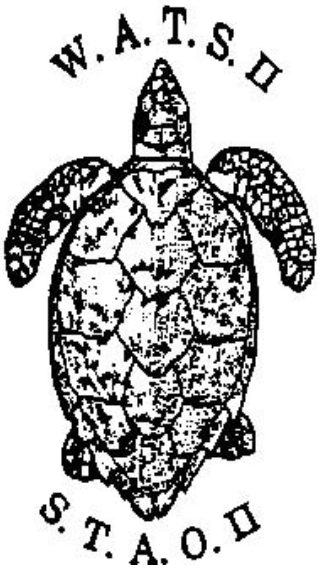
WATS II REPORT / DATA SET



National Report to WATS II for Anguilla

K. Hall

16 October 1987

WATS2 092

WIDECAST
Wider Caribbean Sea Turtle Conservation Network

With a grant from the U.S. National Marine Fisheries Service, WIDECAST has digitized the databases and proceedings of the **Western Atlantic Turtle Symposium (WATS)** with the hope that the revitalized documents might provide a useful historical context for contemporary sea turtle management and conservation efforts in the Western Atlantic Region.

With the stated objective of serving "as a starting point for the identification of critical areas where it will be necessary to concentrate all efforts in the future", the first Western Atlantic Turtle Symposium convened in Costa Rica (17-22 July 1983), and the second in Puerto Rico four years later (12-16 October 1987). WATS I featured National Reports from 43 political jurisdictions; 37 presented at WATS II.

WATS I opened with these words: "The talks which we started today have the multiple purpose of bringing our knowledge up to date about the biological peculiarities of the marine turtle populations of the western Atlantic; to know and analyse the scope of the National Reports prepared by the scientific and technical personnel of more than thirty nations of the region; to consider options for the orderly management of marine turtle populations; and in general to provide an adequate forum for the exchange of experiences among scientists, administrators, and individuals interested in making contributions for the preservation of this important natural resource."

A quarter-century has passed, and the results of these historic meetings have been lost to science and to a new generation of managers and conservationists. Their unique importance in providing baseline data remains unrecognized, and their potential as a "starting point" is neither known nor appreciated.

The proceedings document what was known at the time concerning the status and distribution of nesting and foraging habitat, population sizes and trends, mortality factors, official statistics on exploitation and trade, estimated incidental catch, employment dependent on turtles, mariculture operations, public and private institutions concerned with conservation and use, legal aspects (e.g. regulations, enforcement, protected areas), and active research projects.

Despite the potential value of this information to agencies responsible for conducting stock assessments, monitoring recovery trends, safeguarding critical habitat, and evaluating conservation successes in the 21st century, the National Reports submitted to WATS II were not included in the published proceedings and, until now, have existed only in the private libraries of a handful of agencies and symposium participants. To help ensure the legacy of these symposia, we have digitized the entire proceedings – including National Reports, plenary presentations and panels, species synopses, and annotated bibliographies from both meetings – and posted them online at http://www.widecast.org/What/RegionalPrograms.html.

Each article has been scanned from the original document. Errors in the scan have been corrected; however, to be true to the original content (as closely as we can discern it), potential errors of content have not been corrected. This article can be cited (with the number of pages based on the layout of the original document) as:

Hall, K. 1987. National Report to WATS II for Anguilla. Prepared for the Second Western Atlantic Turtle Symposium (WATS II), 12-16 October 1987, Mayagüez, Puerto Rico. Doc. 092. 17 pages.

Karen L. Eckert
WIDECAST Executive Director
June 2009

WATS II NATIONAL REPORT FOR ANGUILLA

Kathleen V. Hall
Universityof Puerto Rico
Mayaguez, PR 00709

Section 1

a) Sporadic nesting occurs on virtually all the beaches on the main island of Anguilla. Of the 40 mainland beaches, each has an average of 1-2 nests per year. Three species nest on the beaches and in decreasing order of frequency they are *Eretmochelys imbricata*, *Chelonia mydas* and *Dermochelys coriacea*. Beaches reported to have had higher nesting at one time were Cove Bay before 1983, Meads Bay before L982, and Captains Bay before L982. The nesting season extends from January to September with peak months from May to September.

Most fishermen agree that the highest density nesting occurs on the uninhabited satellite islands. Dog Island is the best, then Scrub Island and Prickly Pear Cays. Pigfish Beach on Dog Island had 8-10 old tracks at one time in late August-early September of 1987 and a fresh track on 26 September 1987. Approximately 20-50 nests are laid annually on Dog Island, 8-11 on Scrub Island, and 4-6 on the Prickly Pear Cays.

b) There are 22 km of white calcareous beaches in Anguilla, all under 3 km in length. The vast majority are easily accessible to any species of sea turtle and to man by way of roads. Egg and terrestrial hatchling predation is probably low due to the paucity of feral animals and other predators.

c) Eggs are harvested whenever possible, even during the closed season (see section 1h). The eggs are utilized locally to increase male "stamina". One fisherman (Ed Carty) is worried about the decreasing number of turtles and camouflages nests and tracks in an individual conservation effort. Ten to fifteen pound turtles are often harvested despite a weight limit of 20 lbs, because the meat is considered more tender, and this size-class is much easier to spear. Anguillans do not stuff small turtles. The fishermen of St. Martin are accused of taking many juveniles, and people from St. Barts and Haiti also hunt in these waters. It is hard to keep the St. Martin fishermen out of Anguillan waters because many times they have strong ties to relatives from Anguilla. Anguillans are also known to fish in St. Martin’s waters. The fishermen from the French islands in general are considered to have a total disregard for conservation measures, and will take juvenile fish in addition to juvenile turtles.

It is estimated that 100-200 turtles a year are taken now' as compared to 200-300 in 1984. Sub adults and adults of all species are harvested for meat which sells for US $1.84 lb, and the hawksbill is most often taken for its shell. The whole shells are sold in local gift shops at US $35.00 - $50.00 a shell, and the scutes are sold internationally for handicrafts at $25-30 lb, Jewelry is not made locally, although one shop keeper at Sandy Ground insisted hers was. Strangely enough, her bracelets were fashioned in exactly the same manner as Dominican bracelets, which include metal work. She may have been avoiding payment of an import tax.

d) One hawksbill died naturally after getting caught in underbrush during the nesting process. Leatherbacks frequently get caught in fish pot lines (at least three to my knowledge), which increases their mortality not only from human capture, but from sharks (one had lost a front flipper). A large stranded hawksbill was found with a spear through its body. This wasteful form of mortality may be quite common due to the difficulty of a diver hanging onto a large speared turtle.

e) Foraging turtles are often seen at Sombrero Island, Seal Island, Corito Bay, Forest Bay, Meads Bay, Scilly Cay, and Shaddick Point. Leatherbacks are only seen off the North Coast.

f) Past Reports:

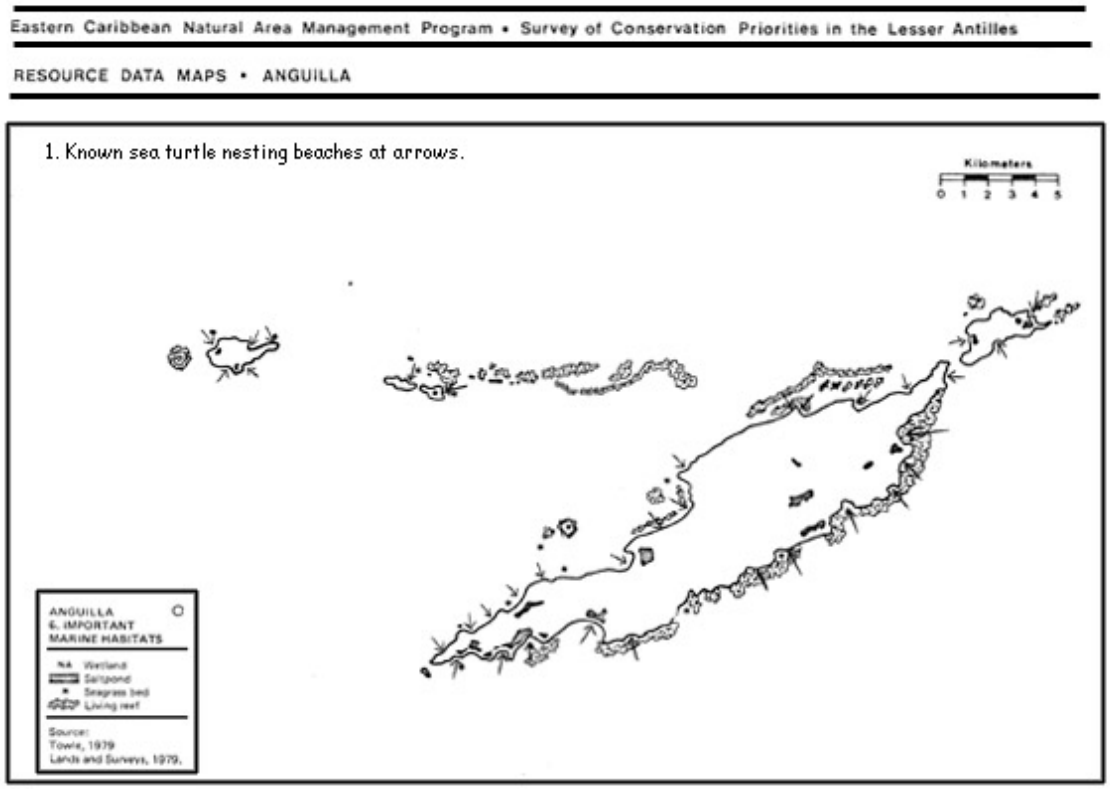
Anguilla: Preliminary Data Atlas. Eastern Caribbean Natural Area Management Program. 1980

Carr, A., A. Meylan, J. Mortimer, K. Bjorndal, and T. Carr. L982. Surveys of sea turtle populations and habitats in the Western Atlantic. NOAA Technical Memorandum NMFS-SEFC-91. 81 pp.

Meylan, A.B. 1983. Marine turtles of the Leeward Islands, Lesser Antilles. Atoll- Research Bulletin, No.278. 24 pp.

Future Work:
Anguilla hopes to start tagging turtles this year with the equipment supplied by WATS.

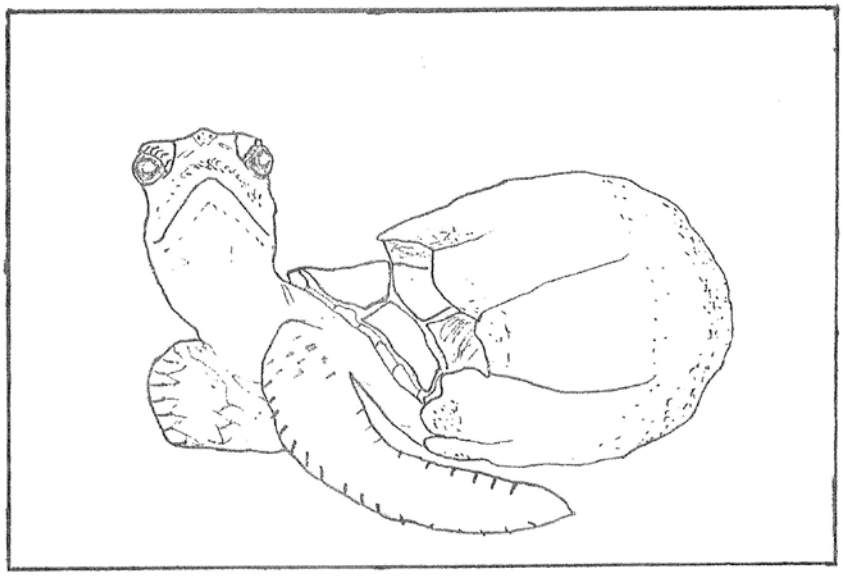
g) Leslie Richardson
Department of Agriculture and Fisheries
The Valley, Anguilla, W.I.
(809) 497-2615



Editor's note (2009): Maps and figures are reprinted exactly as they appear in the original document; we regret the poor quality exhibited in some cases.

h) These laws are handed to fishermen and posted on trees at the beach, and announced on the radio at the beginning and end of the season

BEWARE; TAKE HEED!



1st of June - 30th september is the CLOSE TURTLE SEASON

Why? Turtles, especially the hawksbill, are considered as being on the verge of extinction.

Hence. it is an offence:
(a) To attempt to catch, slaughter or have in your possession any turtle, portions of its meat or its egg during this period.

(b) To capture turtles less than 20 pounds in weight at any time of the year.

Persons suspected of committing an offence against the TURTLE ORDINANCE will be prosecuted and if found guilty shall be fined. The gear used in such an undertaking can be confiscated.

Periodic checks will be made.

Prepared by
Cephas Gumbs
Dept. of Agriculture
& Fisheries

i)

- Four species of sea turtle are found in Anguillan waters: *Eretmochelys imbricata, Chelonia mydas, Caretta caretta, and Dermochelys coriacea.*

- No one fishes turtle in Anguilla as a full-time occupation. Fishing lobster is more profitable.

- Most fishermen believe the number of turtles in the waters surrounding Anguilla has remained the same, but others feel there has been a decrease, especially around the mainland. Ed Carty, a relatively young fisherman, has already seen a change in numbers since he first started fishing. He is counting approximately one-tenth the number of turtles as he did on previous boat trips.

- All people interviewed have reported a decrease in nesting on the mainland. when asked what may have caused this, the following possibilities were given: 1) pre-dawn boat traffic scares them away, 2) the scent of humans in the sand repels them, 3) lights from development inhibit nesting, 4) the population of turtles that once nested on these beaches has been decimated and therefore there are fewer turtles left to renest. Any or all of these may be viable reasons, however advocates of the first three arguments assume the turtles are simply going elsewhere to lay, such as the offshore cays. The fourth alternative - which I believe is the main one - admits to an actual decrease in the population.

- Enforcement is difficult because of the number of beaches and shortage of personnel. No one in present history has ever been fined for a violation. When Anguilla was associated with St. Kitts - Nevis 20 years ago, enforcement was excellent. Many ports were patrolled and catches were monitored.

- Some fishermen are aware of the dates for the closed season.

- A five year moratorium is being considered.

- Development is proceeding rapidly on many of the beaches. Nesting at Meads Bay has greatly decreased since Malliouhana Resort was built (personal communication with former owner's wife). Now is the time to set aside some beaches as reserve areas, and to regulate beachfront construction and lighting. Sand mining is already regulated, although it occurs illegally in some areas.

- Only the mating of hawksbills has been observed, and this is in the months of April to May.

- For the past two years, the vast areas of seaweed once common offshore have not been sighted. In the months of January and April, juvenile turtles of approximately 4-5 lbs have been seen feeding around fish pot buoys and coiled line, 40 miles out to sea in 200-400 meters of water. One fisherman claims they are biting into his buoys while trying to feed on epibionts. *Chelonia* are most commonly seen in this habitat, then *Eretmochelys* and *Dermochelys*.

- Freshly laid turtle nests can often be pinpointed by looking for flies around the nesting area.

WATS II SEA TURTLE SURVEY DATA FORM

TABLE III. NESTING BEACH INVENTORY

List Beaches in geographic sequence. Provide additional information on an attached page. Please list each species that occurs on beach on a separate line even if months of occurrence are the same.

COUNTRY: Anguilla STATE: Anguilla RECORDER: K. Hall

Name of Beach	Length in Km	Species * Nesting	Months Peak Nesting	Months Recorded Nesting
West End	0.05	**		
West End Bay	0.10	**		
Barnes Bay	0.75	**		
Meads Bay	1.75	**		
Long Bay	1.00	**		
Road Bay	1.25	**		
Katouche Bay	0.25	**		
Limestone Bay	0.05	**		
Lower Shoal Bay	1.40	**		September
Upper shoal Bay	0.50	**		
Island Harbour	0.25	**		
Captains Bay	0.12	**		September
Windward Point Bay	0.50	**		
Savannah Bay	0.90	**		
Sile Bay	0.30	**		
Mimi Bay	0.50	**		
Sandy hill Bay	0.40	**		
Forest Bay	0.75	**		September
Blowing Point Harbour	0.90	**		
Rendezvous Bay	2.90	**		
Cove Bay	1.75	**		
Maundays Bay	1.50	**		
Shoal Bay	1.25	**		
Sherricks Bay	0.50	**		

* Cc=*Caretta caretta*; Cm=*Chelonia mydas*; Dc=*Dermochelys coriacea*; Ei=*Eretmochelys imbricata*; Lk=*Lepidochelys kempi*; Lo=*Lepidochelys olivacea*; Uk=Unknown

** Three species nest in Anguilla: *Chelonia mydas*, *Dermochelys coriacea, Eretmochelys imbricata*

WATS II SEA TURTLE SURVEY DATA FORM

TABLE III. NESTING BEACH INVENTORY

List Beaches in geographic sequence. Provide additional information on an attached page. Please list each species that occurs on beach on a separate line even if months of occurrence are the same.

COUNTRY: Anguilla STATE: Dog Island RECORDER: K. Hall

Name of Beach	Length in Km	Species * Nesting	Months Peak Nesting	Months Recorded Nesting
Spring Bay	0.01	Cm, Ei		
Savannah Bay	0.25	Cm. Dc, Ei		
Pigfish Beach	0.01	Ei		September
Stoney Bay	0.40			
Great Bay	0.50	Cm. Dc, Ei		

* Cc=*Caretta caretta*; Cm=*Chelonia mydas*; Dc=*Dermochelys coriacea*; Ei=*Eretmochelys imbricata*; Lk=*Lepidochelys kempi*; Lo=*Lepidochelys olivacea*; Uk=Unknown

WATS II SEA TURTLE SURVEY DATA FORM

TABLE III. NESTING BEACH INVENTORY

List Beaches in geographic sequence. Provide additional information on an attached page. Please list each species that occurs on beach on a separate line even if months of occurrence are the same.

COUNTRY: Anguilla STATE: Prickly Pear Cays RECORDER: K. Hall

Name of Beach	Length in Km	Species * Nesting	Months Peak Nesting	Months Recorded Nesting
Scrub Bay	0.88			
Deadman's Bay	0.13			
Souse Bay	0.12			
Prickly Pear West	0.10			
Prickly Pear East	0.50			

* Cc=*Caretta caretta*; Cm=*Chelonia mydas*; Dc=*Dermochelys coriacea*; Ei=*Eretmochelys imbricata*; Lk=*Lepidochelys kempi*; Lo=*Lepidochelys olivacea*; Uk=Unknown

WATS II SEA TURTLE DATA FORM

TABLE IV. MORTALITY

COUNTRY: Anguilla STATE: ___ YEAR 1987 OBSERVER: K. Hall

Date	Species *	Sex	Length (in)	Weight (lbs)	# Eggs	Locality	Cause
25 March 1987	Ei	F	34 C	166	---	North of Flat Caps	DC
08 May 1987	Ei	Uk		~ 30	---	East of Prickly Pear Cay	DC
07 Sept. 1987	Ei	Uk			---	Crocus Bay	S (speared)
? Sept. 1987	Cm	Uk			---	Dog Island	DC
? Sept. 1987		Uk			---	Sandy Ground	DC
Comments:							
* Cc=*Caretta caretta*; Cm=*Chelonia mydas*; Dc=*Dermochelys coriacea*; Ei=*Eretmochelys imbricata*; Lk = *Lepidochelys kempi*; Lo=*Lepidochelys olivacea*; Uk=Unknown							

WATS II SEA TURTLE DATA FORM

TABLE IV. MORTALITY

COUNTRY: Anguilla STATE: ___ YEAR 1986 OBSERVER: K. Hall

Date	Species *	Sex	Length (in)	Weight (lbs)	# Eggs	Locality	Cause
15 Nov. 1986	Cm	Uk		~ 21	---	Shoal Bay	DC
? Nov. 1986	Ei	Uk				Off Scrub Island	DC
Comments:							
* Cc=*Caretta caretta*; Cm=*Chelonia mydas*; Dc=*Dermochelys coriacea*; Ei=*Eretmochelys imbricata*; Lk = *Lepidochelys kempi*; Lo=*Lepidochelys olivacea*; Uk=Unknown							

WATS II SEA TURTLE DATA FORM

TABLE IV. MORTALITY

COUNTRY: Anguilla STATE: ___ YEAR 1984 OBSERVER: K. Hall

Date	Species *	Sex	Length (in)	Weight (lbs)	# Eggs	Locality	Cause
? / ? 1984	Dc	Uk				Meadsville	DC
? / ? 1984	Dc	Uk				Whale Ground	DC
Comments:							
* Cc=*Caretta caretta*; Cm=*Chelonia mydas*; Dc=*Dermochelys coriacea*; Ei=*Eretmochelys imbricata*; Lk = *Lepidochelys kempi*; Lo=*Lepidochelys olivacea*; Uk=Unknown							

NOAA Technical Memorandum NMFS-SEFSC-91

Surveys of Sea Turtle Populations and Habitat in the Western Atlantic

Archie Carr, Anne Meylan, Jeanne Mortimer, Karen Bjorndal, and Thomas Carr

March 1982

U.S. Department of Commerce
Malcolm Baldrige, Secretary
National Oceanic and Atmospheric Administration
John. V. Byrne, Administrator
National Marine Fisheries Service
William G. Gordon
Assistant Administrator for Fisheries

Leeward Islands

All the Leeward Islands (Fig. 8) were surveyed by Meylan during 1980 and 1981. Return visits were made to selected islands that seemed to warrant additional attention. Antigua, **Anguilla** and Montserrat were visited a second time, to meet with national delegates ob the West Atlantic Turtle symposium.

A substantial percentage of the nesting habitat in these islands has now been reconnoitered, mostly on foot. Interviews were conducted with turtle fishermen, divers, shopkeepers, and residents living along the beaches, to obtain information on species occurrence, abundance and seasonality. Reconnaissance of developmental and adult foraging habitats was made by boat surveys and by diving. A survey of marine habitat types recently completed by the East Caribbean Natural Areas Management Program provided valuable information on the distribution of beaches, sea grass beds and living reefs, and facilitated the present survey of marine turtles. The Caribbean Conservation Corporation provided ECNAMP with detailed data on turtle nesting and forging habitats for inclusion in resource maps that are to be distributed to each East Caribbean country.

The two principal marine turtle species in the Leeward Islands are green turtles and hawksbills. Both appear to be year-round residents. Hawksbills nest to a greater extent than do green turtles, but nesting by both species is sparse to moderate. Specific nesting and foraging localities for both species will be described in the final report.

Leatherbacks are far less common in the Leeward than green turtles and hawksbills, but concentrations nest at several locations. St. Kitts has what further observations may reveal; to be the best nesting aggregation in the Island group, although it is difficult to estimate the size of the population.

Loggerheads are caught infrequently at sea; most are subadults. No definitive nesting sites for this species were found during this survey.

Turtle resources in the Leeward Islands have been badly depleted in recent years, and only the island which are less well developed for tourism, such as **Anguilla**, Barbuda and Montserrat, still have reasonably healthy turtle colonies. Even these, however, currently are being exploited to meet the demands for meat and shell in the tourist centers such as St. Maarten and Antigua.

One of the major threats to sea turtles in these islands is the loss of nesting habitat. Hotels and high-rise condominiums are rapidly going up on some of the best remaining shores in the region.

With the exception of the Dutch Antilles (St. Maarten, Saba and St. Eustatius), there are laws on each island protecting turtles. Enforcement throughout the region suffers badly, though from lack of funds and personnel. The Dutch Antilles have no laws whatsoever protecting turtles or their eggs.

ATOLL RESEARCH BULLETIN
No. 278

MARINE TURTLES OF THE LEEWARD ISLANDS, LESSER ANTILLES

bY

ANNE BARKAU MEYLAN

Issued by

THE SMITHSONIAN INSTITUTION
WASHINGTON, D.C., U.S.A.
DECEMBER 1983

RESULTS

Anguilla (18°I8'N, 63°17'W)

Anguilla is the northernmost island in the Leewards Chain (Fig. 1). Situated I km north of St. Martin, the 90 km^2 island extends NE to SW for 26 km. It includes several small, uninhabited cays: Dog Island, Prickly Pear cays, Seal Island, Sandy Island and Sombrero Island (Fig. 2). There are extensive reefs off the north coast of the island, along a line running westward from Island Harbour to Prickly Pear Cays; fringing reefs are present along most of the south coast (ECNAMP 1980). The numerous short, white sand beaches around the island are potentially good nesting sites for turtles.

The green turtle and the hawksbill are the most common marine turtle species in Anguillan waters. Both are year-round residents, and both are represented by juvenile, subadult and adult size classes. Green turtles are reported to reach great size (227 kg) which is typical of the species in the Eastern Caribbean. Leatherbacks and loggerheads also occur around Anguilla, but in much smaller numbers. The ridley is not known from this locality. Vernacular names for each species are given in Table 1.

The hawksbill is the principal species nesting on Anguilla. The beaches on Dog Island (Savannah Bay, Stoney Bay, Pigflsh Bay and Great Bay) are said to be the most frequently used nesting sites, although some nesting occurs on Prickly Pear Cays and on the main island, as well. A nest found by a resident of North Hill Village at Katouche Bay, in August 1979 contained 200 eggs and thus was presumably the nest of a hawksbill. Despite the existence of much suitable habitat the total number of hawksbills nesting annually on Anguilla and its associated cays appears to be relatively low.

Green turtles rarely nest on Anguilla. One reliable informant recalled seeing a 227 kg green turtle nest at Pigfish Bay, Dog Island some ten years ago. Local lore is that Anguillan green turtles do not nest at all on Anguilla, but instead migrate to Aves Island 250 km west of Guadeloupe, to nest. This may well be the case. Although some solitary nesting does occur, the green turtle is primarily a group nester, and Aves is the only colonial nesting site known for the species in the Eastern Caribbean (Rainey and Pritchard, 1972).

The leatherback, although rare around Anguilla, is well known by residents because of its distinctive appearance. It occurs only as a nesting visitant. On the mainland, one or two leatherbacks nest each year on the northwest coast (Road Bay, Mead's Bay, Long Bay and Barnes Bay), and there are reports of even more sporadic nesting on the southeast coast at Sandy Hill, Mimi Bay, and Captains Bay. It is likely that these turtles are strays from other nesting colonies- perhaps those in the British and U.S. Virgin Islands. Several tagged females have been captured on Anguilla, according to residents, but I could not discover the origin of the tags.

Although nesting by leatherbacks on the main island is common, a number of informants reported nesting on nearby Scrub Island. Scrub Island is uninhabited and seldom visited, and it is possible that a small colony of *Dermochelys* nests there.

There are no reliable records of nesting by loggerheads on Anguilla. It is not even known whether mature individuals occur in the area.

Anguilla is one of the few localities in the Eastern Caribbean where hawksbills can be seen, more or less predictably, in foraging habitats around the main island. Throughout much of the region, they have been extirpated from shallow coastal waters by divers and net fishermen, and persist only in more inaccessible offshore habitats. Both hawksbills and green turtles are frequently sighted by residents from the cliffs at North Hill village and Lower South Hill village, and at Isaac's Cliff.

Green turtles, particularly juveniles, can be seen feeding in bays around the main island. Many informants reported seeing them in groups. On the main island, Mead's Bay is considered by local divers to be one of the best places to observe both greens and hawksbills.

There is good foraging habitat for hawksbills on the on the extensive reef that lies north of the island, and for both hawksbills and green turtles around the offshore cays. Both species are frequently sighted at Dog, Island, Prickly Pear Cays and Sandy Island. One diver reported group of 15 green turtles, ranging in weight from approximately 18 to 27 kg, on the eastern side of Sandy Island. A young green turtle captured by a diver at Sandy Island in August 1980 bore a tag that had been put on by the Florida Department of Natural Resources in 1975, when the turtle was released at Cape Canaveral (R. Witham, in litt.).

Hawksbills are also seen around Sombrero Island, some 48 km northwest of Anguilla. The island is uninhabited, but a boat travels there from Anguilla every 15 days to service the lighthouse. Curiously, all informants who mentioned Sombrero commented on the large size of the hawksbills there.

Information about foraging loggerheads in Anguillan waters is fragmentary. Some reports were received that loggerheads feed around Dog Island, Scrub Island and Sandy Island, but identification of this species by most Anguillans seems to be unreliable, probably because of the turtle' scarcity there. The species definitely does occur around the island however. The author saw a subadult on 12 April 1980 that had just been caught in a net at Scilly Cay, near Island Harbour (Pl. 1). On the rather crude public scale at Island Harbour, the turtle weighed 54.5 kg. In general, fishermen consider this species to be rare.

Marine turtles appear to be more abundant around Anguilla than at most of the other Leeward Islands. This abundance can at least partly be attributed to the fact that the island has extensive nesting and foraging habitats many of which are located on and around offshore cays. Evidence of the value of these less accessible habitats is the abundance of turtles at Dog Island, situated some 13 km from the main island. The slow rate of development of the tourism industry has also been a positive factor in the continued survival of Anguilla's turtle fauna. The usual pressures exerted by the souvenir trade, and the market for turtle meat to supply hotel restaurants, have been minimal.

The survival outlook of marine turtles on Anguilla is by no means secure, however. Populations are already depleted, and exploitation pressures are rapidly escalating as tourism in the region increases. A factor that is already taking a toll is the export of turtles and turtle products to neighboring islands, particularly St. Martin.

A change in the method of fishing turtles is also having a negative effect on populations. The traditional method of setting tangle nets is dying out as costs for net materials and gasoline increase, and as fishermen turn to the more lucrative lobster business. Only about ten people were engaged in setting nets for turtles in 1990. The new generation catches turtles with spearguns. For the most part, they are young divers, who comb the reefs looking for lobster, fish and conch. They take turtles only opportunistically with spearguns for weapons, however, they are able to catch nearly every turtle they encounter, and as a result, far more are being killed than ever before. In addition, smaller size classes are for the first time included in the harvest. The hawksbill is by far the most vulnerable species, because it shares the habitat with the lobster. A few divers who have become aware of the profit to be made in the tortoiseshell trade now concentrate their efforts on hawksbills.

The meat of green turtles and hawksbills is sold locally to private individuals and to hotels on the island. In 1980, the price was approximately US $2/kg. Fishermen also carry meat to St. Martin to sell, where there is a steady demand to supply the many hotel restaurants. Live turtles occasionally are transported on the ferry that runs to Marigot, St. Martin. The meat of the leatherback is eaten on Anguilla, but is probably not exported. Eggs of all species are taken

whenever they are found, but there appears to be no commerce in them, presumably because of their scarcity.

Tortoiseshell is sold to buyers on St. Martin or to entrepreneurs from St. Thomas and Puerto Rico, who periodically visit Anguilla for this purpose. The price for raw shell in l980 was US$ 2O/kg. There is currently no local handicraft in tortoiseshell.

Carapaces of hawksbills and green turtles are dried and prepared for local sale, or are sold to shops on St. Martin. Currently, this trade is small in magnitude. Shells of 15 juvenile hawksbills and one subadult green turtle were seen by the author for sale at various places on Anguilla. All of the hawksbills were well below the 9 kg minimum size limit (Table 2), and thus captured illegally.

Several nesting beaches on Anguilla have been or are currently being, mined for sand for construction purposes: Shoal, Bay, Meads Bay and Barnes Bay (ECNAMP, 1980). The impact of these operations on sea turtles nesting has not been assessed.

Anguilla has no sanctuaries or parks that provide protection for sea turtles (Table 3). However, a proposal under consideration recommends the establishment of three protected marine areas: Seal Island Coral Reef Reserve, which would include Seal Island, the eastern Prickly Pear Cay and an extensive tract of the north barrier reef; Sandy Island National Marine Park; and Shoal Bay National Marine Park (A. Putney, in litt.). All three could potentially benefit sea turtles, provided that specific regulations for their protection were included. Another area that deserves consideration as a possible sanctuary is Dog Island and its surrounding cays and reefs.

TABLE 1. VERNACULAR NAMES OF SEA TURTLES IN THE LEEWARD ISLAND. STANDARD NAMES ARE ALSO WIDELY USED.

	Green turtle (*Chelonia mydas*)	Hawksbill turtle (*Eretmochelys imbricata*)	Leatherback turtle (*Dermochelys coriacea*)	Loggerhead turtle (*Caretta caretta*)
Anguilla	greenback		river turtle river horse trunkback lanternback	
Antigua			river turtle walava	mulatto
Barbuda			bandora	mulatto
Guadeloupe	tortue verte tortue tortue blanche	caret	batacle luth	kahouanne tortue jaune
Montserrat			river turtle horse turtle	
Nevis	greenback		river turtle	bullhead
Saba			trunkback	
St Barthélemy	tortue	caret	batacle	kahouanne
St. Eustatius			river turtle	
St. Kitts	greenback		river turtle trunkback	mulatto
St Martin			river horse rubberback leathercoat	

TABLE 2. LEGISLATION PERTAINING TO MARINE TURTLES IN THE LEEWARD ISLANDS. LESSER ANTILLES.

	Date of Legislation	Protected Species	Closed Season	Minimum Capture Size	Punishment for violation
Anguilla	1948 (revised 1977)	all species	1 June -30 Sept (turtles, eggs)	> 9 kg	Fine ≤ US$ 37; forfeiture of goods, equipment
Antigua	1927 (revised 1962)	all but *Caretta*	1 June -30 Sept (turtles, eggs)	> 9 kg	Forfeiture of goods, equipment
Barbuda	1927 (revised 1962)	all but *Caretta*	1June -30 Sept (turtles, eggs)	> 9 kg	Forfeiture of goods, equipment
Guadeloupe	1979	*Chelonia Eretmochelys Dermochelys*	15 May-15 Sept. (*Chelonia Eretmochelys*); year-round (*Dermochelys)*; year-round (eggs, all species)	> 60 cm carapace length (*Chelonia Eretmochelys*)	
Montserrat	1951	all species	1 June -30 Sept (turtles, eggs)	> 9 kg	Fine ≤ US$ 18; forfeiture of goods, equipment
Nevis	1948	all species	1 June -30 Sept (turtles, eggs)	> 9 kg	Fine ≤ US$ 9; forfeiture of goods, equipment
Saba	none				
St. Barthélemy	see Guadeloupe				
St. Eustatius	none				
St. Kitts	1948	all species	1 June -30 Sept (turtles, eggs)	> 9 kg	Fine ≤ US$ 9; forfeiture of goods, equipment
St. Martin	Neth.: none Fr.: See Guadeloupe				

TABLE 3. MARINE PARKS AND PROTECTED AREAS IN THE LEEWARD ISLANDS, LESSER ANTILLES. SOURCE: ECNAMP 1980, 1982; A. PUTNEY, IN LITT.

	Existing	Proposed
Anguilla	None	Seal Island reserve, Sandy Island, Shoal Bay
Antigua	Diamond Reef Marine Park	Guiana Island to Great Bird Island; Fisher's Hill to Proctors' Point
Barbuda	Palaster Reef Marine Park	Codrington Lagoon
Guadeloupe	Ilets à Goyaves	Grand Cul de Sac Marin
Montserrat	None	None
Nevis	None	None
Saba	None	None
St. Barthélemy	None	None
St. Eustatius	Jenkins Bay	None
St. Kitts	None	Southeastern Peninsula
St. Martin	None	Guana Cay, Molly Beday, Hen and Chicken, Cay Bay, Man O' War Shoal

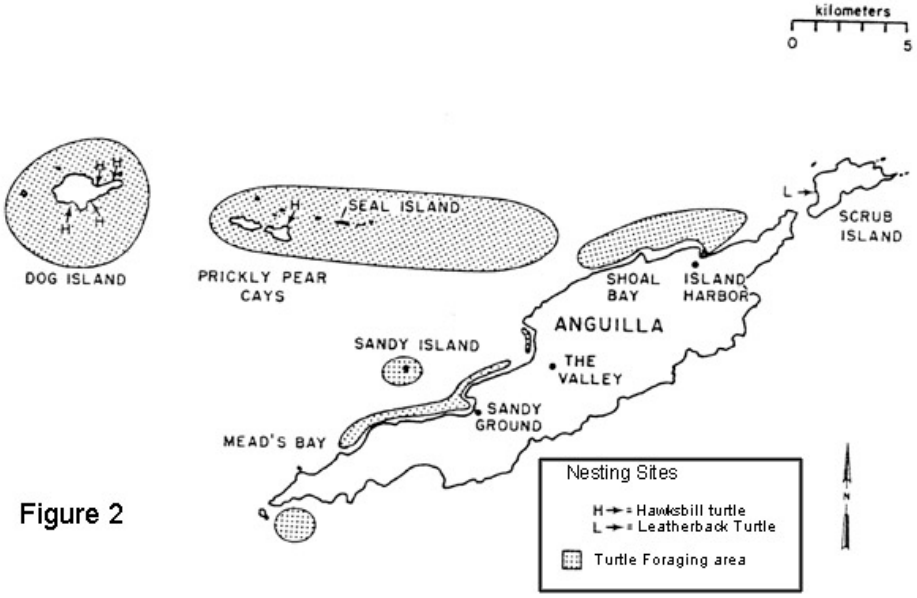


Figure 2

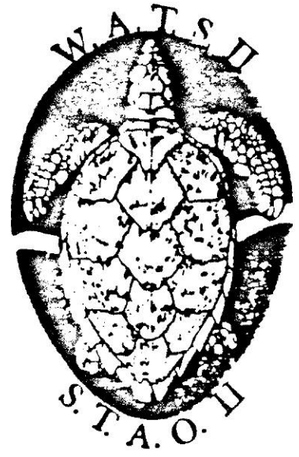
WATS II REPORT/DATA SET

National Report to WATS II for Anguilla

K. Hall

16 October 1987

SECOND WESTERN ATLANTIC
TURTLE SYMPOSIUM



WATS II

SEA TURTLE SURVEY DATA FORMS

Anguilla
K. Hall

Mail to:

Dr. Robert R. Lankford
Executive Secretary WATS II
Department of Marines Sciences
University of Puerto Rico
Mayagüez, Puerto Rico 00708

WATS II NATIONAL REPORT FOR ANGUILLA

KATHLEEN V. HALL
UNIVERSITY OF PUERTO RICO
MAYAGUEZ, PR 00709

Section 1:

a) Sporadic nesting occurs on virtually all the beaches on the main island of Anguilla. Of the 40 mainland beaches, each has an average of 1-2 nests per year. Three species nest on the beaches and in decreasing order of frequency they are Eretmochelys imbricata, Chelonia mydas and Dermochelys coriacea. Beaches reported to have had higher nesting at one time were Cove Bay before 1983, Meads Bay before 1982, and Captains Bay before 1982. The nesting season extends from January to September with peak months from May to September.

Most fishermen agree that the highest density nesting occurs on the uninhabited satellite islands. Dog Island is the best, then Scrub Island and Prickly Pear Cays. Pigfish Beach on Dog Island had 8-10 old tracks at one time in late August - early September of 1987 and a fresh track on 26 September 1987. Approximately 20-50 nests are laid annually on Dog Island, 8-11 on Scrub Island, and 4-6 on the Prickly Pear Cays.

b) There are 22 km of white calcareous beaches in Anguilla, all under 3 km in length. The vast majority are easily accessible to any species of sea turtle and to man by way of roads. Egg and terrestrial hatchling predation is probably low due to the paucity of feral animals and other predators.

c) Eggs are harvested whenever possible, even during the closed season (see section 1h). The eggs are utilized locally to increase male "stamina". One fisherman (Ed Carty) is worried about the decreasing number of turtles and camouflages nests and tracks in an individual conservation effort. Ten to fifteen pound turtles are often harvested despite a weight limit of 20 lbs, because the meat is considered more tender, and this size-class is much easier to spear. Anguillans do not stuff small turtles. The fishermen of St. Martin are accused of taking many juveniles, and people from St. Barts and Haiti also hunt in these waters. It is hard to keep the St. Martin fishermen out of Anguillan waters because many times they have strong ties to relatives from Anguilla. Anguillans are also known to fish in St. Martin's waters. The fishermen from the French islands in general are considered to have a total disregard for conservation measures, and will take juvenile fish in addition to juvenile turtles.

It is estimated that 100-200 turtles a year are taken now, as compared to 200-300 in 1984. Subadults and adults of all species are harvested for meat which sells for US $1.84 lb, and the hawksbill is most often taken for its shell. The whole shells are sold in local gift shops at US $35.00 - $50.00 a shell, and the scutes are sold internationally for handicrafts at $25-30 lb. Jewelry is not made locally, although one shop keeper at Sandy Ground insisted hers was. Strangely enough, her bracelets were fashioned in exactly the same manner as Dominican bracelets, which include metal work. She may have been avoiding payment of an import tax.

d) One hawksbill died naturally after getting caught in underbrush during the nesting process. Leatherbacks frequently get caught in fish pot lines

(at least three to my knowledge), which increases their mortality not only from human capture, but from sharks (one had lost a front flipper). A large stranded hawksbill was found with a spear through its body. This wasteful form of mortality may be quite common due to the difficulty of a diver hanging onto a large speared turtle.

e) Foraging turtles are often seen at Sombrero Island, Seal Island, Corito Bay, Forest Bay, Meads Bay, Scilly Cay, and Shaddick Point. Leatherbacks are only seen off the North Coast.

f) Past Reports:

1980. Anguilla: Preliminary data atlas. Eastern Caribbean Natural Area Management Program.

Carr, A., A. Meylan, J. Mortimer, K. Bjorndal, and T. Carr. 1982. Surveys of sea turtle populations and habitats in the Western Atlantic. NOAA Technical Memorandum NMFS-SEFC-91. 81 pp.

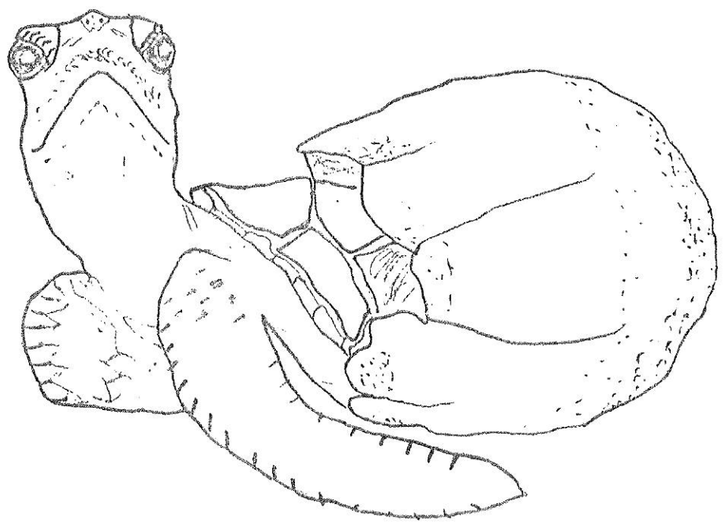
Meylan, A.B. 1983. Marine turtles of the Leeward Islands, Lesser Antilles. Atoll Research Bulletin, No.278. 24 pp.

Future Work: Anguilla hopes to start tagging turtles this year with the equipment supplied by WATS.

g) Leslie Richardson
Department of Agriculture and Fisheries
The Valley, Anguilla, WI
(809) 497-2615

h. These laws are handed to fishermen, posted on trees at the beach, and announced on the radio at the beginning and end of the season.

BEWARE; TAKE HEED!



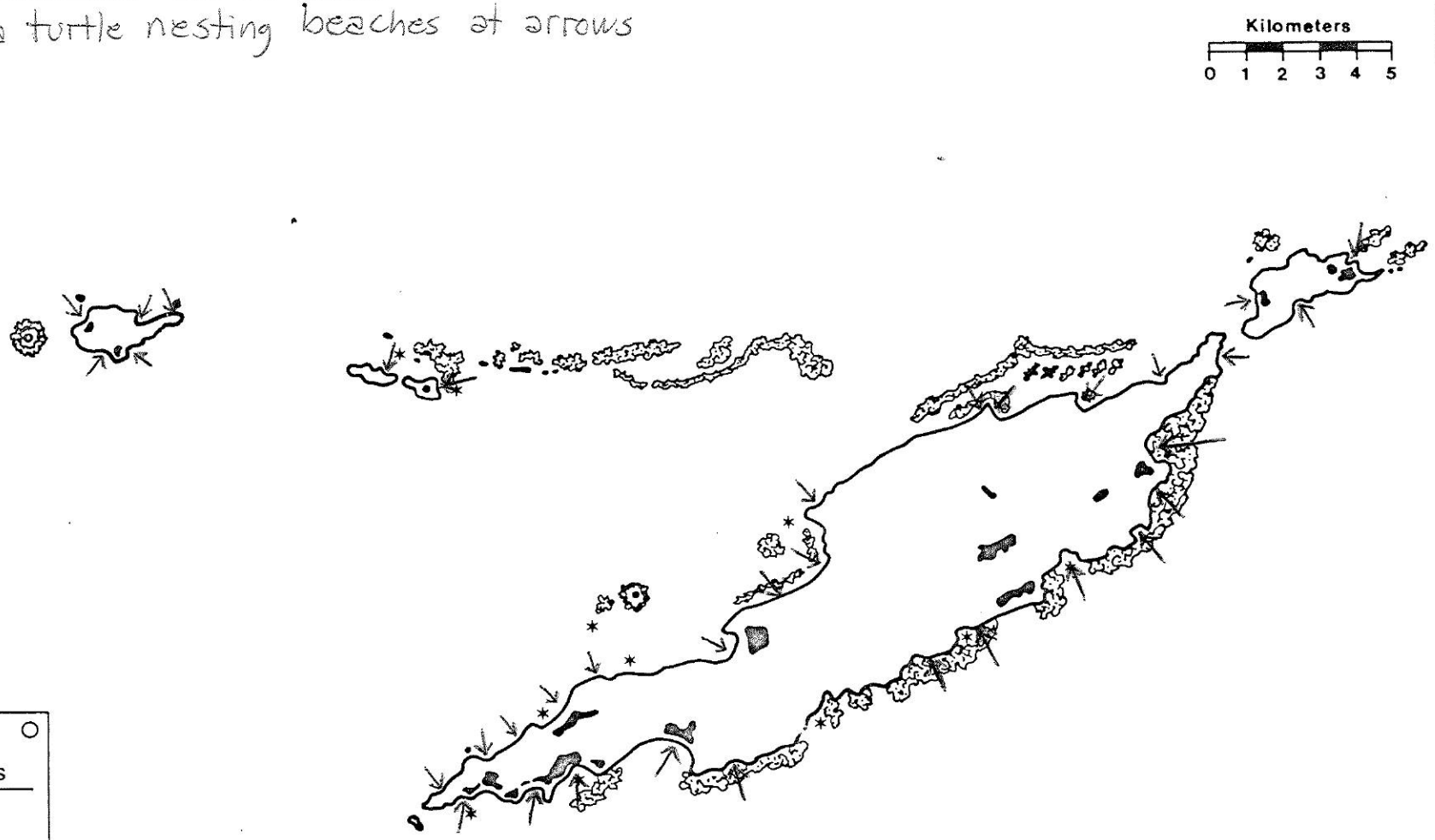
1st of June - 30th September is the CLOSE TURTLE SEASON.

Why? Turtles, especially the hawksbill, are considered as being on the verge of extinction.

Hence, it is an offence:

RESOURCE DATA MAPS ▪ ANGUILLA

1. Known sea turtle nesting beaches at arrows



ANGUILLA
6. IMPORTANT MARINE HABITATS

NA Wetland
Saltpond
Seagrass bed
Living reef

Source:
Towle, 1979
Lands and Surveys, 1979.

j) - Four species of turtle are found in Anguillan waters: Eretmochelys imbricata, Chelonia mydas, Caretta caretta, and Dermochelys coriacea.

- No one fishes turtle in Anguilla as a full-time occupation. Fishing lobster is more profitable.

- Most fishermen believe the number of turtles in the waters surrounding Anguilla has remained the same, but others feel there has been a decrease, especially around the mainland. Ed Carty, a relatively young fisherman, has already seen a change in numbers since he first started fishing. He is counting approximately one tenth the number of turtles as he did on previous boat trips.

- All people interviewed have reported a decrease in nesting on the mainland. When asked what may have caused this, the following possibilities were given: 1) pre-dawn boat traffic scares them away, 2) the scent of humans in the sand repels them, 3) lights from development inhibit nesting, 4) the population of turtles that once nested on these beaches has been decimated and therefore there are fewer turtles left to renest. Any or all of these may be viable reasons, however advocates of the first three arguments assume the turtles are simply going elsewhere to lay, such as the offshore cays. The fourth alternative - which I believe is the main one - admits to an actual decrease in the population.

- Enforcement is difficult because of the number of beaches and shortage of personnel. No one in present history has ever been fined for a violation. When Anguilla was associated with St. Kitts - Nevis 20 years ago, enforcement was excellent. Many ports were patrolled and catches were monitored.

- Some fishermen are aware of the dates for the closed season.

- A five year moratorium is being considered.

- Development is proceeding rapidly on many of the beaches. Nesting at Meads Bay has greatly decreased since Malliouhana Resort was built (personal communication with former owner's wife). Now is the time to set aside some beaches as reserve areas, and to regulate beachfront construction and lighting. Sand mining is already regulated, although it occurs illegally in some areas.

- Only the mating of hawksbills has been observed, and this is in the months of April to May.

- For the past two years the vast areas of seaweed once common offshore have not been sighted. In the months of January and April, juvenile turtles of approximately 4-5 lbs have been seen feeding around fish pot buoys and coiled line, 40 miles out to sea in 200-400 meters of water. One fisherman claims they are biting into his buoys while trying to feed on epibionts. Chelonia are most commonly seen in this habitat, then Eretmochelys and Dermochelys.

- Freshly laid turtle nests can often be pinpointed by looking for flies around the nesting area.

NOAA Technical Memorandum NMFS-SEFC-91

Technical Memorandums are used for documentation and timely communication of preliminary results, interim reports, or special-purpose information, and have not received complete formal review, editorial control, or detailed editing.

SURVEYS OF SEA TURTLE POPULATIONS AND HABITATS IN THE WESTERN ATLANTIC

Archie Carr, Anne Meylan, Jeanne Mortimer,
Karen Bjorndal, and Thomas Carr

March 1982

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary
National Oceanic and Atmospheric Administration
John V. Byrne, Administrator
National Marine Fisheries Service
William G. Gordon, Assistant Administrator for Fisheries

Quitasueño Bank. No beaches exist anywhere in this extensive area of shallow water--only reefs and rock patches. There is good feeding habitat for hawksbills and loggerheads, however, and also a few patches of turtle grass. No trustworthy reports of resident green turtles could be obtained, but the half-dozen people who knew of the southward migration of green turtles past the San Andrés reef believed that some of the itinerant turtles may come from Quitasueño. The waters of the bank are very difficult to navigate, and accordingly the developmental hawksbill population there is less heavily exploited than in most localities in the archipelago.

Roncador Cay. Roncador is a small cay located on Roncador Bank, due south of Serrana and east of Providencia. It is only about 400 yards long and has low, sparse vegetation. There are two short but formerly very good hawksbill beaches, and on these loggerheads also occasionally nest. There is also excellent reef-system habitat, inhabited by foraging adult and juvenile hawksbills, with loggerheads in about the same proportion as elsewhere in the region. Roncador is too far away to be regularly visited by fishermen from San Andrés, but they go there occasionally, especially during the nesting season of the numerous seabirds that nest on the cay. Boats from Cartagena frequently fish there, and everybody interviewed agreed that turtles of this classic and formerly populous hawksbill habitat have declined sharply.

Leeward Islands

All of the Leeward Islands (Fig. 8) were surveyed by Meylan during 1980 and 1981. Return visits were made to selected islands that seemed to warrant additional attention. Antigua, Anguilla and Montserrat were visited a second time, to meet with national delegates of the West Atlantic Turtle Symposium.

A substantial percentage of the nesting habitat in these islands has now been reconnoitered, mostly on foot. Interviews were conducted with turtle fishermen, divers, shopkeepers, and residents living along beaches, to obtain information on species occurrence, abundance and seasonality. Reconnaissance of developmental and adult foraging habitats was made by boat surveys and by diving. A survey of marine habitat types recently completed by the East Caribbean Natural Areas Management Program provided valuable information on the distribution of beaches, sea grass beds, and living reefs, and facilitated the present survey of marine turtles. The Caribbean Conservation Corporation provided ECNAMP with detailed data on turtle nesting and foraging habitats for inclusion in resource maps that are to be distributed to each East Caribbean country.

The two principal marine turtle species in the Leeward Islands are green turtles and hawksbills. Both appear to be year-round residents. Hawksbills nest to a greater extent than do green turtles, but nesting by both species is sparse to moderate. Specific nesting and foraging localities for both species will be described in the final report.

Leatherbacks are far less common in the Leewards than green turtles and hawksbills, but small concentrations nest at several localities. St. Kitts has what further observations may reveal to be the best nesting aggregation in the island group, although it is difficult at this point to estimate the size of the population.

Loggerheads are caught infrequently at sea; most are subadults. No definite nesting sites for this species were found during the survey.

Turtle resources in the Leeward Islands have been badly depleted in recent years, and only the islands which are less developed for tourism, such as Anguilla, Barbuda and Montserrat, still have reasonably healthy turtle colonies. Even these, however, are currently being exploited to meet the demands for meat and shell in the tourist centers such as St. Maarten and Antigua.

One of the major threats to sea turtles in these islands is loss of nesting habitat. Hotels and high-rise condominiums are rapidly going up on some of the best remaining nesting shores in the region.

With the exception of the Dutch Antilles (St. Maarten, Saba and St. Eustasius), there are laws on each island protecting turtles. Enforcement throughout the region suffers badly, though, from lack of funds and personnel. The Dutch Antilles have no laws whatsoever protecting turtles or their eggs.

Los Roques, Venezuela

In 1978, A. Carr briefly visited the Los Roques Atoll (Fig. 9) to consult with biologists of Fundacion Cientifica Los Roques. Information on sea turtle distribution was obtained from personnel of the station who were operating a headstarting program for hawksbills. In November of 1980, Meylan visited Los Roques for six days, to obtain additional information, particularly about the distribution of sea turtles elsewhere around the atoll. An aerial fly-over of the entire atoll was made, to assess the extent and quality of nesting and foraging habitats. The islands of Gran Roque, Cayo Pirata, Isla Agustin, Carankey, and Isla Fernando were visited by boat in order to conduct interviews with fishermen knowledgeable about sea turtles.

The extensive reefs and grassbeds of the atoll provide excellent foraging habitat for green turtles and hawksbills, and these are the two most common species in the area. A number of green turtles that had been tagged while nesting at Tortuguero, Costa Rica, have been caught at Los Roques, providing further evidence of its suitability as a foraging ground. The atoll is largely uninhabited, except for the northeastern corner, around the town of Gran Roque. Fishermen recognize the best turtle foraging areas as those most remote from this settlement, in the southwestern corner of the atoll (Fig. 9).

Hawksbills, locally called parapi, are the principal nesters. Green turtles are thought to be more common than hawksbills, but they nest much less often. Loggerheads also nest in small numbers. Specific nesting and foraging areas of all species will be described in the final report.

Leatherbacks, locally called cardon, apparently do not nest in the islands, although they have been captured at sea with eggs. There is no evidence of nesting by olive ridleys, although they are said to occur as occasional waifs in the area.

ATOLL RESEARCH BULLETIN
No. 278

MARINE TURTLES OF THE LEEWARD ISLANDS, LESSER ANTILLES

BY

ANNE BARKAU MEYLAN

ISSUED BY
THE SMITHSONIAN INSTITUTION
WASHINGTON, D. C., U.S.A.
DECEMBER 1983

in December 1978. Coverage of individual islands was roughly comparable; slightly more time was spent gathering information at Anguilla and Montserrat.

Nesting and foraging localities for turtles indicated on the maps include only data gathered during the present study. Information from other sources cited in the text is not included, nor are sites of desultory nesting. Data presented on the maps are by no means complete. For some areas, no information was available. I would appreciate any additions or corrections that readers can offer.

RESULTS

Anguilla ($18^{o}18'N$, $63^{o}17'W$)

Anguilla is the northernmost island in the Leewards chain (Fig. 1). Situated 8 km north of St. Martin, the 90 km^2 island extends NE to SW for 26 km. It includes several small, uninhabited cays: Dog Island, Prickly Pear Cays, Seal Island, Sandy Island and Sombrero Island (Fig. 2). There are extensive reefs off the north coast of the island, along a line running westward from Island Harbour to Prickly Pear Cays; fringing reefs are present along most of the south coast (ECNAMP, 1980). The numerous short, white sand beaches around the island are potentially good nesting sites for turtles.

The green turtle and the hawksbill are the most common marine turtle species in Anguillan waters. Both are year-round residents, and both are represented by juvenile, subadult and adult size classes. Green turtles are reported to reach great size (227 kg), which is typical of the species in the Eastern Caribbean. Leatherbacks and loggerheads also occur around Anguilla, but in much smaller numbers. The ridley is not known from this locality. Vernacular names for each species are given in Table 1.

The hawksbill is the principal species nesting on Anguilla. The beaches on Dog Island (Savannah Bay, Stoney Bay, Pigfish Bay and Great Bay) are said to be the most frequently used nesting sites, although some nesting occurs on Prickly Pear Cays and on the main island, as well. A nest found by a resident of North Hill Village at Katouche Bay, in August 1979, contained 200 eggs, and thus was presumably the nest of a hawksbill. Despite the existence of much suitable habitat the total number of hawksbills nesting annually on Anguilla and its associated cays appears to be relatively low.

Green turtles rarely nest on Anguilla. One reliable informant recalled seeing a 227 kg green turtle nest at Pigfish Bay, Dog Island, some ten years ago. Local lore is that Anguillan green turtles do not nest at all on Anguilla, but instead migrate to Aves Island, 257 km west of Guadeloupe, to nest. This may well be the case. Although some solitary nesting does occur, the green turtle is primarily a group nester, and Aves is the only colonial nesting site known for the species in the Eastern Caribbean (Rainey and Pritchard, 1972).

The leatherback, although rare around Anguilla, is well known by residents because of its distinctive appearance. It occurs only as a

nesting visitant. On the mainland, one or two leatherbacks nest each year on the northwest coast (Road Bay, Mead's Bay, Long Bay and Barnes Bay), and there are reports of even more sporadic nesting on the southeast coast at Sandy Hill, Mimi Bay and Captains Bay. It is likely that these turtles are strays from other nesting colonies--perhaps those in the British and U. S. Virgin Islands. Several tagged leatherbacks have been captured on Anguilla, according to residents, but I could not discover the origin of the tags.

Although nesting by leatherbacks on the main island is uncommon, a number of informants reported nesting on nearby Scrub Island. Scrub Island is uninhabited and seldom visited, and it is possible that a small colony of Dermochelys nests there. The reports deserve further investigation.

There are no reliable records of nesting by loggerheads on Anguilla. It is not even known whether mature individuals occur in the area.

Anguilla is one of the few localities in the Eastern Caribbean where hawksbills can be seen, more or less predictably, in foraging habitats around the main island. Throughout much of the region, they have been extirpated from shallow coastal waters by divers and net fishermen, and persist only in more inaccessible offshore habitats. Both hawksbills and green turtles are frequently sighted by residents from the cliffs at North Hill Village and Lower South Hill, and at Isaac's Cliff.

Green turtles, particularly juveniles, can be seen feeding in bays around the main island. Many informants reported seeing them in groups. On the main island, Mead's Bay is considered by local divers to be one of the best places to observe both green turtles and hawksbills.

There is good foraging habitat for hawksbills on the extensive reef that lies north of the island, and for both hawksbills and green turtles around the offshore cays. Both species are frequently sighted at Dog Island, Prickly Pear Cays and Sandy Island. One diver reported a group of 15 green turtles, ranging in weight from approximately 18 to 27 kg, on the eastern side of Sandy Island. A young green turtle captured by a diver at Sandy Island in August 1980, bore a tag that had been put on by the Florida Department of Natural Resources in 1975, when the turtle was released at Cape Canaveral, Florida (R. Witham, in litt.).

Hawksbills are also seen around Sombrero Island, some 48 km northwest of Anguilla. The island is uninhabited, but a boat travels there from Anguilla every 15 days to service the lighthouse. Curiously, all informants who mentioned Sombrero commented on the large size of the hawksbills there.

Information about foraging by loggerheads in Anguillan waters is fragmentary. Some reports were received that loggerheads feed around Dog Island, Scrub Island and Sandy Island, but identification of this species by most Anguillans seems to be unreliable--probably because of the turtle's scarcity there. The species definitely does occur around the island, however. The author saw a subadult on 12 April 1980 that had just been caught in a net at Scilly Cay, near Island Harbour (Pl.

1). On the rather crude public scale at Island Harbour, the turtle weighed 54.5 kg. In general, fishermen consider this species to be rare.

Marine turtles appear to be more abundant around Anguilla than at most of the other Leeward Islands. This abundance can at least partly be attributed to the fact that the island has extensive nesting and foraging habitats, many of which are located on and around offshore cays. Evidence of the value of these less accessible habitats is the abundance of turtles at Dog Island, situated some 13 km from the main island. The slow rate of development of the tourism industry has also been a positive factor in the continued survival of Anguilla's turtle fauna. The usual pressures exerted by the souvenir trade, and the market for turtle meat to supply hotel restaurants, have been minimal.

The survival outlook of marine turtles on Anguilla is by no means secure, however. Populations are already depleted, and exploitation pressures are rapidly escalating as tourism in the region increases. A factor that is already taking a toll is the export of turtles and turtle products to neighboring islands, particularly St. Martin.

A change in the method of fishing turtles is also having a negative effect on populations. The traditional method of setting tangle nets is dying out as costs for net materials and gasoline increase, and as fishermen turn to the more lucrative lobster business. Only about ten people were engaged in setting nets for turtles in 1980. The new generation catches turtles with spearguns. For the most part, they are young divers, who comb the reefs looking for lobster, fish and conch. They take turtles only opportunistically. With spearguns for weapons, however, they are able to catch nearly every turtle they encounter, and as a result, far more are being killed than ever before. Also, smaller size classes are for the first time included in the harvest. The hawksbill is by far the most vulnerable species, because it shares the habitat of the lobster. A few divers who have become aware of the profit to be had in the tortoiseshell trade now concentrate their efforts on hawksbills.

The meat of green turtles and hawksbills is sold locally to private individuals and to hotels on the island. In 1980, the price was approximately US$2/kg. Fishermen also carry meat to St. Martin to sell, where there is a steady demand to supply the many hotel restaurants. Live turtles are occasionally transported on the ferry that runs to Marigot, St. Martin. The meat of the leatherback is eaten on Anguilla, but is probably not exported. Eggs of all species are taken whenever they are found, but there appears to be no commerce in them--presumably because of their scarcity.

Tortoiseshell is sold to buyers on St. Martin, or to entrepreneurs from St. Thomas and Puerto Rico, who periodically visit Anguilla for this purpose. The price for raw shell in 1980 was US$20/kg. There is currently no local handicraft in tortoiseshell.

Carapaces of hawksbills and green turtles are dried and prepared for local sale, or are sold to shops on St. Martin. Currently, this trade is small in magnitude. Shells of 15 juvenile hawksbills and one subadult green turtle were seen by the author for sale at various places

on Anguilla. All of the hawksbills were well below the 9 kg minimum size limit (Table 2), and thus had been captured illegally.

Several nesting beaches on Anguilla have been, or are currently being, mined for sand for construction purposes: Shoal Bay, Mead's Bay and Barnes Bay (ECNAMP, 1980). The impact of these operations on sea turtle nesting has not been assessed.

Anguilla has no sanctuaries or parks that provide protection for sea turtles (Table 3). However, a proposal under consideration recommends the establishment of three protected marine areas: Seal Island Coral Reef Reserve, which would include Seal Island, the eastern Prickly Pear Cay and an extensive tract of the north barrier reef; Sandy Island National Marine Park; and Shoal Bay National Marine Park (A. Putney, in litt.). All three could potentially benefit sea turtles, provided that specific regulations for their protection were included. Another area that deserves consideration as a possible sanctuary is Dog Island and its surrounding cays and reefs.

Saint Martin ($18^{o}05'N$, $63^{o}03'W$)

Saint Martin is approximately 120 km^2 in size and is situated on Anguilla Bank, along with the islands of Anguilla, St. Barthélemy and Ile Fourche. The northern half of the island is a dependency administered through Guadeloupe, an overseas department of France; the southern half is one of six Netherlands Antilles, administered by a central government based in Curaçao. Major cays associated with St. Martin are Flat Island (Ile Tintamarre), Pinel Island and Green Cay, all of which lie off the windward (eastern) coast (Fig. 3). None is inhabited.

The waters around St. Martin are relatively shallow in depth (18-27 m). There are extensive seagrass beds off the northwestern and southwestern coasts. The northwestern seagrass bed is 11,600 ha in size (ECNAMP, 1982). Coral reefs extend along much of the coastline. Detailed descriptions of the shoreline are given by Vroman (1968). Most of the island's sandy beaches are on the southern and northwestern coasts; those on the windward shore are, in general, deeply eroded. Sand mining for construction purposes is carried out at nearly a dozen beaches around the island (ECNAMP, 1980). The beaches on the southern coast are among the most commercially developed in the Eastern Caribbean. Hotels and condominiums are under construction on much of the French coast as well, and there will soon be few beaches on the entire island that remain undeveloped.

The green turtle and hawksbill are the principal marine turtle species around St. Martin. Neither appears to be very abundant. The loggerhead and leatherback are also present but rarely encountered.

The frequency of nesting by all marine turtle species is apparently quite low. A few hawksbills and even fewer green turtles nest at Guana Bay and Oyster Pond on the windward coast, at Long Bay on the southwestern tip of the island, and on Flat Island. Divers have seen copulating pairs of both species in the Oyster Pond area.

	Green turtle (Chelonia mydas)	Hawksbill turtle (Eretmochelys imbricata)	Leatherback turtle (Dermochelys coriacea)	Loggerhead turtle (Caretta caretta)
Anguilla	greenback		river turtle river horse trunkback lanternback	
St. Martin	greenback		river horse rubberback leathercoat	
St. Barthélemy	tortue	caret	batacle	kahouanne
Saba			trunkback	
St. Eustatius			river turtle	
St. Kitts	greenback		river turtle trunkback	mulatto
Nevis	greenback		river turtle	bullhead
Barbuda			bandora	mulatto
Antigua			river turtle walava	mulatto
Montserrat			river turtle horse turtle	
Guadeloupe	tortue verte tortue tortue blanche	caret	batacle luth	kahouanne tortue jaune

Table 1. Vernacular names of sea turtles in the Leeward Islands. Standard English names are also widely used.

	Date of Legislation	Protected Species	Closed Season	Minimum Capture Size	Punishment for Violation
Anguilla	1948 (revised 1977)	all species	1 June-30 Sept (turtles, eggs)	> 9 kg	Fine ≤ US$37 Forfeiture of goods, equipment
St. Martin	Neth.-none Fr. see Guadeloupe				
St. Barthélemy	see Guadeloupe				
Saba	none				
St. Eustatius	none				
St. Kitts	1948	all species	1 June-30 Sept. (turtles, eggs)	> 9 kg	Fine ≤ $US9 Forfeiture of goods, equipment
Nevis	"	"	"	"	"
Barbuda	1927 (revised 1962)	all but Caretta	1 June-30 Sept. (turtles, eggs)	> 9 kg	Forfeiture of goods, equipment
Antigua	"	"	"	"	"
Montserrat	1951	all species	1 June-30 Sept. (turtles, eggs)	> 9 kg	Fine ≤ $US18 Forfeiture of goods, equipment
Guadeloupe	1979	Chelonia Eretmochelys Dermochelys	15 May-15 Sept. (Chelonia, Eretmochelys) year-round (Dermochelys) year-round (eggs, all spp.)	>60 cm carapace length (Chelonia & Eretmochelys)	

Table 2. Legislation pertaining to marine turtles in the Leeward Islands, Lesser Antilles.

	Existing	Proposed
Anguilla	None	Seal Island Reserve, Sandy Island, Shoal Bay
St. Martin	None	Guana Cay, Molly Beday, Hen and Chicken, Cay Bay, Man O'War Shoal
St. Barthélemy	None	None
Saba	None	None
St. Eustatius	Jenkins Bay	None
St. Kitts	None	southeastern peninsula
Nevis	None	None
Barbuda	Palaster Reef Marine Park	Codrington Lagoon
Antigua	Diamond Reef Marine Park	Guiana Island to Great Bird Island; Fisher's Hill to Proctor's Point
Montserrat	None	None
Guadeloupe	Ilets à Goyaves	Grand Cul-de-Sac Marin

Table 3. Marine parks and protected areas in the Leeward Islands, Lesser Antilles. Source: ECNAMP 1980, 1982; A. Putney, in litt.

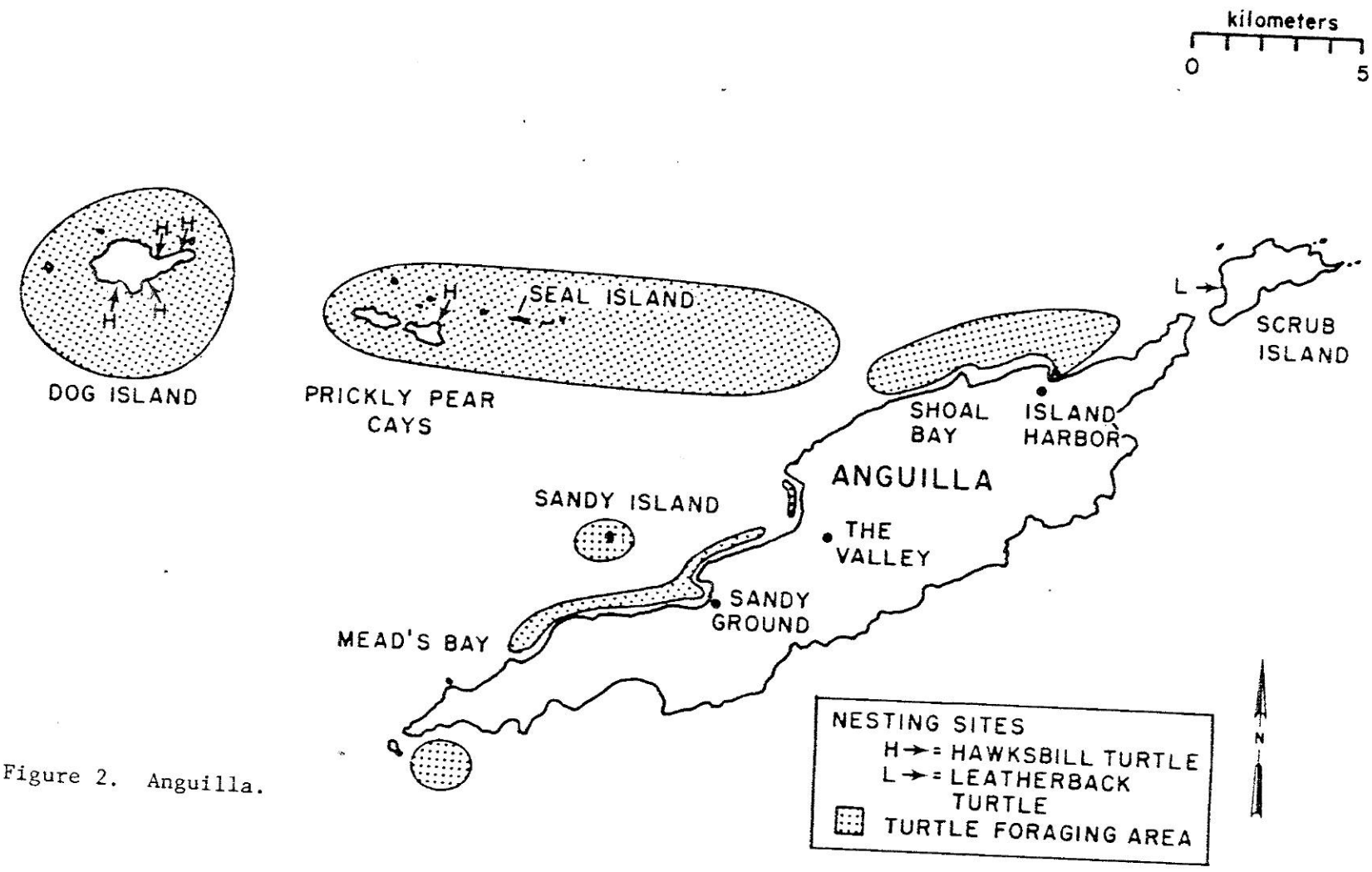


Figure 2. Anguilla.