved in seabird monitoring activities in the Cayman Islands.

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