

ISLAND RESOURCES FOUNDATION, INC.

A Guide to Natural History
Observation on Isla Aves

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Isla Aves ($15^{\circ} 40' N$, $63^{\circ} 36' W$) a Venezuelan Federal Dependency, is approximately 90 miles SSW of Guadeloupe in the Lesser Antilles. The island is the only emergent portion of the Aves Swell, a major geologic structure in the bed of the eastern Caribbean Sea.

Aves is unique and interesting in many ways, and has been a major focus of work by the Island Resources Foundation principally because it is the site of the last major green turtle nesting aggregation in the eastern Caribbean. Because of the migratory habits of the species, the aggregation probably plays a critical role in survival of green turtle stocks throughout the eastern Caribbean. Through a series of expeditions to the island begun in 1971, we have tagged nesting turtles to learn about the geographic range of the population, their growth and survival on distant feeding grounds, the interval between nesting migrations to Aves and many related issues.

Because the historical decline in the green turtle nesting at Aves results primarily from excessive removal of nesting turtles by West Indian fishermen, we have sought protection for the island from Venezuelan authorities. In 1972, a Venezuelan presidential decree made Isla Aves and the adjacent submarine shelf a faunal reserve closed to all exploitation. There has as yet been no active enforcement of this status, but periodic monitoring now seems more likely as a result of recent meetings with Venezuelan authorities. In the meantime poaching continues at least desultorily year round but increasing during the peak of turtle nesting in August and September.

Because of severely limited funds we have had to restrict our Aves expeditions to this late summer period when we maximize the number of turtles tagged, measured and weighed, etc. per dollar spent. Consequently, we have little information on the numbers of turtles nesting per night in other months or other questions about seasonal variation. Most of what we do know comes from reports from individuals who have called briefly at the island, as visiting yachtsmen, or on oceanographic survey vessels principally interested in other matters.

This guide was written to give people who might happen to pass at Aves (or who intentionally visit it) some background on the natural history of the island and outline the kinds of information we would like to have them collect if the opportunity arises. For basic observation, no specialized equipment and little specialized knowledge is required. A camera is a particularly valuable tool so that various questions (what kind of animal was that? how many were there?) can be answered after the fact.

What is of interest to us?

1. Weather and sea conditions: We would like to know about wind speed and direction, occurrence of rain, percent cloud cover, and sea state for any days spent at Aves.
2. Drift Seeds: Even though the island is isolated and few species of plants currently grow on it, many types of seeds wash up on the beach. We have been monitoring seasonal changes in what species make up the seed drift, how many of each species are there, and what proportion of each is still viable (able to sprout and grow) when it arrives. In late summer we have encountered up to fifty different kinds of seeds in six weeks, but we have no information for other seasons.

For anyone interested, an hour or so of intensive beachcombing would be helpful to us. There are seeds along the entire windward side of the island, but we collect only a short section of beach to make the task manageable. We collect every seed (including fragments) from the vegetation to the water line from the southern edge of the small rock rampart ENE of the radar tower, south to the south end of the northern vegetated area. This area (about 100 yards long) is marked on the Xeroxed map and can be readily seen on aerial photos on file at Island Resources Foundation.

Coconuts are bulky and can simply be counted and left on the beach. The rest can be put in a plastic bag and brought or sent to St. Thomas for us to sort, identify and count, or if storage is a problem, the more obvious and common types, such as manchineel, Indian almond, and sleeve palm (there are examples at IRF) can be sorted out, counted, and discarded (preferably on the vegetation, so they aren't counted again in the next beach survey) retaining only an example or two to confirm the identification.

3. Plants: There are generally only two species on the island, both low growing succulents. Much of the island is covered by a dense mat of Sesuvium portulacastrum (which has tapering, cylindrical leaves and abundant tiny purplish flowers). Mostly on the north end of the island among rocks on the semi-consolidated sand on the margins of the bird colony are scattered, prostrate rosettes (generally single plants) of Portulaca oleracea (leaves are flattened and broadest near the tip, yellow flowers which rarely show). Occasionally a coconut or other sea drift seed sprouts and survives a while on the beach.

We would be interested to know: are the Sesuvium and Portulaca flowering (the latter has its flowers open only early in the morning)? Are seedlings of any additional plant species present? (Collect seedlings for identification if you aren't sure what they are and press dry between sheets of paper or preserve in alcohol.)

4. Birds: Normally there are five species of birds on Aves: sooty terns, brown noddy terns, frigate birds, ruddy turnstones, and laughing gulls. Transient or waif birds of many other species stop on the island briefly. Some, particularly small shorebirds, are difficult to identify, but a color slide which we can borrow will usually allow identification. Often small shorebirds brought to the island by storms die there and can be preserved for identification in formalin, alcohol or rum (slit open the bird).

We are interested in counts of numbers for any bird present. For sooties and noddies which may be extremely abundant, a few slides or black and white photos taken from the radar tower or other vantage points will permit a count after the fact.

Sooty, brown noddy and bridled terns and laughing gulls have been seen breeding on the island. The breeding cycle is not annual and any information will help to clarify the currently confusing picture. Estimates of numbers (or just presence or absence) of several simple age categories of these birds would be very useful. We divide each species into adults; eggs; downy chicks; feathered, flightless juveniles; and flying juveniles. Counting the number of adults sitting on eggs per square meter is relatively simple, but the different habits or appearance of chicks and juveniles sometimes make identification and estimating their numbers difficult.

Generally there are fewer noddy chicks and they are generally closely attended by their parents. The plumage of juvenile brown noddies looks similar to that of the adult, so the easiest time to distinguish flying juveniles from adults is in the evening when they beg food from nearby adults, with a plaintive "peep" call. Sooties are generally more abundant, frequently nest on bare ground and their salt and pepper patterned chicks sometimes are seen in dense flocks. Juvenile sooties capable of flying or nearly so are often all black/brown with some white flecks on the wing. Again, feeding by the parents will confirm that they are sooties.

Juvenile laughing gulls flock with the adults and have the same distinctive call even though their mottled pattern lacks the distinctive black head. Younger gull chicks will be closely attended by the parents. Bridled terns are rather similar to sooties and have not been seen breeding on Isla Aves during the last several summers but they did breed there in March of 1966.

Both laughing gulls and ruddy turnstones readily eat tern eggs; frigate birds and gulls may eat young chicks. So every effort should be made to not scare large numbers of terns off their nests as these predators will take advantage of human disturbance.

Reference books for birds are Watson's excellent and inexpensive Birds of the Tropical Atlantic Ocean and any guide book of your choice which covers shore birds.

5. Terrestrial invertebrates: Other than sea birds, there are no vertebrates on Aves. There are, however, six species of crabs which are terrestrial or semi-terrestrial and perhaps twenty species of insects, or other, small invertebrates. The most prominent crabs are: Ocypode, the ghost crab, a primarily nocturnal beach carnivore; Grapsus, a large rock crab which picks algae, but at night will range ashore and scavenge for dead chicks or hatchling turtles. Gecarcinus, the jumbi crab, a highly terrestrial burrow dweller, which emerges at night to browse on plants, but will readily consume turtle eggs and Coenobita, the terrestrial hermit crab, which scavenges nocturnally over the whole island. Any observations of feeding on identifiable foodstuffs, mating, females bearing eggs, of any of these crabs is of interest.

We have made insect collections in the past, but are always interested to look over insect specimens which are preserved in alcohol (or dried) to see if they include any species which we missed previously.

The smaller invertebrates are mostly cryptic and remain concealed in the vegetation mat during the day. For people who stay on the island over night in order to watch nesting turtles, it is best to rest on a ground cloth or cot and to use insect repellent if the terns have young chicks. There are substantial numbers of ticks (though not generally on the open sand) whose reproductive cycle parallels that of the birds. Unlike the more familiar kinds of ticks they do not remain attached to the skin, but bites are very itchy, may cause a local reaction, or occasionally a fever.

6. Turtle observations: We tag nesting turtles with a $1\frac{1}{2}$ " long monel-metal strap tag, clipped through the trailing edge of the right front flipper close to the body. In case the tag is lost we have also made narrow, coded notches in the margins of the turtle's shell. The tags are identified by a letter/number combination on the upper surface (e. g. , H1511, C1463). These tags are hard to read except at very close range, but they can sometimes be seen flashing when the sunlight hits them underwater even at long range.

We are interested in both general and detailed observations on sea turtles around the island:

- a. How many were seen in the water around the island and what size were they?
- b. Were any turtles mating? Several turtles splashing around together on the surface in a clumsy fashion (generally in the early morning) is a sure sign of at least attempted mating.
- c. What sex were the turtles seen? Females have short tails which do not extend much beyond the trailing edge of the shell. The tail of male turtles may be a fourth or more of the shell length. These observations are made easily only underwater. Turtles are somewhat curious about swimmers in the water and will sometimes approach fairly closely. Despite their size they will do no harm.

- d. How many tracks or nest pits are there on the beach? Nesting females leave a prominent track on the beach when emerging and returning to the water and dig one or more large pits (up to six in one night) while trying to lay their eggs. The turtles dig additional pits when buried obstructions or dry sand which collapses readily prevent them from laying on one spot. Thus a count of pits in the island is not equivalent to the number of nests laid, but gives us some ideas. The tracks are not deeply impressed in the sand and are rather quickly obliterated by wind and rain, so they provide a fairly good idea of nesting within the preceding few days. If you plan to remain overnight at Aves and go ashore again in the morning, you can mark the old tracks by simply walking across them, and then count new tracks the following morning to find out how many emergences happened overnight.

A third persistent type of track on the beach is a shallow, smooth U-shaped trough produced when turtle hunters turn a turtle on its back and drag it to a convenient point to load it in their launch or dinghy. We are interested in a count of these tracks also to get some idea of how many turtles are taken each year at what times of year.

If turtle hunters are present, it is usually possible to talk with them and find out about nesting intensity, how many turtles they have taken, whether they hunt turtles regularly or only incidentally, what sort of a price they get for turtles and where, whether they have encountered tagged turtles (the tags are probably discarded), and whether they have noticed any long term trends in the shape or size of the island and the number of nesting turtles. The idea is to learn as much as possible about the turtle trade and the natural history of the island. Experienced turtlers will know quite a bit, possibly including the fact that their activities are, on paper, illegal. The name, port of registry or nationality of any vessel and a photograph are useful.

- e. How many tagged and untagged turtles emerge each night? If there are a few recent tracks on the beach and you are prepared to stay ashore preferably with little or no use of lights, you can see the turtles go through their nesting process. Leaving bright lights burning on your ship, running the generator or other machinery after dark, and use of an outboard motor or bright lights on the island will all tend to reduce the number of turtles emerging to nest. The best policy is to eat early in the evening and come ashore before dark (say 1800 hours) then pick out a comfortable spot with a good view of the beach and wait until 2030 before walking around the island to see if any turtles have begun to nest. Turtles are most sensitive to disturbance while emerging from the water and will head back for it with surprising speed if they detect a light or even moving figures silhouetted against the sky (particularly under bright moonlight). Turtles which have begun excavating the body pit are less sensitive to disturbance, but it is only after they actually begin laying their eggs (generally at least an hour after they emerge) that they become more or less insensitive to having lights shone into their egg chamber, etc. However, if they don't nest on one night they will nest the following night or shortly thereafter) so on a brief stop at the island, it is best to cause a little disturbance and check all nesting turtles with a light to get their tag designation. It is almost impossible to read a tag number on a moving animal, but they will generally pause after a few steps if a hat, towel, or other article is held over their eyes (or entire head).

Principally green turtles (Chelonia mydas) will be encountered nesting at Aves. We have references at the Island Resources Foundation which contain photos and keys of the five kinds of sea turtles likely to be seen in the Caribbean and which might possibly be seen at Aves.