

THE NATIONAL REPORT EL REPORTE NACIONAL

FOR THE COUNTRY OF
POR EL PAIS DE

VENEZUELA

NATIONAL REPRESENTATIVE / REPRESENTANTE NACIONAL

HARRY ORTEGA



Western Atlantic Turtle Symposium
Simposio de Tortugas del Atlantico Occidental

17-22 July / Julio 1983
San José, Costa Rica

Venezuela National Report, WATS I Vol 3, pages 500-514



**WESTERN ATLANTIC TURTLE SYMPOSIUM
San José, Costa Rica, July 1983**

NATIONAL REPORT FOR THE COUNTRY OF

VENEZUELA

NATIONAL REPORT PRESENTED BY

**Peter C. H. Pritchard for
Harry Ortega**

The National Representative

Address:
Director
Dirección General Sectorial
de Administración del Ambiente
Ministerio del Ambiente y de los Recursos Naturales
Torre Sur- Piso 38, Centro Simón Bolívar
Caracas, Venezuela

NATIONAL REPORT PREPARED BY

Peter C. H. Pritchard
Maitland, Florida

DATE SUBMITTED: 17 July 1983



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 size and trend, 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. In most cases it was the first time a national sea turtle assessment had been conducted.

Despite the potential value of this information to agencies responsible for conducting stock assessments, monitoring recovery trends, and safeguarding critical habitat in the 21st century, the hand-written National Reports, largely illegible in the published proceedings, have slipped into obscurity. To help ensure the legacy of these symposia, we have digitized the entire proceedings, including the National Reports, plenary presentations and panels, and annotated bibliographies of 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 should be cited:

Pritchard, P.C.H. 1984. National Report for Venezuela, pp.500-514. *In*: Bacon, P., F. Berry, K. Bjorndal, H. Hirth, L. Ogren and M. Weber (Editors), Proceedings of the First Western Atlantic Turtle Symposium, 17-22 July 1983, San José, Costa Rica. Volume III: The National Reports. RSMAS Printing, Miami.

*Karen L. Eckert
WIDECAST Executive Director
June 2009*

COUNTRY: VENEZUELA

TABLE 2. COASTAL HABITAT INVENTORY OF MARINE SHORELINE			
Marine Shoreline Characteristics*	Km of Shoreline		
	Undeveloped ***	Developed** ***	Total ***
1. Sand Beach (Total)			
A. High Energy			
B. Low Energy			
2. Reef (exposed)			
3. Rocks			
4. Cliffs			
5. Vegetation (Total)			
A. Vines			
B. Grasses			
C. Mangroves			
D. Coconut Trees			
E. Other Trees or Shrubs			
F. Marshes			
6. Mouths of Lagoons, Rivers, Canals			
7. Total Shoreline			
* Refer to SEA TURTLE MANUAL (Aerial Survey)			
** Human development or use (See MANUAL)			
*** Please see description of entire shoreline as given in "Turtles of the Spanish Main" (Report to NMFS, 1981)			

TABLE 3. NESTING BEACH INVENTORY			
List beaches in geographic sequence. Provide additional information on following page.			
Name of Beach	Length In Km	Species Nesting (use abbreviations)*	Months of Recorded Nesting
1. Isla de Aves	About 1.3 km	Cm	May-August (mainly August)
2. Archipelago Los Roques	Many small beaches. Total length unavailable.	Cc, Cm, E	May-December (mainly July-October)
3. Estado Sucre	Many small cove beaches. Total length unknown.	Cm, D, E	June (at least)
Species *	Abbreviation		
<i>Caretta caretta</i>	Cc		
<i>Chelonia mydas</i>	Cm		
<i>Dermochelys coriacea</i>	D		
<i>Eretmochelys imbricata</i>	E		
<i>Lepidochelys kempi</i>	Lk		
<i>Lepidochelys olivacea</i>	Lo		

* *Editor's note (2009)*: Throughout the ms, the editor has used "[--?--]" to indicate that the corresponding text in the original document is indecipherable.

TABLE 3A. NESTING BEACH INVENTORY (supplementary page)

Please give additional information about each nesting beach identified in Table 3. Include information on color of sand, particle size, beach profile, backbeach vegetation, artificial lighting, etc.

Almost the entire western part of the coast of Venezuela is sand beach. This shoreline, which starts in the desert coast at the Colombian border and extends to densely forested areas in and east of the Golfo Triste area, extends for many hundreds of kilometers but has very few nesting turtles. A detailed description of the shoreline of Venezuela, as seen from a survey aircraft, is given in the addendum in "Turtles of the Spanish Main". Mainland turtle nesting in Venezuela is concentrated on small, cove beaches between [---] headlands in Estado Sucre, and on offshore islands including Los Roques, Isla de Aves, and Isla La Tortuga. The long inland beaches are hardly used at all.

TABLE 4.1. NESTING CENSUS FOR BEACH: Isla de Aves, 1971

Table summarizes census data for each beach listed in Table 3. Tables numbered sequentially.

Species	Number of Nests		Dates of collection
	Nest/Night (average)	Nest/Season (estimated)	
<i>Caretta caretta</i>			
<i>Chelonia mydas</i>	16 in 3 nights; i.e., 5.35	174 pits prior to June 24	June 24-27
<i>Dermochelys coriacea</i>			
<i>Eretmochelys imbricata</i>			
<i>Lepidochelys kempfi</i>			
<i>Lepidochelys olivacea</i>			

TABLE 4.2. NESTING CENSUS FOR BEACH: Isla de Aves, 1979

Table summarizes census data for each beach listed in Table 3. Tables numbered sequentially.

Species	Number of Nests		Dates of collection
	Nest/Night (average)	Nest/Season (estimated)	
<i>Caretta caretta</i>			
<i>Chelonia mydas</i>	470 emergences, 70% estimated to have nests, in 60 days; i.e. 8 per night	500-1,000; ~ 750	July, August; 62 days
<i>Dermochelys coriacea</i>			
<i>Eretmochelys imbricata</i>			
<i>Lepidochelys kempfi</i>			
<i>Lepidochelys olivacea</i>			

TABLE 4.3. NESTING CENSUS FOR BEACH: Isla de Aves, 1980

Table summarizes census data for each beach listed in Table 3. Tables numbered sequentially.

Species	Number of Nests		Dates of collection
	Nest/Night (average)	Nest/Season (estimated)	
<i>Caretta caretta</i>			
<i>Chelonia mydas</i>	Extremely variable; e.g., 21 nesting turtles on July 27; none the rest of June 20 - July 09	76 turtles tagged + 9 re-migrants in 137 days	
<i>Dermochelys coriacea</i>			
<i>Eretmochelys imbricata</i>			
<i>Lepidochelys kempfi</i>			
<i>Lepidochelys olivacea</i>			

TABLE 4.4. NESTING CENSUS FOR BEACH: Archipelago Los Roques, 1979			
Table summarizes census data for each beach listed in Table 3. Tables numbered sequentially.			
Species	Number of Nests		Dates of collection
	Nest/Night (average)	Nest/Season (estimated)	
<i>Caretta caretta</i>		7	April-June 1979; 60 days
<i>Chelonia mydas</i>		2-3	
<i>Dermochelys coriacea</i>			
<i>Eretmochelys imbricata</i>	<1	April: 1; May: 1; June: 4; July: 10 [--?--] August: 12 [--?--]; September: 17; October: [--?--]	April-December; 275 days
<i>Lepidochelys kempfi</i>			
<i>Lepidochelys olivacea</i>			
<i>Editor's note (2009):</i> "[--?--]" denotes text that is undecipherable from the original manuscript.			

TABLE 5. AERIAL BEACH SURVEY SUMMARY								
Give any additional information available from aerial surveys. Information should include ground truth observation if conducted.								
Date	Beaches Surveyed	Numbers of Nesting Tracks						
		Cc	Cm	D	E	Lk	Lo	No ID
June 08, 1983	Coast of Venezuela, part of Peninsula de La Guajira.	—	—	—	—	—	—	—
June 10, 1983	Coast of Estado Falcón, starting at Maracaibo. Flew to Isla La Tortuga.	—	X	1	1	—	—	—
June 11, 1983	Isla la Tortuga	—	—	—	?	—	—	—
June 12, 1983	Isla la Tortuga to Isla Margarita	—	1	—	—	—	—	—
June 13, 1987	Isla Margarita to Isla Blanquilla, via Estado Sucre to Trinidad	—	6	3	1	—	—	—
July 18, 1981	Caracas west to Peninsula de Paraguaná	—	—	—	—	—	—	—
July 24, 1981	Caracas east to Guiria, then to Isla Margarita	—	7	—	—	—	—	—
Species	Abbreviation							
<i>Caretta caretta</i>	Cc							
<i>Chelonia mydas</i>	Cm							
<i>Dermochelys coriacea</i>	D							
<i>Eretmochelys imbricata</i>	E							
<i>Lepidochelys kempfi</i>	Lk							
<i>Lepidochelys olivacea</i>	Lo							

TABLE 5A. AERIAL BEACH SURVEY SUMMARY (supplementary page)

Give any additional information available from aerial surveys. Information should include ground truth observation if conducted.

Leatherback (*Dermochelys coriacea*) nests seen at:

- 20 km east of San Juan de los Cayos (Falcón)
- Near Puy Puy (Sucre)
- 3 km west Morro de Puerto Santos (Sucre)
- Laguna Totumo (Sucre)

Green turtle (*Chelonia mydas*) nests seen at:

- 15 km west of San Juan de los Cayos (Falcón)
- Near Sabanas Altas (Falcón)
- Near Chuspa (Miranda)
- Near Machurucuto (Miranda)
- Playa de Zalaya (Sucre)
- Puy Puy (Sucre)
- Laguna Totumo (Sucre)
- Punta Cabello Negro (Sucre)
- Punta el Fraile (Sucre)
- Morro de Lebranche (Sucre)

Hawksbill (*Eretmochelys imbricata*) nests seen at:

- 10 km west of San Juan de los Cayos (Falcón)
- Cangua (Sucre)

1981

Turtles, probably green turtles (*Chelonia mydas*), were seen at:

- 30 km Southeast of Higuerote (Miranda) (one)
- North coast of Estado Sucre, as shown on map in "Turtles of the Spanish Main" (six)

TABLE 6A. ESTIMATED POPULATION OF NESTING FEMALES (supplementary page)

Please give brief details on methods of estimation for Table 6.

These cannot be given even in preliminary form as actual numbers. However, only Cm (*Chelonia mydas*) and E (*Eretmochelys imbricata*) have significant breeding populations in Venezuela. Cc (*Caretta caretta*) and D (*Dermochelys coriacea*) nest so rarely that only a handful (<10) of confirmed nesting records for either is available for Venezuela, and Lo (*Lepidochelys olivacea*), although not rare in feeding grounds, have never been reported nesting in Venezuela.

The only large nesting "colony" in Venezuela is that of Cm (*Chelonia mydas*) on Isla de Aves. Numbers fluctuate greatly, both from season to season, and from night to night within a season. However, typically 200-300 individuals probably nest in a season, with less than 800 adult females in the whole population. However, this is very preliminary.

The hawksbill nests in Los Roques could be made by fewer than 20 mature females. Numbers nesting on La Tortuga and La Blanquilla are not yet known.

Name of Area (or give coordinates)	Approx. Area (Km ²)	Species Foraging (use abbreviations & approx. numbers)	Nature of Evidence (observation, fishery, incidental catch)
1. Gulf of Venezuela	Indeterminate area; limits uncertain	Cm; numbers unknown	Return of tags by fishermen; Turtles were tagged in Costa Rica
2. Isla Margarita to Trinidad	Indeterminate area; limits uncertain	Lo; numbers unknown	Return of tags by fishermen; Turtles were tagged in Surinam
Species		Abbreviation	
<i>Caretta caretta</i>		Cc	
<i>Chelonia mydas</i>		Cm	
<i>Dermochelys coriacea</i>		D	
<i>Eretmochelys imbricata</i>		E	
<i>Lepidochelys kempfi</i>		Lk	
<i>Lepidochelys olivacea</i>		Lo	

Species	Month												Months of Greatest Activity
	J	F	M	A	M	J	J	A	S	O	N	D	
<i>Caretta caretta</i>													
<i>Chelonia mydas</i>	X	X	X	X	X	X	X	X			X	X	Probably year-round
<i>Dermochelys coriacea</i>													
<i>Eretmochelys imbricata</i>													
<i>Lepidochelys kempfi</i>													
<i>Lepidochelys olivacea</i> *	X	X	X	X	X		X	X	X	X	X		

* Lo (*Lepidochelys olivacea*) present in Isla Margarita and Trinidad areas in all months except June and December, so presumably year around.

TABLE 10A. NATURAL MORTALITY (supplementary page for additional biological data)

Please report below, and on additional pages, if necessary, additional data obtained or available such as measurements (length, width, weight) of adult females, adult males, hatchlings, numbers of eggs per nest, hours of nesting, hours and conditions of hatchlings, etc.

Dimensions of adult females on Isla Aves are in Gómez, J.L. 1980. Informe Final del Proyecto No. 3 (FUDENA, Caracas; 92p.). Mean length of nesting females is 107.7 cm; mean weight 173 kg.

Nesting on all known Venezuelan beaches is purely nocturnal.

Data on natural mortality are not available apart from documentation of loss of all eggs on beaches on Isla Aves by Hurricane David, August 29, 1979. (Loss of an estimated 55,280 eggs).

Name of Port or Site	Species Landed (use abbrev)	Fishing Gear Used	Months of Landings	Numbers & Weights (estimate)
1. Peninsula de Paraguaná (eastern side)	Cm	Unknown immature and mature turtles caught and sold locally and available in restaurants, etc. in Coro		
2. Isla de Tortuga	Cm; Cc; E	Nets, probably nesting females taken also. E taken for shells, sold on Isla Margarita and elsewhere. Cm taken for food. <i>Caretta caretta</i> rare; only one old skull seen		
	Species	Abbreviation		
	<i>Caretta caretta</i>	Cc		
	<i>Chelonia mydas</i>	Cm		
	<i>Dermochelys coriacea</i>	D		
	<i>Eretmochelys imbricata</i>	E		
	<i>Lepidochelys kempfi</i>	Lk		
	<i>Lepidochelys olivacea</i>	Lo		

Species				Method of Determination
<i>Caretta caretta</i>				*
<i>Chelonia mydas</i>				*
<i>Dermochelys coriacea</i>				*
<i>Eretmochelys imbricata</i>				*
<i>Lepidochelys kempfi</i>				*
<i>Lepidochelys olivacea</i>				*
TOTAL				*

* Data not available. Trade is illegal.

Species	Year	Type of Fishing Activity & Method of Estimation
<i>Caretta caretta</i>		*
<i>Chelonia mydas</i>		*
<i>Dermochelys coriacea</i>		*
<i>Eretmochelys imbricata</i>		*
<i>Lepidochelys kempfi</i>		*
<i>Lepidochelys olivacea</i>		*

* Overall estimates impossible, but significant numbers of Lo (*Lepidochelys olivacea*) caught by trawlers in Eastern Venezuela.

TABLE 13A. ESTIMATED TURTLE CATCH BY FOREIGN FISHERMEN (supplementary page)

Please describe the type of foreign fishing in your waters and provide estimates for:

1. Number of foreign vessels catching turtles
2. Number of foreign fishermen catching turtles
3. Year of estimate

Take of nesting Cm (*Chelonia mydas*) by boats from St. Lucia, Martinique, etc. was significant at Isla de Aves until a permanent military base was placed there in 1979. It has now stopped completely.

TABLE 15A. OFFICIAL STATISTICS OF TURTLE CATCH AND PRODUCTION (supplementary page)

Please provide any additional data on turtle products produced in your country. Include manufactured products such as tortoise shell novelties, etc., if such data are available.

Capture of sea turtles is illegal in Venezuela. However, products of locally caught Cm (*Chelonia mydas*) and E (*Eretmochelys imbricata*) are still sold, and some export probably occurs.

TABLE 17. TURTLE MARICULTURE OPERATIONS *

This table quantifies activities concerned with turtle culture for either conservation, population enhancement experiments, or commercial use. Activities to be included are "headstarting", re-nesting, incubation and release, etc. Prepare separate table for each year of available data.

Species	Hatchery Operations					Holding Live Turtles		
	Eggs Collect.	Eggs Hatch	No. Release	Age at Release	No. Retain	No. of Juvs.	Adult Females	Adult Males
<i>Caretta caretta</i>								
<i>Chelonia mydas</i>	4 nests	3 nests not viable; only 1 produced hatchlings	Not available					
<i>Dermochelys coriacea</i>								
<i>Eretmochelys imbricata</i>		About 5,000	About 4,000	11-18 months				
<i>Lepidochelys kempfi</i>								
<i>Lepidochelys olivacea</i>								
* 1979-1982 aggregate data. Head-starting at Los Roques								

TABLE 18. PUBLIC AND PRIVATE INSTITUTIONS CONCERNED WITH TURTLE CONSERVATION / MANAGEMENT / UTILIZATION

Institution or Organization Name And Address	No. of Active Members	Activities in Progress
Fundacion Los Roques Caracas Venezuela		Sea turtle studies and headstarting in Archipelago Los Roques

FUDENA Fundacion para la Defensa de La Naturaleza Caracas Venezuela		Sea turtle monitoring on Isla de Aves
Instituto Nacional de Parques Ministerio del Ambiente y de Los Recursos Naturales Renovables Caracas Venezuela		

TABLE 19. SANCTUARIES AND REFUGES			
Name and Location	Area Km ²	Reason(s) for Protection	Type and Effectiveness of Enforcement
Médanos de Coro (base of Peninsula de Paraguaná)	902.8 (90,280) *	National park; mainly for huge sand dune formations. Some green turtles.	
Morrocoy National Park (Estado Falcon)	460 (46,000) *	National park for coral reefs and islands. Hawksbill habitat.	
Mochima National Park (Estados Anzoátegui y Sucre)	949.4 (94,935) *	National park	
Laguna de Tacarigua (Estado Miranda)	184 (18,400) *	National park	
Henri Pittier (Estados Aragua y Carabobo)	1078 (107,800) *	National park; mainly for rain/cloud forest but including coastline.	
Laguna de la Restinga Isla Margarita	107 (10,700) *	National park	
Isla de Aves		Sea turtle nesting. Wildlife refuge.	
* <i>Editor's note (2009):</i> Area values in original report given in hectares; values converted to square kilometers by editor.			

TABLE 20. REGULATORY AUTHORITY			
Indicate all entities with statutory responsibilities (e.g., Fisheries Departments and Ministries, Police, Coast Guard, etc.)			
Name and Address of Organization	Budget Allocation to Turtles	No. of Staff Assigned to Turtles	Comments on Levels of Enforcement
MARNR Ministerio del Ambiente y de Los Recursos Naturales Renovables			

TABLE 20A. REGULATORY AUTHORITY (supplementary page)

Please list National, regional, and local legislation concerning turtle management and conservation. List title, date, and stated purpose.

- Ley de Protección de la Fauna silvestre (August 11, 1970).
(Turtles included under reptiles in Article 2, Annex 1)

- CITES (Venezuela is a signatory)
- “Lista Oficial de Animals de Caza” (Resolution No. 276 of the Ministry of Agriculture and Livestock; November 13, 1970) includes all sea turtles which receive complete protection as of November 28, 1979.

TABLE 21. NATIONAL RESEARCH PROJECTS			
List turtle research activities funded within your country.			
Project Title	Date		Name and Address of Institution & Chief Investigator
	Start	End	
Study of turtles on Isla de Aves	Seasonal (April-August)		FUDENA. José Láiz Blanco José L. Gomez Carredano
Study of turtles on Islas Los Roques	Seasonal (April-December)		Fundación Los Roques
Aerial survey of nesting beaches	1981, 1983		NMFS contract to Peter C. H. Pritchard Florida Audubon Society 1101 Audubon Way Maitland Florida 32751 USA

REPORTS AND PUBLICATIONS

The following is a list of the major reports and publications concerned with national turtle resources (list author, date, title, and publisher).

1. Pritchard, P. C. H. 1981. Turtles of the Spanish Main. Unpublished. 24pp.
2. Anon. 1980. Protección y Recuperación de Poblaciones de Tortugas Marinas en el Archipiélago Los Roques. Fund. Los Roques. 5pp.
3. Brownell W, Guzmán C. 1974. Ecología de la isla de Aves con especial referencia a los peces. Mem. Soc. Cienc. Nat. La Salle 34: 93-158. *
4. Buitrago, J. 1981. Las Tortugas Marinas de Los Roques, Venezuela. Cría en Cautiverio con Fines de Repoblación. Mimeo. 24 pp.
5. Caribbean Conservation Corp. 1980. Survey and Preliminary Census of Marine Turtle Populations in the Western Atlantic. Final Report to National Marine Fish Service. Mimeo. 78 pp and 12 maps.
6. Carr, A. F., Carr, M. and Meylan, A. B. 1978. The ecology and migrations of sea turtles. 7. The west Caribbean green turtle colony. Bulletin of the American Museum of Natural History 162(1):1-46. **
7. Donoso-Barros, R. 1964a. Nota sobre *Lepidochelys kempi* en las costas de Cumaná. Lagena no. 2: 20-21. Instituto Oceanográfico, U.D.O., Cumaná, Venezuela.
8. Donoso-Barros, R. 1964b. Anotaciones sobre las Tortugas marinas de Venezuela. Lagena no. 3: 26-31. Instituto Oceanográfico, U.D.O., Cumana, Venezuela.
9. Flores, C. 1966. Nuevos registros de *Lepidochelys kempi* (Garman) en la costa oriental de Venezuela. Lagena no. 12; 37-39. Instituto Oceanográfico, U.D.O., Cumana, Venezuela.

10. Flores, C. 1969. Nota sobre reptiles acuáticos de Venezuela y su importancia económica. Lagena no. 21-22: 1-19 and 6 figs.
11. Flores, C. and D.E. Hoit. 1965. Nota sobre la tortuga verde o de sopa en los alrededores de Cumaná (Edo Sucre), Venezuela Lagena no. 8: 37-39.
12. Maldonado, B. 1981. Proyecto Tortugas. Actividades Nov-Dic 1980. Mimeo, 11pp.
13. Ogren, L. 1980. Trip Report-Costa Rica, Venezuela, Guyana. February 28-March 11, 1980. 16pp.
14. Roze, J. 1955. Las Tortugas Marinas de Venezuela. Rev. Pecuaria, April 1955: 9-11.

* *Editor's note (2009)*: The original National Report listed publication pages as 91-168. Editor corrected publication pages (to 93-158) as per website:
http://www.scielo.org.ve/scielo.php?script=sci_arttext&pid=S0378-18442008000200006&lng=en&nrm=iso&tlng=es, on 24 June 2008.

** *Editor's note*: The original National Report listed the publication volume and number as 162(1). Editor corrected publication volume and number to 62(1) as per website:
http://assets.panda.org/downloads/caribbean_hawksbills.pdf, on 24 June 2008.

Appendix B ¹

TURTLE CONSERVATION REGULATIONS IN VENEZUELA

Wildlife protective regulations in Venezuela are promulgated under the “Ley de Protección a la Fauna Silvestre” (Wildlife Protection Law), passed 11 August 1970. Although turtles are not specifically named in the text of the law, they are included in the section on Reptiles in Article 2, Annex 1.

Venezuela became a signatory to the convention on international Trade in endangered Species of Fauna and Flora (CITES) in 1976. The Convention prohibits international trade in species listed in its Appendix I and requires exporting countries to issue permits and determine that such trade is not likely to jeopardize the species for export of species listed under Appendix I. The categories correspond roughly to “endangered” and “threatened” lists of the U.S. Department of Interior or the International Union for the Conservation of Nature. Currently, all of the marine turtles (*Cheloniidae* and *Dermochelyidae*) are listed under Appendix I, and all tortoises and *Podocnemis expansa* and *P. unifilis* are in Appendix II.

The Official List of Game Animals (Lista Oficial Animales de Caza) was published as Resolution no. 276 of the ministry of Agriculture and livestock (Ministerio de Agricultura y Cría) on 13 November 1970. This list included the following turtle species: *Lepidochelys olivacea*; *Eretmochelys imbricata*; *Dermochelys coriacea*; *Caretta caretta*; *Chelonia mydas*; *Peltocephalus dumerilianus*; *Geochelone carbonaria*; and *G. denticulata*. This list presumably represents all those turtles that are large, common, and palatable enough to be worth hunting; it excludes the chelids *Kinosternon*, *Pseudemys*, *Rhinoclemmys* and *Podocnemis erythrocephala*.

Although resolution no. 276 did not in itself establish protection for listed species, on November 28, 1979 the Ministry of the Environment and Renewable Natural Resources (Ministerio de Ambiente y de los Recursos Naturales Renovables, hereafter MARNR) established complete protection for all of the above species except for *Podocnemis unifilis* and *P. vogli*. MARNR established a hunting season of February 1 to March 31 for these two species, for holders of licenses of type A and C, and a season of February 15 to March 31 for holders of license type B. A daily limit of one animal and a bag limit of two was established. The total closed season on *Podocnemis expansa* was extended for five years (until 1983) by MARNR Resolution no. 103, passed on May 22, 1978.

Green turtles (*Chelonia mydas*) in Venezuela received substantially improved protection under the designation of Isla Aves, the principal national nesting ground (see plate P 44D), as a wildlife refuge (Refugio de Fauna Silvestre) on November 30, 1972. The establishment of a permanent military garrison within a hurricane proof structure on the island although aesthetically unfortunate, also ensured enforcement of the protective legislation. Historically, turtles on Isla Aves have been raided regularly by crews of small boats arriving without permission from various islands of the Lesser Antilles.

In addition, turtles in Venezuela receive protection under various protected lands designations. These include 26 national parks (totaling 7,317,663 hectares), 13 national monuments (20,745 ha), ten forest reserves (11,678,267 ha), three faunal refuges (56,328 ha), and one faunal reserve (227, 795 ha). All exploitative activities are prohibited in the first, second and fourth categories above; such activities may be permitted, under controls and permits, in forest and faunal reserves.

National parks and other protected lands in Venezuela are currently being inventoried under a joint Nature Conservancy (Fundación para la Defensa de la Naturaleza) program. Under the direction of Carlos Gremone, this study is to determine the percentage of each major ecosystem type in Venezuela that is within the boundaries of protected lands, and to make recommendations for further acquisition of under-represented ecosystem types. Existing national parks cover a wide variety of ecosystems, By far the largest is Parque Nacional Canaima in south western Venezuela, which includes many dramatic “tepuis” (known as “mesas” in North America). This park includes several turtle species within its borders, including *Phrynops geoffranus* and both species of tortoise.

¹ Editor's note (2009): The original national report exhibited no Appendix A.

TURTLES OF THE SPANISH MAIN
BY
Peter C. H. Pritchard, Ph.D.

Summary of knowledge and results of surveys of sea turtle and their nesting beaches in Venezuela

FLORIDA AUDUBON SOCIETY
1101 Audubon Way
Maitland, Florida 32751

TABLE OF CONTENTS

	PAGE
DESCRIPTION OF THE COAST	1
SEA TURTLE POPULATIONS IN VENEZUELA	3
AERIAL SURVEYS	12
SUMMARY OF FLIGHT LOG: Caracas west to Paraguana Peninsula	14
SUMMARY OF FLIGHT LOG: Caracas east to Guiria, west to Isla Margarita	16
SURVIVAL OUTLOOK FOR VENEZUELAN TURTLES	20
RECOMMENDATIONS FOR FUTURE WORK	21
LITERATURE	22

DESCRIPTION OF THE COAST

The mainland coast of Venezuela follows an approximately east-west course and extends between the longitudes of 60°W and 71°W.² The coast lies entirely within the tropics being between 10° and 12° north of the Equator, and it comprises the eastern half of the southern boundary of the Caribbean Sea. The coast of eastern Venezuela is very arid, and is dominated by the huge, paired, narrow-necked, desiccated peninsulas of Guajira and Paraguana, which enclose the Gulf of Venezuela. The Gulf has an open connection at its southern end with the freshwater Lake Maracaibo, the largest lake in South America. East of Paraguana Peninsula, whose southern base is composed of sterile, rolling sand dunes reminiscent of the Sahara Desert, the climate becomes progressively more moist; several permanent rivers reach the sea in the short stretch of the coast between Tucacas and Puerto Cabello, and between Tucacas and Chichiriviche the otherwise nearly continuous beach is interrupted by a spectacular complex of mangrove islands, some of which have small beaches, that together comprise the Morrocoy National Park.

² *Editor's note (2009):* The original National Report misrepresented the geographic coordinates of Venezuela, stating "extends between the latitudes of 60°W and 71°W". Editor corrected this to read "extends between the longitudes of 60°W and 71°W".

In the Central Part of the Venezuelan coast, the coastal mountains reach to the seashore. In this area, which lies between Puerto Cabello and Higuero, there are numerous small beaches but few large ones. The rainfall is not uniform, but in parts the hills are covered with dense forest growth, while others that receive less rain have bare areas of red soil between the trees and shrubs.

East of Higuero, as far as Barcelona, the coast is flat, although low hills reach increasingly near the coast as one proceeds east. The entire coast is marked by an almost continuous beach, with sporadic towns and cities of variable size, and huge areas immediately behind the beach dedicated to the monoculture of coconuts. In places natural vegetation still exists.

Between Barcelona and Cumaná, the coast is hilly and very dry, much of the soil appearing bare. A number of hilly islands are found along this stretch of coast, and a few small beaches may be seen on both the islands and mainland.

East of Cumaná, the Gulf of Cariaco extends eastward for about 75 kilometers, being bounded on the northern side by the Araya Peninsula. The water in the Gulf of Cariaco is dark blue and deep, the Araya Peninsula is composed of red, eroded hills with extremely sparse vegetation. Towards the base of the Peninsula, however, the hills are more vegetated and fertile. There are a few small gravelly beaches on the southern shore of the Araya Peninsula. To the east, the lagoon peters out into a complex of mangrove swamps with inflowing brown-water rivers, followed by dense tropical forest. As one approaches the Gulf of Paria from the eastern end of the Gulf of Araya, the forest continues, in places dominated by palms, and elsewhere very swampy. The Peninsula of Paria, forming the north shore of the Gulf of Paria, is a relatively narrow but rather high mountain ridge thickly clad with tropical rainforest. Along the gulf coast of the peninsula, the shoreline is dominated by mangrove forests but there are occasional small beaches.

The east-west coast of about 300 km that forms the northern shore of the combined peninsulas of Araya and Paria has steep forest-clad hills with no coastal plain, but the ragged, serrated coast includes numerous fishing villages and small beaches.

From the western corner of the Gulf of Paria to the Guyana border about 400 km to the southeast, the coast is dead flat for miles inland, and is totally dominated by the huge estuary and delta of the Orinoco River. This extremely complex coast is primarily fringed by mangroves, which in many areas show evidence of drastic erosion and natural changes in the coastline. There are no sand beaches in this area (though, as mentioned above, there are some small ones on the northern shore of the Gulf of Paria), and the water is very muddy and of reduced salinity.

In striking contrast to all other countries of northern South America, the offshore waters of Venezuela are dotted with islands, many of large size. The principal islands and archipelagos, from west to east are as follows: Aruba, Curaçao, Bonaire, Aves; Los Roques; Orchila; La Tortuga; Blanquilla and Los Hermanos; Margarita; Cubagua and Coche; Los Frailes; Los Testigos, and Trinidad. Aruba, Curaçao, and Bonaire are not politically Venezuelan but are included in the Netherlands Antilles, and Trinidad is part of the British Commonwealth. These islands, with the exception of Trinidad, are rather or very arid. The smaller islands are all very flat, but the larger ones, including Trinidad, Margarita, and the Netherlands Antilles, have significant elevation.

Politically included with Venezuela, and one of the most important turtle nesting islands in the Atlantic system, is tiny Aves Island, located about 500 km to the north of Carúpano (Estado Sucre). Aves is a mere sandbank of negligible altitude, and has a coastline that changes from year to year and that may even be split in two after hurricanes. Aves is the only emergent point of the Aves Ridge, a vast submarine geological formation in the eastern Caribbean.

SEA TURTLE POPULATIONS IN VENEZUELA

Although nesting of sea turtles on the mainland coast of Venezuela is sparse, the waters and islands of Venezuela provide either feeding or breeding habitats for several populations of a number of species of sea turtles. According to presently available knowledge, these may be summarized as follows:

- i. The nesting population of the nesting green turtle, *Chelonia mydas*, on Aves Island. This population appears to migrate to feeding grounds in the Lesser Antilles and the Dominican Republic.
- ii. A feeding population of the green turtle, *Chelonia mydas*, in the Gulf of Venezuela, derived from the breeding population at Tortuguero, Costa Rica. Although generally separated, members of populations i) and ii) may occasionally be found in the same areas.
- iii. A feeding population of the olive ridley, *Lepidochelys olivacea*, in western Venezuela (Sucre, Nueva Esarata, and Delta Amacuro) derived from nesting grounds in Surinam.
- iv. Populations of the hawksbill turtle, *Eretmochelys imbricata*, both breeding on and feeding near many of the islands off the Venezuelan coast, especially the smaller and less inhabited ones.
- v. A low density breeding population of the green turtle, *Chelonia mydas*, of unknown migratory habits, in Estado Sucre.
- vi. A very small breeding population of the loggerhead, *Caretta caretta* in the Los Roques Archipelago, and with rare nesting elsewhere on the islands and the mainland of Venezuela.

In addition to the above, the leatherback, *Dermochelys coriacea*, nests in quite good numbers in Trinidad and is caught sporadically in Venezuelan waters but no nesting in Venezuelan territory has been recorded. It has, however, been found nesting in both Guyana and Colombia, and in great numbers in Surinam and French Guiana.

I. Green Turtles Nesting on Aves Island

Aves Island is a tiny, rock-cored, footprint-shaped sandbar located almost 600 km north of the coast of Estado Sucre, Venezuela, and about 200 km west of Guadeloupe, its coordinates being 15°40'N, 63°36'W. The island is of fluctuating form. It is only about 520 meters long and 200 meters wide at its widest part (at the northern tip). The green turtle colony on Aves Island has been discussed in a considerable body of literature, relevant references include Hummelinck (1952), Lazell (1967), Maloney and Schubert (1968), Zuloaga (1955), Rainey (1955), Brownell and Guzman (1974), and Laiz Blanco (1979).

While Aves has been visited by voyagers for decades, the first systematic study of the Aves Island green turtle colony was that of Rainey in 1971-74. Rainey found turtles nesting on Aves from June through August, as is typical of the northern hemisphere marine turtle colonies.

In 1971, he counted 174 nest pits made prior to his arrival on June 24, and tagged 16 nesting turtles during the subsequent three nights. Mean carapace length was found to be 42.4' (107.7 cm) and mean weight 380 lbs (173 kg). The Aves Island turtles are thus distinctly larger than those nesting at Tortuguero, Costa Rica, and close in size to the South American mainland nesters in Surinam and Guyana.

After a hiatus of several seasons, FUDENA re-initiated an Aves Island turtle tagging program in 1979. In that year, the research team spent 89 days on the island, arriving in July and departing in October, but being forced to leave for a time by the passage of hurricane David on August 29. Maps were drawn showing the change in form of the island before, immediately after, and 44 days after the passage of the hurricane, which denuded the island of sand, washed away all turtle eggs, and uprooted the narrow isthmus connecting the northern and southern parts of the island so that for a brief period Aves consisted of two separate islands.

Various turtles tagged in earlier years by Rainey and his co-workers were found, but these turtles have not been analyzed. 670 nesting emergences were recorded in July and August, the vast majority in

the latter month, and an estimated 70% of these resulted in nestings. Laiz Blanco (1979) estimated that as many as 55,280 eggs were destroyed by the hurricane on August 29. The nesting took place all around the island, with only moderate variation in density from one section to another. A few hatchling emergences were witnessed during July and August, corresponding to early-season nesting in May and June.

Long distance recoveries of green turtles tagged while nesting on Aves Island are summarized by Carr, Carr, and Meylan (1978) and by Caribbean Conservation Corporation (1980). Recovery locations recorded include: Miskito Keys, Nicaragua (2); Isla Mujeres (Mexico); Dominican Republic (several); Isla Tortuga; Grenada; Grenadines; Martinique (2); and Guadeloupe. The possibility cannot be discounted that some of the recoveries reported from Lesser Antillean islands such as Martinique and Guadeloupe were in fact made from vessels poaching in waters and beaches of Aves Island itself, with the recovery location falsified by the finders to prevent self-incrimination.

II. Green Turtles in the Gulf of Venezuela

Although green turtle nesting has not been reported in the Gulf of Venezuela, the species is often encountered there, and is caught for human consumption in both the Guajira and Paraguana Peninsulas. Both immature and mature turtles are caught; a number of the mature females found have borne tags indicating that they had previously nested at Tortuguero, Costa Rica. Western Venezuela thus appears to be an outlying feeding area for the Tortuguero breeding colony, which is the largest breeding congregation of green turtles in the Caribbean and which primarily utilizes feeding grounds off the coasts of Nicaragua, Panama, and Colombia with occasional recoveries of tagged animals as far away as Campeche, Key West, and Puerto Rico (Carr, Carr, and Meylan, 1978).

During the period of 1956-1976, seventeen Tortuguero green turtles were recovered in the Gulf of Venezuela, and eight more on the central Venezuelan coast, between Los Roques off Caracas and Guiria on the south coast of the Paria Peninsula (Carr, Carr, and Meylan, op. cit.). Specific localities recorded as of 30 June 1977 for these Tortuguero-Venezuela migrants were:

SPECIFIC LOCALITIES RECORDED AS OF 30 JUNE 1977 FOR TORTUGUERO-VENEZUELA MIGRATING GREEN TURTLES *			
Tag**	Date Tagged	Place of Recovery	Date of Recovery
1178	04 July 1970	Isla de Margarita	16 June 1972
1667	17 August 1961	Castillete, Venezuela	25 July 1963
1726	02 August 1961	Between Colombian and Venezuelan coasts	07 May 1966
1958	08 September 1961	Las Costas de Cojoro, Venezuela	January 1963
2698	02 August 1963	2 m S of Isla El Gran Roque	June 1968
3254	19 August 1964	Isla de Margarita	November 1965
4421	09 September 1967	Isla de Tortuga	22 November 1969
4437	10 August 1967	3 m N of Zapara Island, Gulf of Venezuela	24 April 1968
5680	24 July 1969	Coastal waters of western Gulf of Venezuela	22 February 1971
5818	27 July 1969	Isla de Tortuga	15 July 1970
6369	11 September 1968	Guiria, Golfo de Paria	08 April 1973
6836	29 August 1970	Cojoro, Peninsula Guajira	July 1972
6836	04 August 1972	Cojoro	Summer 1973
6870	11 September 1970	Castillete, Peninsula de la Guajira	08 April 1971
7028	16 September 1970	Punta Salina, Los Roques	16 March 1972
7629	10 August 1971	Punta Salina, Península de Paraguaná, Estado Falcon	02 January 1972
7963	21 August 1972	Cojoro, Guajira Peninsula	12 December 1972
9036	17 August 1972	Cojoro, Guajira Peninsula	12 December 1972
8403	31 July 1972	Cojoro	Summer 1973

8538	01 August 1972	Cojoro	Summer 1973
8953	14 August 1973	Cojoro, Peninsula Guajira, Gulf of Venezuela	02 January 1973
9870	10 September 1973	Eastern part of the Paraguana Peninsula	09 August 1974
H135	26 August 1972	Cojoro	Summer 1973
<p>* <i>Editor's note (2009)</i>: This table in the original National Report did not have a title. Editor provided the title for the table in this version of the report.</p> <p>** <i>Editor's note (2009)</i>: The order of appearance of the individual tag numbers in this table does not correspond to the order presented in the original National Report. Editor listed the tag numbers in increasing numerical sequence.</p>			

The occurrence of the green turtle and other marine turtles on the Paraguana Peninsula was discussed in an undated newspaper article by Arteaga entitled "Las Tortugas de Adicora"³ (El Nacional, Caracas). I made a visited to the Peninsula in February 1978, and found several carapaces of green turtles that had been caught and butchered locally. Two of these that had been preserved measured 104.1 x 77.5 cm (i.e., mature) and 84.1 x 63.3 cm (i.e., immature). I also found six intact shells near a ghost town on the mouth of the lagoon opposite Santa Rita. One was adult (105.4 x 83.2 cm), while the remainder were immature (somewhat distorted, but generally 60.75 cm in length).

Interviews were conducted with local inhabitants regarding turtle nesting in the area. Long-time German residents in Punta Fijo said that turtles were not found in significant numbers on the western side of the Paraguana Peninsula, and if they nested there at all there could not be many. In Adicora, on the eastern side of the peninsula, great confusion was found with common names of turtles, cawana being used for either the loggerhead or the leatherback, and carey being applied to both the hawksbill and the male green turtle. This confusion of common names was also apparent in the popular article by Arteaga cited above. Nevertheless, one Adicora resident convincingly described the nesting of a green turtle nearby, and he had two shells in his yard to confirm his species identification. Another informant reported that the penis of the male green turtle is sometimes dried and used for medicinal and aphrodisiac purposes, and he showed us one such dried organ.

Concentrations of foraging sea turtles of unreported species have also been recorded from the Golfo Triste area south of Cayo Sombrero (near the city of Tucacas), according to G. Cuellar (pers. comm. to L. Ogren, 1980).

III. Feeding Grounds of the Olive Ridley, *Lepidochelys Olivacea*, in Eastern Venezuela

Lepidochelys olivacea, (mistakenly identified as *Lepidochelys kempfi*) was first recorded in Venezuela by Donosco-Barros (1964a, 1964b) who cites the only locality record available to him for the country as "Cumaná". Subsequently, Flores (1966) reported three Venezuelan specimens, including two carapaces from Piritu de Barlovento and a nearly mature live female from Isla La Tortuga, though he persisted in the misidentification as *L. kempfi*; the correct identification is immediately apparent from photographs, which show a turtle with seven left costals and six right costals, a condition common in *olivacea* but unknown in *kempfi*. Flores cited local vernacular names for *olivacea* as "Tortuga manila" and "Tortuga bestia". The subadult female specimen had carapace dimensions of 57.5 x 55.5 cm and the stomach contained traces of vegetation, bony fish, cartilaginous fish, and gastropods.

At about the same time as these discoveries, I first encountered and recorded the nesting of *Lepidochelys olivacea* in Guyana, and Schulz found the same species nesting in larger numbers in eastern Surinam (Pritchard, 1966; Schulz, 1964). Subsequently Schulz and I cooperated in a tagging program for *olivacea* on the Surinam beaches that resulted in considerable data on migratory destinations

³ *Editor's note (2009)*: The original National Report spelled this area as "Adicoa". Editor changed the spelling to "Adicora" based on the alternative spelling cited in the subsequent paragraph and the editor's research.

of post-nesting females; 3,359 tagged animals yielding a total of 72 long-distance recoveries (Pritchard, 1973, 1976). Recoveries from Venezuela are listed in the table below.

VENEZUELAN RECOVERIES OF TAGGED <i>LEPIDOCHELYS OLIVACEA</i> AS OF JULY 1977			
Tag	Date Tagged Surinam	Place of Recovery	Date of Recovery
E135	07 June 1965; Ei*	10 m from NE part of Isla Margarita	03 August 1970
E300	31 May 1967; Ei	Punta Barima (8°15'N, 60°20'W)	01 August 1967
E332	02 June 1967; Ei	Puerto Santo, Estado Sucre ; "en la playa"	ca. August 1975
E543	13 June 1967; Ei	Golfo de Paria, 3 m SE Güiria, Estado Sucre	05 October 1972
E585	13 June 1967; Ei	3 m W of Los Testigos	18 May 1970
E593	13 June 1967; Ei	2 m off Soldado Rock, in Cedros Current off E coast of Trinidad	04 February 1969
E823	13 June 1968; Ei	Near Isla Margarita	10 May 1969
E936	17 June 1968; Ei	25 m N of Trinidad	13 February 1969
E981	17 June 1968; Ei	15 m S of Punta Espada, Golfo de Venezuela	04 November 1971
E1120	25 June 1968; Ei	1 ½ m N of Carupano	18 September 1968
E1164	28 June 1968; Ei	Las Casitas de Punta Piedras, Nueva Esparta	20 January 1970
E1209	23 June 1969; Ei	8 m N Cabo Negro, Margarita	28 October 1970
E1280	23 June 1969; Ei	11°22'N, 63°43'W (near Carupano)	22 January 1971
E1336	10 July 1969; Ei	Boca de Serpiente	19 April 1975
E1628	25 May 1969; K.P.*	Boca de Serpiente	25 March 1975
E2666	15 June 1969; Ei	1 m off S coast of Trinidad (S of Siparia)	ca. January 1973
E2764	10 June 1969; Ei	10 m N Isla Los Frailes (11°34'N, 63°45'W)	23 July 1970
E2953	22 April 1969; Bab*	Los Frailes Archipelago	12 November 1969
E4348	25 May 1979; Ei	2 m off NW coast of Trinidad	28 October 1972
E5090	26 June 1970; Ei	½ m off E coast of Isla Margarita	ca. May 1972
E5148	10 June 1970; Ei	Few m off Toco Toco, Trinidad	12 July 1971
E5283	27 June 1970; Ei	Off Las Cuevas, NW of Trinidad	April 1977
E5286	27 June 1970; Ei	1 m E of Pt. Galera, Trinidad	09 March 1972
E5589	01 July 1979; Ei	12 m SE Isla Margarita	10 January 1972
E5648	14 July 1971; Ei	11°15'N, 63°55'W (near Carupano)	March 1972
E5654	02 June 1971; Ei	10°58'N, 63°30'W (near Carupano)**	September 1971
E5719	30 June 1971; Ei	Trinidad	March 1974
E5816	07 July 1971; Ei	Gulf of Paria; several m off Point Fortin	26 November 1971
E7123	20 June 1972; Ei	Pampatar, Isla Margarita	26 February 1976
* Ei= Elanti; K.P.=Krotaja Pasi; Bab=Baboonsanti			
** <i>Editor's note (2009):</i> Original National Report listed location as 63°30'N 10°58'N			

Flores (1969) reports this species (which he erroneously identified as *Lepidochelys kempî*) from the vicinity of Cumaná (Estado Sucre); La Tortuga; and Islas Piritu (Estado Anzoátegui).

These recoveries are clearly concentrated in the area around the Orinoco delta and areas to the north and west to which the Orinoco waters are carried by the Equatorial Current. There is only one Venezuelan recovery west of Isla La Tortuga, but the specimen (E981) reached as far as the mouth of the

Gulf of Venezuela, only fifteen miles from the Colombian border. Occasional specimens have been caught in Colombian waters; Nicéforo Maria ((1953) and Tufts (1972) report on the same individual, initially misidentified as *kempi*, from Cartagena, Colombia. Other outlying olive ridleys have been recorded from 3 miles west of San Juan Harbor, Puerto Rico (Caldwell, 1969), and from Gibara, Cuba (Aguayo, 1953). An immature olive ridley has been recorded from Martinique and reports have been received of migrating individuals between Isla Saona and the Dominican Republic (Caribbean Conservation Corporation, 1980).

An important factor relevant to the potential study of olive ridley distribution by means of aerial surveys is that the Western Atlantic populations do not seem to share the East Pacific *olivacea* habit of floating or sleeping on the surface for extended periods. This habit makes East Pacific ridleys particularly easy to survey (and to capture) but I have never seen Atlantic *olivacea* floating or sleeping on the surface, and I know of no known published record of others having made such observations. The floating habit may possibly represent an attempt by ridleys in relatively cool East Pacific waters to elevate their body temperature by allowing the central part of the carapace to be held above the surface of the water and thus received unfiltered insolation. The characteristic high, flat topped shell of the *olivacea* would appear to be well-adapted for this stratagem.

Olive ridleys have never been recorded nesting in Venezuela. However, Bacon (1973) summarizes nesting information for this species in Trinidad as follows:

1. Tracks on Matura Beach (animal not seen). August 1969.
2. Hatchling found on Manzanilla Beach. August 1969.
3. Tracks and nest on Matura Beach (animal not seen). March 1970.
4. Adult female nesting on Matura Beach. May 1970.
5. Immature ridleys are sometimes caught around Isla Margarita. A carapace of a specimen from the north coast seen in the collection Isla Margarita, Instituto Oceanografico was 69.3 cm wide and had seven pairs of costal scutes.

IV. Populations of the Hawksbill Turtle *Eretmochelys Imbricata*

In Venezuela, the populations of this species appear to be concentrated on offshore islands, from which the quality and quantity of information available ranges from very good to non-existent.

In the Netherland Antilles, hawksbills are almost extinct (de Boer et al., 1973) though they may have existed in somewhat greater abundance in the past.

In the Los Roques Archipelago (a complex of mangrove, beach and reef islands about 150 km due north of Caracas), extensive studies have been conducted in the last two or three years on hawksbill populations, and these have included an ambitious "head-starting" program. These islands are a National Park and scientific studies here are administered by the Fundacion Los Roques, based in Caracas; there is a field research station in the archipelago, the Estacion de Biologia Marina Dos Mosquises. Intensive studies of the sea turtle population were initiated in 1979 and continue. Several mimeographed reports are available on the first season's work (Maldonado, 1981; Buitrago, 1981; Anon, 1980). Findings may be summarized as follows:

Hawksbill nests in modest numbers on many islands in the Archipelago; nesting takes place from May to December but with the great majority of emergences taking place in July to October (peak month September). Absolute numbers are low; in 1979 one nest was recorded in April, one in May, four in June, ten in July, twelve in August, seventeen in September, ten in October, four in November, and one in December. The most used nesting islands were identified as: Dos Mosquises, La Pelona, Cayo de Agua, Bekeve, Selesky, Carenero, Cayo del Sal, and Crasky. These islands are concentrated in the western side of the archipelago; the islands in the east, although much larger, are extensively mangrove bordered with little beach.

Although the area is a National Park there are still resident fishermen who constitute an ongoing threat to turtle nests; most nests that are not found almost immediately by the research and conservation team are raided by egg collectors. The preferred course of action by the conservation team in finding a fresh nest is to camouflage or dig a small hole to give the impression that the eggs have already been taken. Broken egg shells scattered around the nest complete the impression of a "raided" nest. Other nests are taken to the research station for artificial incubation and head-starting. In 1979, 21 nests were camouflaged and only two of these were robbed. Of 20 nests found in 1980, 16 had already been robbed (2 green turtles, 12 hawksbills).

There have been two long-distance recoveries of turtles "head-started" at the Los Roques facility. One of these was a hawksbill hatched on Los Roques 08/11/74 and released 27/12/75 when it measured 30.2 x 21.4 cm and weighed 3.35 kg. It was captured in Jamaica on October 21, 1976.

The other was an Aves Island green turtle, artificially incubated and hatched at Los Roques 10/11/73 and released 15/01/74 when it measured 19.8 x 15.9 cm and weighed 875 g.; it was caught at Santos, São Paulo, Brazil on 28/08/76, at which time it measured 33 x 28 cm and weighed 4 kg. It was retained for the Santos aquarium. This is one of the longest turtle movements on record; however, whether a turtle would naturally embark on a journey of that nature is uncertain, since the turtle entered the sea at an unnatural location and age.

Isla Blanquilla, a flat, arid island about 100 km NNW of Isla Margarita, is likely to be another nesting site for the hawksbill. This island has no permanent inhabitants, though fishermen camp there from time to time. It is surrounded by superb reefs and many fine beaches. During a very brief visit to the island on February 21, 1978, with no more than an hour on the ground, I was able to find the remains of several hawksbill turtles that had been killed by visiting fishermen. An attempt to survey the island more thoroughly in the 1981 survey was thwarted by mechanical problems with the aircraft (which fortunately took place on the flight to Isla Margarita rather than the scheduled next leg of the flight to uninhabited and waterless Isla Blanquilla). However, Blanquilla should be considered a high priority for a hawksbill nesting and feeding habitat survey.

Roze (1954) reports that the hawksbill comes to the beaches of Isla Margarita on occasion for purposes of egg laying, and the hawksbills, caught in the waters around the island provide the basis for a local carey industry. Roze (1955) offers an earlier comment on this industry, with thoughts on the relative merits of extracting the carey from live and from killed hawksbill.

It is vital that studies be conducted of turtle nesting (particularly hawksbill nesting) on other islands of the Venezuelan coast, including Orchila (east of Los Roques) and La Tortuga, due west of Isla Margarita. La Tortuga island lacks permanent inhabitants, is of large size (about 11 x 22 km), and has a beach along its entire northern shore.

Hawksbill nesting on the Venezuelan mainland is extremely sparse. However, an informant at Guiria on the Gulf of Paria coast of eastern Estado Sucre, stated that the hawksbill was one of two species that regularly nested in that area in August. Bjorndal (in Caribbean Conservation Corporation, 1980) similarly heard reports of hawksbill nesting on the beaches of the Gulf of Paria. This coincides in a general way with the peak nesting of hawksbills at Shell Beach, in Guyana, some 70 km from the Venezuelan border (Pritchard, 1969), although the other species that use the beach (greens, leatherbacks, ridleys) do so considerably earlier in the year. It is interesting that this extremely atypical habitat (muddy, estuarine water) should provide habitat for the hawksbill, a species typical of coral reefs, but Shell Beach may be the best nesting ground for this species on the South American mainland.

Very small numbers of hawksbills have been found on Aves Island. Brownell and Guzman (1974) reported having encountered six specimens in Aves Island waters in the course of four expeditions, though none had been seen nesting. All were immature, weighing 10 and 20 kilos each. Laiz Blanco (1978) mentioned another Aves Island hawksbill, 1,905 g in weight and 265 mm in carapace length.

V. Breeding Colony of the Green Turtle, *Chelonia mydas*, in Estado Sucre.

Several published reports draw attention to the nesting of green turtles in Estado Sucre. Flores and Hoit (1965) mention an individual that was captured while nesting at 2 A.M. on October 18, 1965 at Playa Naiguata, near Cumaná. It laid 160 eggs and the carapace measured about 112 x 90 cm; the estimated weight was 150 kg.

Laiz Blanco (1978) reported on an aerial survey of the beaches of the Península de Paria, and found a single turtle track and three beaches that appeared suitable for nesting.

Ogren (1980) mentioned an aerial survey in Estado Sucre in August 1979, reported to him by G. Cuellar, head of projects for FUDENA. This survey took place between Carupano and San Juan de las Galdonas, and only a single turtle track was seen. The coast was reported to consist of small stretches of beach, separated by rocky cliffs.

In the course of my 1981 aerial survey, the northern coast of Estado Sucre was the only place we found regular turtle tracks. Seven fresh tracks were seen, nearly all on beaches immediately east of Cabo Tres Puntas. The three beaches at the eastern end of the peninsula mentioned by Laiz Blanco (op. cit.) were not surveyed.

Detailed information on the location of the nests seen and the beaches along the coast of Estado Sucre may be obtained from the flight log and maps appended herewith. Although identification of the species that made the nest is uncertain, my judgment is that they were made by green turtles; they were certainly not leatherback or ridley nests.

A few green turtles nest in northern and western Trinidad, which is a geological extension of the Península de Paria, separated by just a few miles of ocean at Boca del Dragon. Bacon (1973) records green turtle nesting from Mayaro, Matura, Matelot, and Big Bay, Trinidad. Following the mainland coast to the south-east from the Gulf of Paria, the next beaches of any kind are in northwestern Guyana (Shell Beach) where moderately dense nesting by green turtles takes place (Pritchard, 1969).

A fisherman interviewed on Isla Margarita on 21 February 1978 declared that that he considered the following beaches on Isla Cubagua (between Isla Margarita and the mainland) to be possible nesting sites for *Chelonian mydas*: La Caldera; Corral el Barlovento; Corral del Sotavento, and possibly Puntarenas.

Several shells of immature green turtles were seen for sale in Isla Margarita; three of them had the following dimensions; 61.3 x 52 cm; 41.9 x 36.5 cm; 47.0 x 37.5 cm. Prices ranged from 25 to 40 Bolivars.

Some turtle nesting was reported to take place on Playa Manzanilla, Isla Margarita, but the species was uncertain.

VI. Nesting by the Loggerhead Turtle, *Caretta caretta*, in Venezuela.

The loggerhead is rather scarce in Venezuela and only a few nesting records are available. This contrasts with the Colombian coast where *Caretta* is the commonest nesting turtle; however, east of Venezuela, in the Guianas, the loggerhead has never been recorded nesting in Guyana or French Guiana, and only a single specimen has been found nesting among thousands of leatherbacks, olive ridleys, and green turtles in Surinam. In Trinidad, Bacon and Maliphant (1971) report a single nesting by a loggerhead, at Las Cuevas Beach, in 1971; however, the photograph of this turtle, although somewhat indeterminate, looks more like a hawksbill, and the carapace length (85 cm) is more typical of that of a nesting hawksbill than a loggerhead.

A few loggerheads nest in the Los Roques Archipelago, though the predominant the predominant turtles there are hawksbills. Buitrago (ms) recorded seven loggerhead nestings in Los Roques during the 1979 season-five in May, one each in April and June.

Flores (1969) reported that the loggerhead is frequently observed in the waters of Sucre and Isla Margarita, Venezuela, and that it nests on sandy shorelines of coasts and the islands of eastern Venezuela. I saw three loggerhead skulls in the collections of the Instituto La Salle on Isla Margarita; the largest of these 27.6 cm wide and 24.5 cm in basicranial length, equal to the largest skull of this species that I have seen.

AERIAL SURVEYS

Two major aerial surveys were conducted in the course of the consultancy reported herein. The first of these started from Caracas and proceeded west, maintained high altitude until Puerto Cabello, then followed the coast at a low level to Coro and completely around the Paraguana Peninsula. No sign of turtles nesting was seen on this on this flight; because of this and extreme turbulence the journey from Punto Fijo to Maracaibo was completed at high altitude. The second flight started from Caracas, again maintaining high altitude for some time following take off, and descended to low survey altitude at Higuerote. The survey continued to the east, passing along the southern shore of the Península de Paria. A landing was made in Guiria, after which we crossed to the north coast of the peninsula, and flew west along the coast, finally crossing the narrow water separation to Isla Margarita where a landing was made and the flight abandoned because of battery failure in the aircraft. One turtle nest was seen on the coast of Anzoategui and several in Sucre, described in detail in the flight log. It is unfortunate that aircraft failure prevented survey of the coasts of Isla Blanquilla and Tortuga as had been intended.

Certain other data are available from Venezuelan surveys other than these two. On March 25 1977, Pedro Trebbau and I flew the coast of the Orinoco delta and onward to Guyana at an altitude of about 300 feet in search of the reputed beach of "Punta Playa", on which leatherback nesting was supposed to occur. However, the entire coast was composed of mud and eroding mangrove forests throughout the delta area and the first beach encountered was Shell Beach, Guyana. The latter is a uniquely important nesting area, not so much for the absolute number of turtles utilizing it as for the fact that it is an important site for no fewer than four species (leatherback, green, olive ridley, and hawksbill).

Pedro Trebbau also reported to me that he had flown the coast of Aragua and the Distrito Federal west of Caracas on Feb. 19, 1981, in search of downed aircraft. The flight covered the shoreline from Maiquetia to Puerto Cabello. However, despite an intensive visual search of the coast and water surface from a low altitude, no traces of sea turtles or their nests was seen.

A more positive observation was reported by Leopoldo Garcia of the Parque Zoologico "El Pinar" in Caracas. Garcia reported that in course of an aerial survey in May 1981, he had observed a group of green turtles swimming in and out of a trench through a limestone reef offshore from Las Salinas, in the Distrito Federal between Chichiriviche and Catia La Mar. The turtles were estimated to be between 50 and 100 cm. in carapace length, and were between 9 and 15 inch in number, at least five being of adult size.

SUMMARY OF FLIGHT LOG

Caracas east to Guiria, west to Paraguana Peninsula

Date: July 18, 1981

Pilot: Luis Arturo Ayala, M.D.

Copilot: Pedro Trebbau, D.V.M.

Observers: Peter C. H. Pritchard, Ph.D.

J. Robert McMorris

Luis Arturo Ayala, Jr.

Aircraft: Piper Twin-engine Low-wing monoplane; Registration YV-1562P

(This type of aircraft was less than ideal for aerial surveys, being rather fast and with low wings, so observers were forced to sit in the rearmost seats and look backward).

- 9.26 a.m. Take-off, El Centro Airport, Caracas. Required by air traffic regulations to fly over high mountainous section west of Caracas; descend to observation altitude near Puerto Cabello.
- 9.46 Cliffs and forest-covered hills, with occasional yellow sand beaches, relatively or completely inaccessible; some pebble beaches.
- 9.48.18 Puerto de Cata. Sandy bay with development including two high-rises.
- 9.48.50 Longer beach but with town behind.
- 9.49.20 Another curved beach, isolated. Still forest-covered behind coast. Bahía de Turiamo -some beaches in bay, but small; shoreline mostly rocks. Steep cliffs.
- 9.53.15 Mangrove inlet with complex border. Isla Larga and Isla Alcatraz: beaches along southern shores, with yachtsmen and vacationers.
- 9.55.45 Puerto Cabello. Large port city.
- 9.57.20 Beaches extend outside city, but in many areas fronted by rocks (on seaward side).
- 9.58.23 Cement factory.
- 9.58.45 Refinery. Beach starts after refinery.
- 9.59.25 Power station with riprap-bordered cooling water channels.
- 10.01.18 Boca de Yaracuy (small town at river mouth). Beachfront development; bathers. Beach huts until 10.03.21.
- 10.06.00 Boca de Aroa-beachfront town. Beachfront development, highway. Developed all the way to Tucacas.
- 10.07.20 Tucacas. Mangroves and small beaches. Flew over Morrocoy National Park-extensive complex of mangrove islands, coral reefs, and small beaches; small groups of people seen on most of the best beaches.
- 10.11.30 Cliffs with more beach, and extensive coconut groves. Passed beach in front of the Chichiriviche Lagoon.
- 10.12.42 Chichiriviche-coastal town. Long, empty beach after the town, with coconut plantations.
- 10.15.30 More beach and coconut plantations. Much driftwood on shore.
- 10.16.10 Boca de Tocuyo (coastal town). Muddy water west of river mouth; much driftwood on beach. Beach flat, continuous with flat land behind beach. Highway ½ mile inland. One scarlet ibis seen.
- 10.19.40 San Juan de los Cayos (coastal town). Beachfront development. Very wide beach beyond town, with development. Coconut plantation. Two scarlet ibis seen.
- 10.21.50 Beach with natural vegetation (low, scrub forest); eroding cliffs; muddy water.

- 10.25 Long beach with few huts, and coconut grove.
- 10.26.10 High cliffs, narrow beach. Water still muddy.
- 10.27 ½ Small town. Circled until 10:29. Five scarlet ibis.
- 10.30.24 Cliffs.
- 10.32 Beach with human footprints.
- 10.32.40 Huge coconut grove on point.
- 10.35 Beach with huge coconut grove.
- 10.36.40 Good beach.
- 10.38 Good beach, with hill behind; some coconut palms.
- 10.39 Long beach, high dunes, coconuts; some muddy water.
- 10.41 More beach, coconuts. Streaks of muddy water in sea. point.
- 10.44 Puerto Cumarebo (coastal city with airport). Much beach. Flight becoming turbulent. Cliffs, cactus.
- 10.54.30 Landed at Coro airport.
- 11.30.15 Took off from Coro; headed north along Paraguana Peninsula Flight still rough and turbulent. Long, rock-bordered beach along neck of peninsula, much sand, dunes, etc. Highway about 300 yards inland (4-lane with medium).
- 11.37 More beach, without rock frontage; highway becomes single.
- 11.39 Dry salt lagoons inland. Endless beach. Looks good for turtles, but no tracks.
- 11.40.55 Houses and huts on beach.
- 11.41.30 More houses and huts; also off-road vehicle tracks.
- 11.42.50 Adicora (coastal town); beachfront development.
- 11.44 Town; beach development; lagoon.
- 11.45.23 Offshore rocks and reef. Town on coast. Whole peninsula visible-all flat except two isolated peaks of great altitude (2,723 feet).
- 11.47 Huge sand flats, reef-fronted-beaches.
- 11.48 Town. Turbulence getting worse.
- 11.48.50 Beach gives way to rock.
- 11.51.40 Wide beach, sandy point. Isolated rocky patches. Tracks of vehicles and people. Huts on beach.
- 12.02 Beachfront development.

12.09 Climb to cross Golfete de Coro; no turtles seen and too turbulent for notes so continued fast and at high altitude to Maracaibo.

SUMMARY OF FLIGHT LOG

Caracas east to Guiria, west to Isla Margarita

Date: July 24, 1981

Pilot: Carlos Palmer

Observers: Peter C. H. Pritchard, Ph.D.

Ledy Cecilia Acosta

Aircraft: Cessna 182 High-wing, four seat monoplane

Take off time: La Carlota (Caracas) 8:43 a.m.

Required by flight traffic regulations to fly over mountains east of Caracas directly to Higuero. Much light cloud at 5,000 feet, scattered higher cloud.

9.03 a.m. Descending to Higuero. Long beach extended from point north of Higuero, with considerable beachfront development.

9.05.30 Wide beach with much driftwood. Sea brown and muddy with effluent from rivers. Inland flat, undeveloped, with scattered green trees near the coast becoming thicker inland.

9.07.10 River mouth; muddy effluent. Beach otherwise continuous.

9.07.45 Small coastal town, low density, with recreational beach. One or two high-rises, scattered development, several beach access roads.

9.08.50 River mouth. Recreational beach, extensive coconut groves.

9.09.50⁴ End of beachfront development. Some young coconuts planted behind beach. Wheel tracks on beach. Swamp inland with many dead trees.

9.11.25 Town of entrance to lagoon. More beach. Water now less muddy. Some coconut groves. Dune vegetation and open water in alternating parallel strips behind beach with a lagoon full of mangrove islands.

9.13.25 Coconut groves continue, with some beach houses. Many frigate bird and boobies aircraft.

9.17 Lagoon ends in a series of mangrove islands in long strips. Beach and coconut plantations continue.

9.17 Fresh turtle track seen, possibly green turtle.

9.19 Many frigate birds.

9.19.15 Small town situated on a river mouth.

⁴ *Editor's note (2009):* The time was listed as "09.50" in the original National Report. Editor changed it to "9.09.50" based on the previous and succeeding entries in the flight log.

- 9.20 River mouth, more coconut groves. Tractor tracks on beach.
- 9.21 Shrimp boat seen about one mile offshore. Huge coconut grove extends about one mile inland. Plane getting too high, descends from 600 feet to 400 feet.
- 9.26.10 Playa Pintada airport. Small city. More beach (medium energy wave action, yellow sand).
- 9.27.15 Lagoon begins. Narrow beach strip between lagoon and sea with development and recreation; many swimmers
- 9.30 Development ends but coconut grove continues.
- 9.30.20 Coconut grove ends.
- 9.30.50 Sandbar at entrance to lagoon, with brown and muddy water.
- 9.34.30 River mouth, muddy effluent. Next lagoon begin. Beach continues with scattered coconut palms, narrow strip of vegetated dunes between the sea and lagoon. No development; cattle tracks.
- 9.37.30 Aircraft forced to attend to higher altitudes over Puerto Piritu. Beach continues uniformly.
- 9.39 Puerto Piritu. Lagoon mouth with effluent of muddy water. Had to fly still higher as we approached Barcelona (Military Regs).
- 9.41 Beach continues with undisturbed bush behind.
- 9.42 Old beach ridges visible inland from present beach. Beach looks excellent but we were too high to see in detail.
- 9.50 Barcelona Aircraft at 6,700 feet. Big port city with complex Islands offshore. Beach ends at Barcelona.
- 9.53 Hilly islands, with very little beach and what beach does exist covered with huts. Island looks dry and sterile, with sparse vegetation.
- 9.59 Passing "Isla Caracas" with some small uninhabited crescent beaches. Islands again hilly and arid.
- 10.02 A few isolated crescent beaches visible before Cumaná,
- 10.05.30 Flying over tip of Peninsula de Araya. A few beaches around tip but sporadic development and very dry inland. Flight path along southern shore of Peninsula de Araya.
- 10.07.02 Town with boats and pier. Coast with dry hills; water dark blue and looks deep. Some dark, gravelly beaches-do not look suitable for turtle nesting. Red, eroded hills with extremely sparse vegetation.
- 10.11.10 Entrance to small inlet or bay. Water still looks dark blue and deep.
- 10.14 Hills becoming more densely vegetated and fertile. Occasional grayish, gravelly, narrow beaches; occasional coves with boats.
- 10.17 Beaches getting longer and sand becoming more yellow. Very low energy system, well protected with no visible waves.

- 10.17.50 Small fishing village.
- 10.19 Hills becoming lower; occasional lagoon. Shoreline made up of beaches and mangroves.
- 10.21.30 River mouth, small town, many fishing boats (small, open type).
- 10.21.44 White sandy point with salt lagoon. Lagoon terminates in mangroves. Brown water with inflowing rivers and muddy marshes.
- 10.26.31 Overland crossing to Gulf of Paria. Some excellent rainforest visible to left.
- 10.37 Carupano Airport visible several mile due north. Countryside hilly, covered with nice forest.
- 10.41.10 Flying over El Pilar.
- 10.44 Dense forest dominated by a species of tall palm. Hills to left.
- 10.45 Extensive swamps.
- 10.47 Coastal swamp forests, intact on right side of aircraft (i.e., to south), with brown estuaries. Gulf of Paria -muddy, brown water. Mangrove and hardwood bordering shorelines. Intact for miles inland on both sides. Very nice.
- 10.53.45 Flying along south side of Península de Paria. Signs of coastal erosion- tall mangroves leaning over at shoreline.
- 10.54 Mud flats. Cloud very low (1,000 feet).
- 10.56.30 Dramatic line in water between muddy river water and dark, clear, tea-colored sea water.
- 10.58 First small beach seen.
- 10.59 Several small sandy beaches, several outflows of very muddy water.
- 11.00 Narrow yellow beach fairly continuous.
- 11.02 Coastal village.
- 11.03 Another village. Continuous narrow sandy beach, with swamp forest behind. Port of Guiria visible, with breakwaters to create harbor. Forest surrounds, with tall Cereus cacti visible.
- 11.08 Landed at Guiria. Talked with a one eared informant at airport who said that there were a lot of turtles around Guiria, and both the Carry and one other species nested in the area around August.
- 11.24 Take off from Guiria; went north across peninsula to north coast. Peninsula is thickly covered with rain forests and slopes up to a ridge near the north coast which plunges abruptly into the sea. Thick clouds over the hills. Occasional, totally isolates thatched huts.
- 11.33 Reach north coast. Small cove beaches with wave action visible even from high altitude. Water deep and clear.
- 11.34 .13 Turtle track (fresh). Several beaches with small villages behind.

- 11.36.51 Another turtle track.
- 11.38 Another turtle track. These appear to be medium-sized fresh nesting tracks, probably greens but possibly hawksbills.
- 11.38.25 Another track.
- 11.39.50 Another track.
- 11.39.50 Long beach with huts at point. Hills behind; mainly rock cliffs behind beach.
- 11.41 Small town, beaches. Still steep hills plunging down to the sea.
- 11.43 Fresh nest at end of beach.
- 11.43.30 Village.
- 11.44.30 Large village, beach, steep rocky islands.
- 11.46.40 Small village, beach.
- 11.48 Village and beach, with rocks; many boats (about 30) offshore in tight group, presumably fishing.
- 11.49 Beach.
- 11.50.35 Five beaches, two with houses. Cliffs behind.
- 11.53 Large town, beach in cove.
- 11.54.30 El Morro de Puerto Santo (town at base of narrow-necked peninsula); lots of boats in harbor in western side of neck.
- 11.57 Passing Carupano offshore.
- 11.59 Passing long beach behind Carupano. Some rocky outcrops. 3-4 very long beaches (1 - 3 miles each).
- 12.02 Deep cove with three beaches. Steep hills with sparse cactus forest.
- 12.03 Town In cove.
- 12.05 Turtle track on end of beach. Two boats at sea operating a large circle net, about 80 yards in diameter.
- 12.05.42 Town in deep, wide cove.
- 12.08.30 Several beaches separated by rocks. Passed over Morro de Chacopata (peninsula) and gained height for flight to Isla Margarita. Severe acidic, burning smell developed during this flight. On landing at Margarita it transpired that the battery was dry, burned out and so hot that the plastic fittings were melting. Peter Pritchard and the other observer abandoned the flight at this point. Pilot called for a pickup truck for a boost to start his engine, and returned to Caracas.

For many decades, the Aves Island green turtle nesting colony was subject to sporadic, perhaps sometimes intensive, poaching of breeding adults and eggs by fishermen and sailors from the Lesser Antilles. This caused an almost certain major decline in the breeding populations over the years, though quantification is difficult-especially since the number of adult green turtles that reach breeding condition in any given season is variable and impossible to predict, so that "good" and "bad" nesting years may have little bearing on the overall status of the population. The colony was probably headed for extinction had it not been for the establishment of a permanent military base, the "Base Cientifico Naval Simon Bolivar", on Aves Island in early 1979. This construction, built on high pilings on the reef to avoid disturbance to the terrestrial ecosystem, is described and illustrated by Branch ((1981); a permanent garrison ensures that poaching of turtles and eggs on the island no longer takes place, and prospects appear to be good. There is still capture of turtles on the feeding grounds, and tag may allow this loss to be quantified, but the intensity is unlikely to be disastrous. Natural constraints on recruitment, such as the ghost crabs on Aves Island that eat hatchling turtles, and periodic removal of sand on the island by hurricanes, continue but should be tolerable. However, the island is constantly changing in size and shape, and if at any time the sand beaches were to disappear permanently, the turtle colony would doubtless disappear, though what the egg-bearing female turtles would do in an eventuality of that nature is interesting to contemplate.

The turtle colonies that feed partially in Venezuelan waters, the Tortuguero green colony and the Surinam ridley colony, are both currently well protected on their nesting grounds. The riddels are probably principally threatened by incidental capture by shrimp trawlers that abound in the waters off the Guianas; whether the decline in numbers on the nesting beach at Eilanti, Surinam, during the last fifteen years is attributable to this, to recruitment failure during the many years of total egg exploitation, or to a shift of the nesting turtles away from the eroding beaches at Eilanti to better nesting sites, is still not determined. However, according to the usual index of numbers of females nesting on known grounds, the olive ridley colony in northern South America is in serious trouble. The Tortuguero green turtle colony is no longer subject to industrial-level exploitation anywhere in its range, as far as known, and it is probable that the subsistence and village-level take from Nicaragua to Guajira (and Paraguana) is tolerable., though one should not be complacent.

Prospects for the hawksbill colonies nesting in Venezuela (principally on the islands) are poor. Even in the Los Roques Archipelago, which is a national park, virtually all nests are raided by local resident fishermen unless the conservation crew from FUDENA is able to get them first. Displacement of all residents to areas outside the national park is a major desideratum, but may be difficult to achieve. The situation on the other Venezuelan islands where hawksbills nest remains to be determined; some islands are protected by their isolation, or by the very low numbers of nesting turtles that make them unprofitable to hunt, but wherever there are people there is likely to be egg robbing.

The small nesting colony of green turtles in Estado Sucre appears to be subject to significant predation, but this has yet to be quantified. The area is remote and difficult to patrol, but there are numerous small villages along the north coast of the Península de Paria where the turtles nest, and this juxtaposition is unlikely to be beneficial to the turtles.

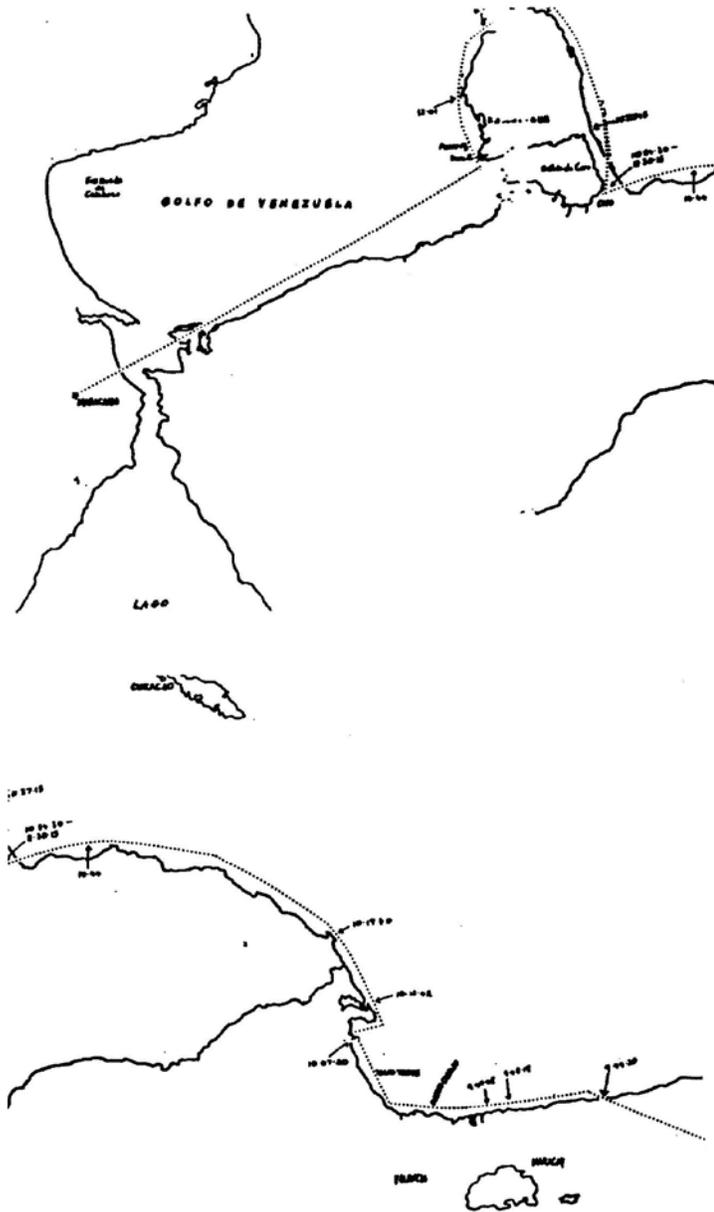
RECOMMENDATIONS FOR FUTURE WORK

It is unlikely that the central Venezuelan coast will yield significant numbers of nesting sea turtles, and it is therefore not recommended that resources be committed to ongoing aerial surveys there except on an opportunistic basis. However, the Guajira Peninsula remains unsurveyed on either the Venezuelan or Colombian sides, and this should be done, both aerially and on ground, as soon as feasible.

The beaches of the Península de Paria require further investigation. Surveys so far have revealed that both green turtles and hawksbills nest there, and efforts should be made to quantify this. Such studies will need to rely initially upon aerial surveys, since the large number of small beaches on the peninsula are separated from each other by difficult terrain. Aerial identification of prime beaches and interviews with local villagers and fishermen is the recommended procedure.

A high priority is survey of the islands of Blanquilla, La Tortuga, and Orchila. These remote islands have much apparently undisturbed beach and aquatic habitat for sea turtles, and preliminary information suggests that turtles are there.

It is also strongly recommended that the existing study and conservation programs on the islands of Aves and Los Roques be continued and augmented as necessary.



Editor's note (2009): Maps and figures are reprinted exactly as they appear in the original WATS I Proceedings (Bacon et al. 1984); we regret the poor quality exhibited in some cases.

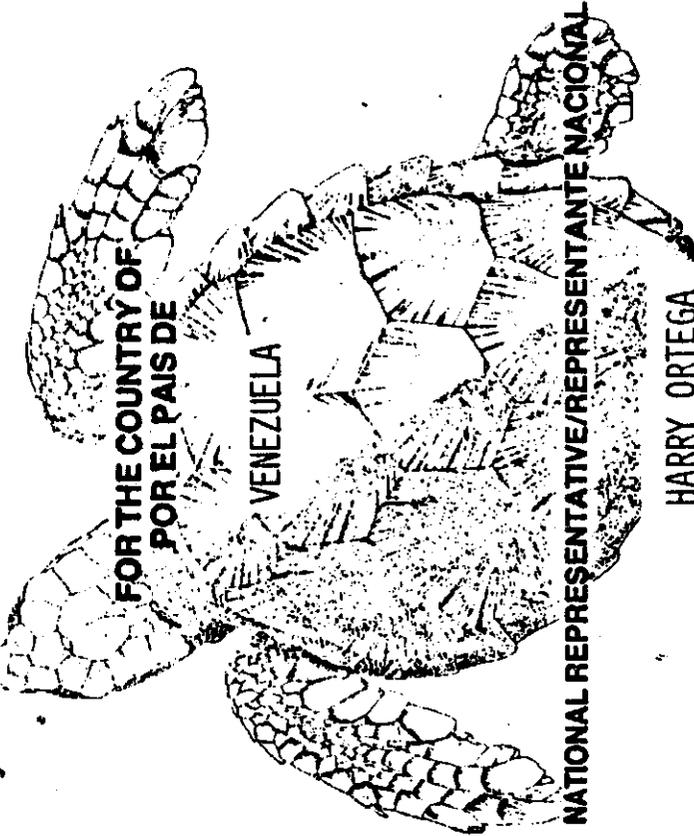
LITERATURE

- Aguayo, C.G. 1953. La tortuga bastarda (*Lepidochelys olivacea kempfi*) en Cuba. Mem. Soc. Cubana de Hist. Nat. 21(2): 211-219.
- Anon. 1980. Protección y Recuperación de Poblaciones de Tortugas Marinas en el Archipiélago Los Roques. Mimeo. Fundación Científica Los Roques. 5pp.
- Bacon, P.R. 1973. The status and management of the sea turtle resources of Trinidad and Tobago. Report to Permanent Sec'y, Min. of Ag. Land and Fisheries. Mimeo. 40 pp.
- Bacon, P.R. and G. K. Malipant. 1971. Further studies on sea turtles in Trinidad and Tobago. The Trinidad Field Naturalist Club Journal. pp 2-17.
- Branch, H. 1981. Isla de Aves. Viasar (VIASA Airlines Magazine) no. 24: 54-59.
- Brownell W, Guzmán C. 1974. Ecología de la isla de Aves con especial referencia a los peces. Mem. Soc. Cienc. Nat. La Salle 34: 93-158.
- Buitrago, J. 1981. Las Tortugas Marinas de Los Roques, Venezuela. Cría en Cautiverio con Fines de Repoblación. Mimeo. 24 pp.
- Caldwell, D.W. 1969. Pacific ridley turtle (*Lepidochelys olivacea*) in Puerto Rico. Bull. So. Calif. Acad. Sci. 68(2): 112.
- Caribbean Conservation Corporation. 1980. Survey and Preliminary Census of Marine Turtle Populations in the Western Atlantic. Final Report to National Marine Fish Service. Mimeo. 78 pp and 12 maps.
- Carr, A. F., Carr, M. and Meylan, A. B. 1978. The ecology and migrations of sea turtles. 7. The west Caribbean green turtle colony. Bulletin of the American Museum of Natural History 162(1): 1-46.
- DeBoer, B., D. Hoogerwerf, I. Kristensen and J. Post. 1973. Antillean fish guide (STINAPA no. 7). Caribbean Marine Biological Institute, Curaçao, Netherland Antilles. 110 pp.
- Donoso-Barros, R. 1964a. Nota sobre *Lepidochelys kempfi* en las costas de Cumaná. Lagena no. 2: 20-21. Instituto Oceanográfico, U.D.O., Cumaná, Venezuela.
- Donoso-Barros, R. 1964b. Anotaciones sobre las Tortugas marinas de Venezuela. Lagena no. 3: 26-31. Instituto Oceanográfico, U.D.O., Cumana, Venezuela.
- Flores, C. 1966. Nuevos registros de *Lepidochelys kempfi* (Garman) en la costa oriental de Venezuela. Lagena no. 12; 37-39. Instituto Oceanográfico, U.D.O., Cumana, Venezuela
- Flores, C. 1969. Nota sobre reptiles acuáticos de Venezuela y su importancia económica. Lagena no. 21-22: 1-19 and 6 figs.
- Hummelinck, P.W. 1952. Islote Aves een Vogeleiland in de Caraibische Zee. De West- Indische Gids. 33: 23-34.
- Laiz Blanco, J. 1979. Conservación del ecosistema "Isla de Aves" con especial énfasis en el control y marcaje de la Tortuga Verde (*Chelonia mydas*) de las Aves Residentes y Migratorias. FUDENA. Caracas. Mimeo. pp.1-82.
- Lazell, J.D. 1967. Ternary on Aves Island on March. Condor 69(1): 87-88. Cooper Ornithological Society.

- Maldonado, B. 1981. Proyecto Tortugas. Actividades Nov-Dic. 1980. Mimeo, 11 pp.
- Maloney, N.J. and C. Schubert. 1968. La isla de Aves: una isla que desaparecerá(?). Acto Cient. Venezolana 19: 152-154.
- Niceforo, Maria, H. 1953. Tortugas marinas de Colombia. Bull. Inst. La Salle (192-193): 1-9.
- Ogren, L. 1980. Trip Report – Costa Rica, Venezuela, Guyana. February 28-March 11, 1980. Mimeo. 16 pp.
- Pritchard, P.C.H. 1966. Sea turtles of Shell Beach, British Guyana. Copeia (1): 123-125.
- Pritchard, P.C.H. 1969. Sea turtles of the Guyanas. Bull. Florida. State Mus. 13: 85-140.
- Pritchard, P.C.H. 1973. International migration of South American sea turtles (Cheloniidae and Dermochelyidae). Anim. Behav. 21:18-27.
- Pritchard, P.C.H. 1976. Post nesting movements of marine turtles (Cheloniidae and Dermochelyidae) tagged in the Guianas. Copeia 4: 749-754.
- Rainey, W.E. 1971. Reconnaissance of the green turtle (*Chelonia mydas*) nesting aggregation at Aves Island, Lesser Antilles. Unpublished report. Island Resources Foundation, St. Thomas, V.I. 24 pp.
- Roze, J. 1955. Las Tortugas Marinas de Venezuela. Rev. Pecuaria, April 1955: 9-11.
- Roze, J. 1964. La Herpetología de la Isla de Margarita, Venezuela. Mem. Soc. Cienc. Nat. La Salle no. 69(24): 209-241.
- Schultz, J.P. 1964. Zeeschildpadden, deel II: Zeeschildpadden in Surinam. Mimeo. Dienst Landsbosbeheer Suriname. 44 pp.
- Tufts, C.E. 1972. Report of the Suritica Marine Turtle Reserve with emphasis on biological data from "Operation Tortuga 1972" and recommendations for the future. Mimeo 73 pp.
- Zuloaga, G. 1955. The Isla de Aves story. Geographical Review 45(2): 172-180.



THE NATIONAL REPORT EL REPORTE NACIONAL



Western Atlantic Turtle Symposium
Simposio de Tortugas del Atlantico Occidental

17-22 July/Julio 1983
San Jose, Costa Rica



WESTERN ATLANTIC TURTLE SYMPOSIUM

San Jose, Costa Rica

July 1983

NATIONAL REPORT FOR THE COUNTRY OF

VENEZUELA

NATIONAL REPORT PRESENTED BY

Peter C. H. Pritchard for

Harry Ortega

(The National Representative)

Address: Director

Direccion General Sectorial

de Administracion del Ambiente

Ministerio del Ambiente y de los Recursos

Naturales

Torre Sur - Piso 28, Centro Simon Bolivar

Caracas, Venezuela

NATIONAL REPORT PREPARED BY

Peter C. H. Pritchard

Maitland, Florida

DATE SUBMITTED: July 17, 1983

WATER SHORELINE CHARACTERISTICS	NO. OF SHORELINE DEVELOPMENT	
	UNDEVELOPED	TOTAL
1. Sand Beach (Total)		
A. High Beach (Please set description)		
B. Low Beach (of entire shoreline as given in "Turtles of the Bay" appendix)		
2. Reef (Appendix)		
3. Docks		
4. CHITON (NMP's, 1981)		
5. Vegetation (Total)		
A. Pines		
B. Mangroves		
C. Neotropics		
D. Coconut Trees		
E. Other Trees or Shrubs		
F. HERBAGE		
6. Herbs of lagoons, rivers, canals		
7. Total Shoreline		

TABLE 2. CURRENT INVENTORY OF WATER SHORELINE. Refer to SEA WATTLE MANUAL (Aerial Survey) for more details on human development or use (See manual.)

NAME OF BEACH	LENGTH IN MI	SPECIES NESTING (Use abbreviations)	NOTES OF RECORD NESTING
1. Isla de Aves	Ca. 1.3 mi.	Ca	None known (only August)
2. Antipodas las Rupas	1.5 mi. long, 100 m wide	Ca, E, Cc	None known (only Aug - Oct)
3. Isla de Suda	1.5 mi. long, 100 m wide	Ca, E, D	June (1st Aug)
4.			
5.			
6.			
7.			
8.			
9.			
10.			

TABLE 3. NESTING BEACH INVENTORY. List beaches in geographic sequence. Provide additional information on following page.

Species Abbreviations:
 Ca = Curlew
 Cc = Cassin's Gull
 E = Frigatebird
 D = Double-crested Cormorant
 S = Sooty Tern
 L = Leach's Petrel
 Lo = Laysan Albatross

TABLE 2. NESTING BEACH INVENTORY (Supplementary page)

Please give additional information about each nesting beach identified in Table 3. Include information on color of sand, particle size, beach profile, beach vegetation, artificial lighting, etc.

Notes: The entire western part of the coast of Venezuela is sand beach. The sea shoreline, which starts with the development of the Colombian border and extends to nearly parallel areas in and east of the Golfo Triste area, extends for many hundreds of kilometers but has very few nesting turtles. A detailed description of the shoreline of Venezuela, as seen from a very narrow strip in the old colonial "Territory de Spanish Shore": Minimal turtle nesting in Venezuela is concentrated in small, cove beaches. Intermittent landings in Isla de Aves, and an offshore island including Isla Rupas, Isla de Aves, and Isla de Tortuga. The long, narrow beaches are heavily used at all.

SPECIES	NUMBER OF NESTS		DATES OF DATA COLLECTION
	Nests/Flight (Average)	Nests/Season (Estimated)	
Curlew			
Cassin's Gull	16 - 20, Aug, 1981	170, 1981 prior to June 26	June 21 - 27
Double-crested Cormorant	500		
Sooty Tern			
Leach's Petrel			
Laysan Albatross			

TABLE 3 - (cont.) NESTING BEACH FOR EACH ISLA DE AVES (cont.)

Please complete one of these tables to summarize census data for each beach listed in Table 3. Number tables sequentially (1-4, 4-1, 4-2, etc.) as enumerated in Table 3.

SPECIES	NUMBER OF NESTS		DATES OF DATA COLLECTION
	Nests/Flight (Average)	Nests/Season (Estimated)	
<i>Coccyz coriacea</i>			
<i>Chauletris ardens</i>		500-1000 per 100	July, August 68 days
<i>Bonaparteia carolinensis</i>			
<i>Erasmobolus americanus</i>			
<i>Laniidactylus borealis</i>			
<i>Laniidactylus olivaceus</i>			

TABLE 4 - 1977 NESTING COUSES FOR BIRDS ISLA DE AVES (name)

Please complete one of these tables to summarize census data for each beach listed in Table 3. Number tables sequentially (4-1, 4-2, 4-3, etc.) as enumerated in Table 3.

SPECIES	NUMBER OF NESTS		DATES OF DATA COLLECTION
	Nests/Flight (Average)	Nests/Season (Estimated)	
<i>Coccyz coriacea</i>			
<i>Chauletris ardens</i>		76 nests, August 4-9 21 nests, July 27-31 July 27, 1977 150-200 per 100	
<i>Bonaparteia carolinensis</i>			
<i>Erasmobolus americanus</i>			
<i>Laniidactylus borealis</i>			
<i>Laniidactylus olivaceus</i>			

TABLE 4 - 1978 NESTING COUSES FOR BIRDS ISLA DE AVES (name)

Please complete one of these tables to summarize census data for each beach listed in Table 3. Number tables sequentially (4-1, 4-2, 4-3, etc.) as enumerated in Table 3.

SPECIES	NUMBER OF NESTS		DATES OF DATA COLLECTION
	Nests/Flight (Average)	Nests/Season (Estimated)	
<i>Coccyz coriacea</i>		7	APRIL - JUNE 1977
<i>Chauletris ardens</i>		2-3	
<i>Bonaparteia carolinensis</i>			
<i>Erasmobolus americanus</i>	< 1		APRIL - JUNE 1977
<i>Laniidactylus borealis</i>			
<i>Laniidactylus olivaceus</i>			

TABLE 4 - 1978 NESTING COUSES FOR BIRDS ISLA DE AVES (name)

Please complete one of these tables to summarize census data for each beach listed in Table 3. Number tables sequentially (4-1, 4-2, 4-3, etc.) as enumerated in Table 3.

DATE	BEACHES SURVEYED	NUMBERS OF NESTING TRACKS												
		Ce	Ca	B	E	Lt	Lo	Ro	P	Lk	La			
JUNE 7 '75	COAST OF NORTHERN PART OF GUNABIA PENINSULA	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNE 10 '75	COAST OF EDO. FALLS, STARTING IN MARAGONS FIELD TO LA TOCTUVA ISLANDS	-	4	1	1	-	-	-	-	-	-	-	-	-
JUNE 11 '75	ISLA LA TOCTUVA	-	-	-	-	-	7	-	-	-	-	-	-	-
JUNE 12 '75	ISLA LA TOCTUVA & IS. MARABAITA	-	-	-	-	-	-	-	-	-	-	-	-	-
JUNE 13 '75	ISLA MARABAITA IS. LA BARRIGUILLA, IS. ED. SUCAR IS. TRINIDAD	-	6	3	1	-	-	-	-	-	-	-	-	-

TABLE 5. AERIAL BEACH SURVEY SUMMARY
Give any additional information available from aerial surveys. Information should include ground truth observation if conducted.

Species Abbreviations:
Coccyz coriacea
Chauletris ardens
Bonaparteia carolinensis
Erasmobolus americanus
Laniidactylus borealis
Laniidactylus olivaceus

TABLE 5. ACTUAL BENCH SURVEY SUMMARY
(Supplementary page)

Give any additional information available from aerial survey.
Information should include ground truth observation if conducted.

La Tablada (D) with team of: 30 km. S. NW towards La Cajas (Palmas)
New PUY (SUAE)
3. km. W. of *Administración de Puerto Santo* (SUAE)
LAJUNA TORTURO (SUAE)

Green Turtle (Cn) with team of: New Avocá, FALCÓN
15 km. W. SW towards La Cajas, FALCÓN
New Sábanales Aste, FALCÓN.
New CAYAMA (MORONA)

New MACRUCURURO (MIRANDA).
PLATA DE ZALEMA
PUY PUY
LAJUNA TORTURO
Punta CAMELLO NEGRO SUAE
PUNTA EL ADAME
NORTE DE LABANQUE

Hawksbill (E.I.) with team of: 10 km. W. SW towards La Cajas, FALCÓN
CAMOJA, SUAE.

TABLE 5. ACTUAL BENCH SURVEY SUMMARY
(Supplementary page)

Give any additional information available from aerial survey.
Information should include ground truth observation if conducted.

TURTLE NESTS (PROBABLY Cn) were seen at: 30 km.
SE of HIGUEROTE (Edu. MIRANDA). (DUE)
N. coast of Isla. SUAE, AS SHOWN ON MAP IN
"TURTLES OF THE SPANISH MAIN" (SIX).

DATE	BENCH SURVEY	REPORT OF BENCH TRACES									
		Cc	Ca	B	Uk	Lo	Lo	Lo	Lo	Lo	Lo
20-21-1961	CHARACTERS with TO MARIANA RINCONSULA	-	-	-	-	-	-	-	-	-	-
24-25-1961	CHARACTERS with TO QUEBR. SANTA ICH. MARIANA	-	91	-	-	-	-	-	-	-	-

TABLE 5. ACTUAL BENCH SURVEY SUMMARY
Give any additional information available from aerial survey.
Information should include ground truth observation if conducted.

Species Abbreviations:
Cc
Ca
B
Uk
Lo
Lo
Lo
Lo
Lo
Lo

TABLE 6. ESTIMATED POPULATIONS OF NESTING FOWLS.
(Supplementary page)

Please give brief details on methods of estimation for Table 6.

These cannot yet be given, even in preliminary form, as actual numbers known, only E.I. and Cn. have significant breeding populations in Vaupés. C.I. and D.C. nest so early that only a handful (10) of confirmed nesting records for either are available for Vaupés, and L.O., although not rare in feeding grounds, has never been reported nesting in Vaupés.

The only large nesting colony in Vaupés is that of Cn. on Urdó Ave. Nesting females greatly outnumber males for some time of the night for night within a town. However, typically 200-500 individuals probably nest in a town, with less than 100 adults present in the whole population known. This is very preliminary.

The bandwidth sets on L.O. reports could be made by less than 20 meters from. Number nesting on La Tablada and La Camojoa are not yet known.

NAME OF ISLAND (or five coordinates)	SPICES, EGGS (total)	SPECIES OBSERVED (No. observations, species, numbers)	NATURE OF EVIDENCE (Observation, fishery, incubator, catch)
1. GULF OF VENEZUELA	INCUBATED EGGS UNKNOWN	C.M. (number unknown).	Plum of eggs by plumage. Tuffin water typed in Costa Rica.
2. ISLA MARGARITA to TRINIDAD	-	L.O. (number unknown).	Action of eggs by plumage. Tuffin water typed in Suriname.
3.			
4.			
5.			

Species abbreviations:
 C.M. *Caretta caretta*
 O.M. *Chelonia mydas*
 E.C. *Eretmochelys imbricata*
 L.L. *Lepidochelys lewini*
 L.O. *Lepidochelys olivacea*

TABLE 7. PROTECTING AREAS INVENTORY

TABLE 10. NATURAL MORTALITY (Supplementary map for additional biological data)
 Please report below, and on additional pages if necessary, additional data obtained or available such as measurements (length, weight) of adult females, adult males, hatchlings, numbers of eggs per nest, hours of nesting, hours and conditions of hatching, etc.

DIVISION OF ADULT FEMALES ON ISLA AVB ALC IN GOMES, V.L., 1980: IMPURE FURNACE PROJECTED AS 43 (FUBENA, CARMEN; 92M). MEAN LENGTH OF NESTING: 93 in 107.7 cm; mean weight 173 kg.
 NESTING IN ALL MONTHS VENEZUELAN DEMONSTRATION PROJECT.
 NOCTURNAL.
 DATA ON ADULT MORTALITY ARE NOT AVAILABLE, MAINLY FROM DOWNGRADEMENT OF LOSS OF ALL EGGS IN BEACHES AT ISLA AVB AT MURALLANDE DAVID, AUG. 29 1979. (LOSS OF ESTIMATED 55,280 EGGS).

SPECIES	MONTHS												RINGS OF GREATEST ACTIVITY			
	J	F	M	A	M	J	J	A	S	O	N	D				
<i>Caretta caretta</i>	✓															
<i>Chelonia mydas</i>		✓														PEAKABLE YEAR ROUND.
<i>Eretmochelys imbricata</i>																
<i>Eretmochelys imbricata</i>																
<i>Lepidochelys lewini</i>																
<i>Lepidochelys olivacea</i>																

TABLE 8. TURTLE SPECIES PRESENT IN PROTECTING AREAS. Please complete one of these tables for each of the areas identified in Table 7. Number each table as enumerated in Table 7 (1-5, 7-2, etc.).

8-2. 1. *olivacea* present in MARGARITA/TRINIDAD area in all months, except June and December. So probably year-round.

NAME OF PORT OR SITE	SPECIES (check the above)	FISHING GEAR USED	FORMS OF LANDING	AGES & WEIGHTS (Estimate)
1. (name site)	C.M.	UNKNOWN - TRAPNETS - NETS - TRUCKS LAUNDRY, ETC. LOCALLY BY HAND OR BY REMOTE CONTROL.		
2. (do. do. next to)	C.M. E.C. L.L.	NETS, TRAPS, NETS, TRAPS, ETC. TRAPS AND NETS - ETC. ON ISLA MARGARITA AND TRINIDAD. C.M. - TRAPS AND NETS. E.C. - NETS - ONLY ONE TRAP.		
3.				
4.				
5.				
6.				
7.				
8.				

TABLE 11. LANDING SITES FOR TURTLES & TURTLE PRODUCTS

Species abbreviations:
 C.C. *Caretta caretta*
 O.C. *Chelonia mydas*
 E.C. *Eretmochelys imbricata*
 L.L. *Lepidochelys lewini*
 L.O. *Lepidochelys olivacea*

SPECIES	YEAR			METHOD OF DETERMINATION
	1978	1979	1980	
<i>Chelonia mydas</i>				DATA NOT AVAILABLE (TRADE IS ILLEGAL)
<i>Chelonia agassizii</i>				
<i>Desmarestia orcutti</i>				
<i>Desmarestia lewini</i>				
<i>Lepidochelonia lewini</i>				
<i>Lepidochelonia olivacea</i>				

TABLE 12. TOTAL ANNUAL TURTLE LANDINGS BY SPECIES AND EXTENTS (M²) IN NET FISHING VESSELS COMPAT (INCIDENTAL TO OTHER FISHING OPERATIONS (E.G., SHRIMP TRAWLING)).

SPECIES	YEAR			TYPE OF FISHING ACTIVITIES & METHOD OF ESTIMATION
	1978	1979	1980	
<i>Chelonia mydas</i>				OVERALL ESTIMATES IMPOSSIBLE BUT SIGNIFICANT NUMBERS OF L.O. CATCH BY TRAWLERS IN EASTERN VENEZUELA
<i>Chelonia agassizii</i>				
<i>Desmarestia orcutti</i>				
<i>Desmarestia lewini</i>				
<i>Lepidochelonia lewini</i>				
<i>Lepidochelonia olivacea</i>				

TABLE 13. ESTIMATED INCIDENTAL TURTLE CATCH (GIVE ESTIMATED NUMBERS AND/OR WEIGHTS).

TABLE 14. ESTIMATED TURTLE CATCH BY FOREIGN FISHERMEN (Supplementary page)

Please describe the type of foreign fishing in your waters and provide estimates for:

1. Number of foreign vessels entering waters.
2. Number of foreign fishermen entering waters.
3. Year of estimate.

TAKE OF NETTING C.A. BY BOATS FROM SK. LUCIA, MARTINIQUE ETC. WAS SIGNIFICANT AT ISLA DE AVES UNTIL PERMANENT MILITARY BASE RAZED THERE IN 1979. IT WAS NOW STOPPED COMPLETELY.

TABLE 15. OFFICIAL STATISTICS OF TURTLE CATCH AND PRODUCTION (Supplementary page)

Please provide any additional data on turtle products produced in your country, including manufactured products such as tortoise shell novelties, etc., if such data are available.

CAPTURED SEA TURTLES IS ILLEGAL IN VENEZUELA. WOMEN, PRODUCED OF LOCALLY-CATCHED C.M. AND E.I. ARE STILL SOLD, AND SOME EXPORT PROBABLY OCCURS.

SPECIES	RECOVERY OPERATIONS				HOLDING LIVE TURTLES	
	EGGS COLLECTED	EGGS MATCHED	NO. RELEASED	NO. AT RELEASE	NO. OF ADULT TURTLES	ADULT TURTLES
<i>Chelonia mydas</i>	4-1957	NOT AVAILABLE	NOT AVAILABLE	11-18 MONTHS		
<i>Chelonia mydas</i>	Ca. 5000	Ca. 4000				
<i>Chelonia mydas</i>						
<i>Chelonia mydas</i>						
<i>Chelonia mydas</i>						
<i>Chelonia mydas</i>						

TABLE 17 - (174-P2) (AVERAGE DATA.) HEAD-STARTING AT LOS ROQUES.

TABLE 17 - TURTLE RECOVERY OPERATIONS
 This table quantifies activities concerned with turtle capture for either conservation, population enhancement experiments, or commercial use. Activities to be included are "head-starting", rearing, incubation and release, etc.
 Prepare separate table for each year of available data.

NAME AND LOCATION	AREA SQ. METERS	STATUS (a) FOR PROTECTION	TYPE AND EFFECTIVENESS OF ENFORCEMENT
MOMIOS DE COLO (BASE OF PENINSULA DE PARAGUANÁ)	90,250 METERS	NAT. PARK, MAINLY FOR HUGE SAND DUNE FORMATION. (SOME LARGE TURTLES)	
MORRICOY NAT. PARK (C.R. FALLÓN)	46,000 METERS	NAT. PARK FOR CORAL REEFS AND ISLANDS. (HAWKSHALL HABITAT)	
MOCIMA (SUCRE DEPARTMENT)	94,955 SQ. METERS	NAT. PARK	
L'AGUA DE THOMAS (PARAGUANÁ)	18,400 SQ. METERS	NAT. PARK	
YAGUAI PITCHER (CARABOBO)	107,000 SQ. METERS	NAT. PARK, MAINLY FOR SAND/CLAY FOREST BUT INCLUDING NAT. PARK	
L'AGUA A LA ESTERIDA (C.R. FALLÓN)	19,700 SQ. METERS	SEA TURTLE RESTING (WILDLIFE RESERVE)	
ISLA DE AVES.			

TABLE 18. SUCRERIAS AND RESERVES

INSTITUTION OR ORGANIZATION NAME AND ADDRESS	NO. OF ACTIVE TURTLES	ACTIVITIES IN PROGRESS
FUNDACION LOS ROQUES (CARACAS)		SEA TURTLE STUDIES AND HEAD-STARTING IN ACQUIRIELADO LOS ROQUES
FUNDENR (FUNDACION PARA LA DEFENSA DE LA NATURALEZA) (CARACAS)		SEA TURTLE MONITORING ON ISLA DE AVES.
INSTITUTO NACIONAL DE PARQUES		
MINISTERIO DEL AMBIENTE Y LOS RECURSOS NATURALES CARACAS VENEZUELA		

TABLE 19. PUBLIC AND PRIVATE INSTITUTIONS CONCERNED WITH TURTLE CONSERVATION/MANAGEMENT/UTILIZATION

NAME AND ADDRESS OF ORGANIZATION	BUDGET ALLOCATION TO TURTLES	NO. OF STAFF ASSIGNED TO TURTLES	COMMENTS ON LEVELS OF ENFORCEMENT
MINISTERIO DEL AMBIENTE Y LOS RECURSOS NATURALES CARACAS (PARAGUANÁ)			

TABLE 20. REGULATORY AGENCY
 Indicate all entities with statutory responsibilities (e.g., Fisheries Departments and Ministries, Police, Coast Guard, etc.)

TABLE 2B. REGULATORY ACTIVITY
(Supplementary page)

Please list National, regional, and local legislation concerning turtle management and conservation. List title, date, and stated purpose.

LEY de PROTECCION de LA FAUNA SILVESTRE (AUG 11, 1970).
(TURTLES INCLUDED UNDER REPTILES IN ARTICLE 2, ARTICLE 1).

CITES (VENEZUELA is a SIGNATORY).

"LISTA OFICIAL de ANIMALES de Caza" (Resolución No. 276
of NOV. 1966 and LITERAL; NOV. 13 1970) includes ALL SEA TURTLES,
WHICH ARE BEING COMPLETE PROTECTED AS OF NOV. 28, 1972.

SOURCES AND PUBLICATIONS

The following is a list of the major reports and publications concerned with
terrestrial turtles resources (list author, date, title, and publisher).

1. "TURTLES of the SPANISH MAIN" (PETER C.H. REYNOLDS, PBI).
2. ANON. 1980: PROTECCION y SEGUIMIENTO de poblaciones de TORTUGAS
terrestres en el Municipio Los Andes. PUBL. LOS ANDES, S.P.
3. BROWNIE, M. and C. BURNHAM. 1974. ECOLOGIA de ISLA de AVEA,
en ESPECIAL, REPUBLICA a los PEQUE. MAR. SER. CIENC. NAT.
4. BURTON, J. 1961. LOS TORTUGAS MARINOS de LOS CERROS,
VENEZUELA. CARON CARIBBEAN CAMPUS de REPTILES. 24 p.
5. CARABAN CONSERVATION CORP. 1970. SURVEY and RECONSTRUCTION
of CARON CARIBBEAN TURTLE POPULATIONS in THE WESTERN ATLANTIC.
REPORT TO NHP.
6. GAZ, A.P., M.V. GAZ and A.G. REYLAND. 1972. THE ECOLOGY and
MIGRATIONS of SEA TURTLES, 7. THE WEST CARABAN GREEN
TURTLE COLONY. BULL. AMER. MUS. NAT. HIST. 162(1): 1-46.
7. DUBOSSO-SABLOS, R. 1944a. NOTA sobre LEYDORCENSIS KEAN
en LOS CERROS de CUMAN. LAGUNA, 2: 20-21.
8. ———. 1944b. ANOTACIONES sobre LAS TORTUGAS MARINAS de
VENEZUELA. LAGUNA, 3: 52-53.
9. FLECK, C. 1946. USTROS ABISPOS de LEYDORCENSIS KEAN (GARDNER)
en LA CANTA de SANTA DE VENEZUELA. LAGUNA 12: 37-38.
10. ———. 1949. NOTA sobre REPTILES ANATOMICOS de VENEZUELA Y SU
IMPORTANCIA ECONOMICA. LAGUNA 21: 21-23.
11. ———. 1950. NOTA sobre LA TORTUGA VERDE de
SANTA DE LOS ANDES de VENEZUELA. LAGUNA, 6: 37-39.
12. MACDONALD, B. 1961. PROTECCION TURTLES. ANIMALES de VENEZUELA
MUNDO, 116.
13. OCHOA, LARRY. 1980. THE REPTILE CORP. de VENEZUELA de VENEZUELA.
PBI, 28 - MAR 21, 1980. 164.
14. 2025, J. 1955. LOS TORTUGAS MARINOS de VENEZUELA. REV.
PECUBANA, MAR. 1955: 1-11.

TABLE 2A. TURTLE RESEARCH PROJECTS
List turtle research activities needed within your country.

PROJECT TITLE	DATES		WHO IS FINANCING & OTHER INVESTMENT
	START	END	
(STUDY OF TURTLES ON ISLA de AVEA)	1968 (1968- 1969)		FUBENA. JOSÉ LUIS BLANCO, Dr. JOSÉ L. GÓMEZ CALABRADO
(STUDY of TURTLES ON ISLAS LAS ARAUCAS)	1968 (1968- 1969)		FUNDACION LAS ARAUCAS.
AGRIC. SPAWER OF MARINE BIRNERS	1981, 1985		NHP COMPANY. TO PETER C.H. REYNOLDS FLORIDA AUDUBON SOCIETY 1101 AUDUBON WAY MAITLAND, FLA 32751, USA.

ANNEX B

**TURTLE CONSERVATION
REGULATIONS IN VENEZUELA**

Wildlife protective regulations in Venezuela are promulgated by the Ministry of the Environment and Renewable Natural Resources (Ministerio de Ambiente y de los Recursos Naturales Renovables, hereafter referred to as the MARNR) and are contained in the National Wildlife Law (Ley de Protección de la Fauna Silvestre) of February 11, 1970. Although turtles are not specifically named in the text of the law, they are included in the section on Reptiles in Article 2. Venezuela became a signatory to the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) in 1976. This Convention is a multilateral agreement based in its Appendix I and contains a list of countries to which permits and otherwise that such trade is not likely to jeopardize the species for export of species listed under Appendix I. The companies concerned with the "endangered" and "threatened" lists of the U.S. Department of the Interior in the International Union for the Conservation of Nature (IUCN) are: the Green Sea Turtle (Chelonia mydas), the Hawksbill (Eretmochelys imbricata), and the Leatherback (Dermochelys coriacea). The IUCN lists are in Appendix I, and all species are listed in Appendix II.

The Official List of Green Anoles (Lacerta viridis) of the Ministry of the Environment and Renewable Natural Resources (Ministerio de Ambiente y de los Recursos Naturales Renovables) of Venezuela is currently being reviewed under a joint Nature Conservancy-Fundación para la Defensa de la Naturaleza program, under the direction of Carlos Ojeda. The study is to determine the percentage of each species that is in Venezuela and to make recommendations for further protection of underrepresented species. Existing national parks (over a half million hectares) in the large Parque Nacional Caraima, in southwestern Venezuela, which is a state park, and the Parque Nacional Mucuna, in the north, are the only national parks that have turtle species within its borders, including Protogeomys and both species of tortoise.

Although Resolution no. 276 did not establish protection for listed species, on November 28, 1979 the Ministry of the Environment and Renewable Natural Resources (Ministerio de Ambiente y de los Recursos Naturales Renovables, hereafter referred to as the MARNR) established complete protection for all listed species except for those two species, for holders of licenses of type A and C, and a season of February 15 to March 31 for holders of license type B. A day hunt of one animal and a bag limit of two was established. The total closed season on Poole's tortoise was extended for two years until 1981, by MARNR Resolución 100, issued on July 22, 1979.

Green turtles (Chelonia mydas) in Venezuela received substantially improved protection under the designation of Isla Aves, the principal national nesting ground (see Page 66D), as a Wildlife Sanctuary (Parque Nacional) on November 30, 1979. This designation is a permanent measure to protect the nesting grounds of the species within a national park, although essentially uncontrolled. The MARNR has established a program of enforcement of the protective legislation. Historically, turtles on Isla Aves have been hunted regularly by crews of small boats arriving without permission from various islands of the Lesser Antilles.

In addition, turtles in Venezuelan reserve protection under various protected lands. These include 26 national parks (totaling 2,317,663 hectares), 13 national monuments (20,765 ha), two forest reserves (11,878,267 ha), three faunal reserves (56,328 ha), and one burial reserve (227,795 ha). All extensive activities are prohibited in the faunal reserves, but hunting is permitted in the faunal and burial reserves. National parks and other protected lands in Venezuela are currently being reviewed under a joint Nature Conservancy-Fundación para la Defensa de la Naturaleza program, under the direction of Carlos Ojeda. The study is to determine the percentage of each species that is in Venezuela and to make recommendations for further protection of underrepresented species. Existing national parks (over a half million hectares) in the large Parque Nacional Caraima, in southwestern Venezuela, which is a state park, and the Parque Nacional Mucuna, in the north, are the only national parks that have turtle species within its borders, including Protogeomys and both species of tortoise.

	PAGE
BY	
Peter C. H. Pritchard, Ph.D.	
Summary of knowledge and results of surveys of sea turtles and their nesting beaches in Venezuela	
FLORIDA AUDUBON SOCIETY	
1101 Audubon Way Maitland, Florida 32751	
DESCRIPTION OF THE COAST	
SEA TURTLE POPULATIONS IN VENEZUELA	
SURVIVAL OUTLOOK FOR VENEZUELAN TURTLES	
RECOMMENDATIONS FOR FUTURE WORK	
LITERATURE	

DESCRIPTION OF THE COAST

The mainland coast of Venezuela follows an approximately east-west course and extends between the latitudes of 80° W and 71° 30' W. The coast lies entirely within the tropics being between 10° and 12° north of the Equator, and it comprises the eastern half of the southern boundary of the Caribbean Sea. The coast of eastern Venezuela is very arid, and is dominated by the huge, paired, narrow-necked, desiccated peninsulas of Guajira and Paraguana, which enclose the Gulf of Venezuela. The Gulf has an open connection at its southern end with the freshwater Lake Maracaibo, the largest lake in South America. East of Paraguana Peninsula, whose southern base is composed of sterile, rolling sand dunes reminiscent of the Sahara Desert, the climate becomes progressively more moist; several permanent rivers reach the sea in the short stretch of coast between Tucacas and Puerto Cabello, and between Tucacas and Chichiriviche the otherwise nearly continuous beach is interrupted by a spectacular complex of mangrove islands, some of which have small beaches, that together comprise the Morrocoy National Park.

In the Central Part of the Venezuelan coast, the coastal mountains reach to the seashore. In this area, which lies between Puerto Cabello and Higuero, there are numerous small beaches but few large ones. The rainfall is not uniform, but in parts the hills are covered with dense forest growth, while others that receive less rain have bare areas of red soil between the trees and shrubs.

East of Higuero, as far as Barcelona, the coast is flat, although low hills reach increasingly near the coast as one proceeds east. The entire coast is marked by an almost continuous beach, with sporadic towns and cities of variable size, and huge areas immediately behind the beach dedicated to the monoculture of coconuts. In places natural vegetation still exists.

Between Barcelona and Cumana, the coast is hilly and very dry, much of the soil appearing bare. A number of hilly islands are found along this stretch of coast, and a few small beaches may be seen on both the islands and mainland.

East of Cumana, the Gulf of Cariaco extends eastward for about 75 kilometers, being bounded on the northern side by the Araya Peninsula. The water in the Gulf of Cariaco is dark blue and deep, the Araya Peninsula is composed of red, eroded hills with extremely sparse vegetation. Towards the base of the Peninsula, however, the hills are more vegetated and fertile. There are a few small, gravelly beaches on the southern shore of the Araya Peninsula. To the east, the lagoon peters out into a complex of mangrove swamps with flowing brown-water rivers, followed by dense tropical forest. As one approaches the Gulf of Paria from the eastern end of the Gulf of Araya, the forest continues, in places dominated by palms, and elsewhere very swampy. The Peninsula de Paria, forming the north shore of the Gulf of Paria, is a relatively narrow but rather high mountain ridge, thickly clad with tropical rainforest. Along the Gulf coast of the peninsula, the shoreline is dominated by mangrove forests but there are occasional small beaches.

The east-west coast of about 300 km that forms the northern shore of the combined peninsulas of Araya and Paria has steep forest-clad hills with no coastal plain, but the ragged, serrated coast includes numerous fishing villages and small beaches.

From the western corner of the Gulf of Paria to the Guyana border about 400 km to the south-east, the coast is dead flat for miles inland, and is totally dominated by the huge estuary and delta of the Orinoco River. This extremely complex coast is primarily fringed by mangroves, which in many areas show evidence of drastic erosion and natural changes in the coastline. There are no sand beaches in this area (though, as mentioned above, there are some small ones on the northern shore of the Gulf of Paria), and the water is very muddy and of reduced salinity.

In striking contrast to all other countries of northern South America, the off-shore waters of Venezuela are dotted with islands, many of large size. The principal islands and archipelagos, from west to east, are as follows: Aruba, Curaçao, Jan Aire; Aves; Los Roques, Orchila, La Tortuga, Blanquilla and Los Hermanos; Margarita, Cubagua and Coche; Los Frailes; Los Testigos, and Trinidad. Aruba, Curaçao, and Bonaire are not politically Venezuelan but are included in the Netherlands Antilles, and Trinidad is part of the British Commonwealth. These islands, with the exception of Trinidad, are rather or very arid. The smaller islands are all very flat, but the larger ones, including Trinidad, Margarita, and the Netherlands Antilles, have significant elevation.

Politically included within Venezuela - and one of the most important turtle nesting islands in the Atlantic system - is tiny Aves Island, located about 500 km to the north of Carúpano (Edo. Sucre). Aves is a mere sandbank of negligible altitude, and has a coastline that changes from year to year and that may even be split in two after hurricanes. Aves is the only emergent point of the Aves Ridge, a vast submarine geological formation in the eastern Caribbean.

SEA TURTLE POPULATIONS IN VENEZUELA

Although nesting of sea turtles on the mainland coast of Venezuela is sparse, the waters and islands of Venezuela provide either feeding or breeding habitat for several populations of a number of species of sea turtles. According to presently available knowledge, these may be summarized as follows:

- i) The nesting population of the green turtle, *Chelonia mydas*, on Aves Island. This population appears to migrate to feeding grounds in the Lesser Antilles and the Dominican Republic.
- ii) A feeding population of the green turtle, *Chelonia mydas*, in the Gulf of Venezuela, derived from the breeding population at Tortuguero, Costa Rica. Although generally separated, members of populations i) and ii) may occasionally be found in the same area.
- iii) A feeding population of the olive ridley, *Lepidochelys olivacea*, in western Venezuela (Sucre, Nueva Esparta, and Delta Amacuro) derived from nesting grounds in Surinam.
- iv) Populations of the hawksbill turtle, *Eretmochelys imbricata*, both breeding on and feeding near many of the islands off the Venezuelan coast, especially the smaller and less inhabited ones.
- v) A low density breeding population of the green turtle, *Chelonia mydas*, of unknown migratory habits, in Estado Sucre.
- vi) A very small breeding population of the loggerhead, *Caretta caretta*, in the Los Roques Archipelago, and with rare nesting elsewhere on the islands and the mainland of Venezuela.

In addition to the above, the leatherback, *Dermochelys coriacea*, nests in quite good numbers in Trinidad and is caught sporadically in Venezuelan waters but no nesting in Venezuelan territory has been recorded. It has, however, been found nesting in both Guyana and Colombia, and in great numbers in Surinam and French Guiana.

ii) Green turtles nesting on Aves Island.

Aves Island is a tiny, rock-cored, footprint-shaped sandbar located almost 500 km north of the coast of Estado Sucre, Venezuela, and about 200 km west of Guadeloupe, its coordinates being 15° 40' N, 63° 36' W. The island is of fluctuating form. It is only about 520 meters long, and 200 meters wide at its widest part (at the northern tip). The green turtle colony on Aves Island has been discussed in a considerable body of literature, relevant references include Mummelrich (1852), Lessell (1857), Maloney and Schubert (1868), Zuloaga (1865), Rainey (1871), Bronnelt and Gurman (1874), and Laiz Blanco (1878).

White Aves has been visited by voyagers for decades, the first systematic study of the Aves Island green turtle colony was that of Rainey in 1871-74. Rainey found turtles nesting on Aves from June through August, as is typical of the northern hemisphere marine turtle colonies.

In 1971 he counted 174 nest pits made prior to his arrival on June 24, and tagged 16 nesting turtles during the subsequent three nights. Mean carapace length was found to be 42.4" (107.7 cm) and mean weight 260 lbs. (123 kg). The Aves Island turtles are thus distinctly larger than those nesting at Tortuguero, Costa Rica, and closer in size to the South American mainland nesters in Surinam and Guyana.

After a hiatus of several seasons, FUDENA re-initiated an Aves Island turtle tagging program in 1978. In that year, the research team spent 89 days on the island, arriving in July and departing in October but being forced to leave for a time by the passage of Hurricane David on August 28. Maps were drawn showing the change in form of the island before, immediately after, and 44 days after the passage of the hurricane, which obliterated the island of sand, washed away all turtle eggs, and ruptured the narrow isthmus connecting the northern and southern parts of the island to that for a brief period Aves consisted of two separate islands.

Whitehead turtles tagged in earlier years by Rainey and his co-workers were found, but 1988 results have not been analyzed. 670 nesting emergencies were recorded in July and August, the vast majority in the latter month, and an estimated 70% of these resulted in nestings. Lutz Blanco (1979) estimated that as many as 55,280 eggs were destroyed by the hurricane on August 28. The nesting took place all around the island, with only modest variation in density from one section to another. A few hatching emergencies were witnessed during July and August, corresponding to early-season nesting in May and June.

Long distance recoveries of green turtles tagged while nesting on Aves Island are summarized by Carr, Carr and Maylan (1978) and by Caribbean Conservation Corporation (1980). Recovery locations recorded included Miskito Keys, Nicaragua (2); Isla Mujeres (Mexico); Dominican Republic (several); Isla La Tortuga; Grenada; Grenadines, Martinique (2); and Guadeloupe. The possibility cannot be discounted that some of the recoveries reported from Lesser Antillean islands such as Martinique and Guadeloupe were in fact made from vessels poaching in waters and beaches of Aves Island itself, with the recovery location falsified by the trawlers to prevent self-incrimination.

8] Green turtles in the Gulf of Venezuela.

Although green turtle nesting has not been reported in the Gulf of Venezuela, the species is often encountered there, and is caught for human consumption in both the Guajira and Paraguaná Peninsulas. Both immatures and mature turtles are caught, a number of the mature females found have borne tags indicating that they had previously nested at Tortuguero, Costa Rica. Western Venezuela thus appears to be an outlying feeding area for the Tortuguero breeding colony, which is the largest breeding assemblage of green turtles in the Caribbean and which primarily utilizes feeding grounds off the coasts of Nicaragua, Panama, and Colombia with occasional recoveries of tagged animals as far away as Campeche, Key West, and Puerto Rico (Carr, Carr and Maylan, 1978).

During the period of 1958-1976, seven hundred Tortuguero green turtles were recovered in the Gulf of Venezuela, and eight were on the Central Venezuelan coast, between Las Roques off Caracas and Guiria on the south coast of the Paria Peninsula (Carr, Carr and Maylan, op. cit.). Specific localities recorded as of 30 June 1977 for these Tortuguero-Venezuelan migrants were:

Tag No.	Date Tagged	Place of Recovery	Date of Recovery
1960	8 Sept. 1961	Las Casas de Cajiao, Venezuela	January 1963
1067	17 Aug. 1961	Cauillero, Venezuela	25 July 1963
3254	18 Aug. 1964	Isla de Margarita	Nov. 1965
1726	2 Aug. 1961	Between Colombian and Venezuelan coasts	7 May 1968
3089	2 Aug. 1963	12 mi. south of Isla El Gran Roque	June 1968
4437	10 Aug. 1967	3 mi. north of Zapara Island, Gulf of Venezuela	24 April 1968
6880	24 July 1968	Coastal waters of western Gulf of Venezuela	22 Feb. 1971
6870	11 Sept. 1970	Cocinita, Peninsula de la Guajira	8 April 1971
7629	10 Aug. 1971	Punta Salina, Peninsula de Paraguaná, Estado Falcón	2 Jan. 1972
7028	16 Sept. 1970	Punta Salina, Las Roques	16 Mar. 1972
6836	29 Aug. 1970	Cajiao, Peninsula Guajira	July 1972
6863	14 Aug. 1973	Cajiao, Guajira Pen., Gulf of Venezuela	2 Jan. 1973
6360	11 Sept. 1968	Guiria, Golfo de Paria	8 April 1973
6036	17 Aug. 1972	Cajiao, Guajira Pen.	12 Dec. 1973
7862	21 Aug. 1972	Cajiao, Guajira Pen.	13 Dec. 1973
6536	1 Aug. 1972	Cajiao	Summer 1973
6403	21 July 1972	Cajiao	Summer 1973
6126	26 Aug. 1972	Cajiao	Summer 1973
6836	4 Aug. 1970	Cajiao	Summer 1973
6870	10 Sept. 1973	Eastern part of Paraguaná Pen.	9 Aug. 1974
1178	4 July 1969	Isla de Margarita	16 June 1972
4431	8 Sept. 1967	Isla de Tortuga	22 Nov. 1969
6810	27 July 1968	Isla de Tortuga	16 July 1970

The occurrence of the green turtle and other marine turtles on the Paraguaná Peninsula was discussed in an untitled newspaper article by Arrese entitled "Las Tortugas de Adicora" (El Nacional, Caracas). I made a visit to the Peninsula in February 1978, and found several carapaces of green turtles that had been caught and butchered locally. Two of these that had been preserved measured 104.1 x 77.5 cm (i.e. mature) and 84.1 x 63.8 cm (i.e. immature). I also found six intact shells near a ghost town on the mouth of the lagoon opposite Santa Rita. One was adult (108.4 x 83.2 cm), while the remainder were immature somewhat distorted, but generally 80-75 cm in length.

Interviews were conducted with local inhabitants regarding turtle nesting in the area. Long-time German residents in Punta Fija said that turtles were not found in significant numbers on the western side of the Paraguaná Peninsula, and if they nested there at all there could not be many. In Adicora, on the eastern side of the Peninsula, great confusion was found with common names of turtles, Spanish being used for either the loggerhead or the leatherback, and *caja* being applied to both the hawkbill and the male green turtle. This confusion of common names was also apparent in the popular article by Arrese cited above. Nevertheless, one Adicora resident convincingly described the nesting of a green turtle nearby, and he had two shells in his yard to confirm his species identification. Another informant reported that the penis of the male green turtle is sometimes dried and used for medicinal and aphrodisiac purposes, and he showed us one such dried organ.

Concentrations of foraging sea turtles of unrecorded species have also been recorded from the Golfo Triste area south of Cayo Samariere (near the city of Tucucani), according to G. Cuellar (pers. comm. to L. Ogden, 1980).

9] Feeding grounds of the olive ridley, *Lepidochelys olivacea*, in eastern Venezuela.

Lepidochelys olivacea (mistakenly identified as *Lepidochelys Annapolis*) was first recorded in Venezuela by Danoso-Barrios (1954a, 1954b), who cites the only locality record available to him for the country as "Cumaná". Subsequently, Flores (1968) reported three Venezuelan specimens, including two carcasses from Pinar de Barlovento and a nearly mature female from Isla La Tortuga, though he mentioned in the misidentification as *L. Annapolis*; the correct identification is immediately apparent from the photographs, which show a turtle with seven left scutes and six right scutes, a condition common in *olivacea* but unknown in *Annapolis*. Flores cited local vernacular names for *olivacea* as "Tortuga marile" and "Tortuga buele". The subadult female specimen had carapace dimensions of 57.5 x 56.5 cm and the stomach contained traces of vegetation, bony fish, cartilaginous fish, and gastropods.

At about the same time as these discoveries, I first encountered and recorded the nesting of *Lepidochelys olivacea* in Guyana, and Schutz found the same species nesting in larger numbers in eastern Surinam. (Pritchard, 1966; Schutz 1964). Subsequently Schutz and I cooperated in a tagging program for *olivacea* on the Surinam beaches that resulted in considerable data on migratory distributions of post-nesting females. 3,358 tagged animals yielding a total of 72 long-distance recoveries (Pritchard, 1972, 1976). Recoveries from Venezuela are listed in the table below.

VENEZUELAN RECOVERIES OF TAGGED *LEPIDOCHELYS OLIVACEA* AS OF JULY 1977

Tag	Date Tagged	Place of Recovery	Date of Recovery
E 138	June 7 '68; E	10 m. from NE part of Isla Margarita	Aug. 2, 1970
E 900	May 21 '67; E	Punta Salina 05° 34'N, 60° 20'W	Aug. 1, 1967
E 332	June 2 '67; E	Puerto Salina, Edo. Sucre; "on its plow"	28 Aug. 1975
E 643	June 12 '67; E	Golfo de Paria, 3 m. SE Guiria, Edo. Sucre	Oct. 5, 1972
E 386	June 12 '67; E	3 m. W of Las Tortugas	May 18, 1970
E 583	June 12 '67; E	2 miles off Bolivada Road in Dofra Current off E coast of Trinidad	Feb. 4, 1968
E 922	June 12 '68; E	near Isla Margarita	May 10, 1968
E 926	June 17 '68; E	26 m. north of Trinidad	Feb. 13, 1968
E 981	June 17 '68; E	16 m. E of Punta Espada, Golfo de Venezuela	Nov. 4, 1971
E 1120	June 25 '68; E	1 1/2 m. NE of Carapana	Sept. 16, 1968
E 1194	June 26 '68; E	Las Casas de Punta Piedra, Edo. Nueva Esparta	Jan. 26, 1970
E 1209	June 26 '68; E	8 m. N Cabo Negro Margarita	Oct. 26, 1970
E 1280	June 27 '68; E	17° 22'N, 63° 43'W (near Carapana)	Jan. 22, 1971
E 1326	July 10 '68; E	Baño de Serpiente	April 18, 1975
E 1628	May 6 '68; E.P.	Baño de Serpiente	March 26, 1975
E 2005	June 16 '68; E	1 m. off south coast of Trinidad Is. of Spanish	28 Jan. 1972
E 2794	June 10 '68; E	18 m. N of Isla La Fragua (17° 34'N, 63° 45'W)	July 23, 1969
E 2863	Apr. 22 '68; Sub	Las Fraguas Archipelago	Mar. 12, 1969
E 4248	May 26 '68; E	2 m. off NW coast of Trinidad	Oct. 28, 1972
E 5080	June 26 '68; E	1/2 m. off eastern coast of Margarita I.	28 May 1972
E 6148	June 10 '68; E	8 m. off Yaco Yaco, Trinidad	July 12, 1971
E 6269	June 27 '68; E	off Las Casas, N. coast of Trinidad	April 1977
E 6388	June 27 '68; E	1 m. E Pt. Salina, N. Trinidad	March 2, 1972
E 6688	July 1 '70; E	12 m. SE Isla Margarita	Jan. 10, 1972
E 6848	July 10 '71; E	65° 55' W on 11° 10' N (near Carapana)	March 1972

E684	June 2 '71, E	83° 30' N, 10° 58' W	Sept. 1971
E679	June 30 '71, E	near Carupano	March 1974
E6815	July 7 '71, E	Gulf of Paria, several m off	Nov. 26, 1971
E7123	June 20 '72, E	Punta Fortin	Feb. 26, 1975
		Pampatar, Isla Margarita	

(E1 = Eitemi, K.P. = Krotzaji Pasi, Bab. = Baboonantii)

Flores (1969) reports this species (which he erroneously identified as *Lepidochelys kempi*) from the vicinity of Cumana (Estado Sucre), La Tortuga; and Isla Paritu (Estado Anzoategui).

These recoveries are clearly concentrated in the area around the Orinoco delta and the gulf to the north and west to which the Orinoco waters are carried by the Equatorial Current. There is only one Venezuelan recovery west of Isla La Tortuga, but this specimen (E681) reached as far as the mouth of the Gulf of Venezuela, only fifteen miles from the Colombian border. Occasional specimens have actually been caught in Colombian waters; Nicéforo María (1953) and Tufts (1972) report on the same individual, initially misidentified as *kempi*, from Cartagena, Colombia. Other outlying olive ridleys have been recorded from 3 miles west of San Juan Harbor, Puerto Rico (Caldwell, 1969), and from Gibara, Cuba (Aguayo, 1953). An immature olive ridley has been recorded from Martinique and reports have been received of migrating individuals between Isla Soona and the Dominican Republic (Caribbean Conservation Corporation, 1980).

An important factor relevant to the potential study of olive ridley distribution by means of aerial surveys is that the Western Atlantic populations do not seem to share the East Pacific olive's habit of floating or sleeping on the surface for extended periods. This habit makes East Pacific ridleys particularly easy to survey (and to capture), but I have never seen Atlantic olive's floating or sleeping on the surface, and I know of no published record of others having made such an observation. The floating habit may possibly represent an attempt by ridleys in relatively cool East Pacific waters to elevate their body temperature by allowing the central part of the carapace to be held above the surface of the water and thus receive unfiltered insolation, the characteristic high, flat topped shell of olive's would appear to be well adapted for this strategy.

Olive ridleys have never been recorded nesting in Venezuela. Bacon (1973) summarizes nesting information for this species in Trinidad as follows:

1. Tracks on Matura Beach (animal not seen), August 1969.
2. Hatching found on Manzanilla Beach, August 1969.
3. Tracks and nest on Matura Beach (animal not seen), March 1970.
4. Adult female nesting on Matura Beach, May 1970.

Immature ridleys are sometimes caught around Isla Margarita. A carapace of a specimen from the north coast seen in the Collection, Isla Margarita, Instituto Oceanográfico was 69.3 cm wide, and had seven pairs of costal scutes.

Isla Blanquilla, a flat, arid island about 100 km NNW of Isla Margarita, is likely to be another significant nesting site for the hawksbill. This island has no permanent inhabitants, though fishermen camp there from time to time. It is surrounded by superb reefs and many fine beaches. During a very brief visit to the island, on Feb. 21, 1978, with not more than an hour on the ground, I was able to find the remains of several hawksbill turtles that had been killed by visiting fishermen. An attempt to survey the island more thoroughly in the 1981 survey was thwarted by mechanical problems with the aircraft (which fortunately took place on the flight to Isla Margarita rather than the scheduled next leg of the flight to uninhabited and waterless Isla Blanquilla). However, Blanquilla should be considered a high priority for a hawksbill nesting and feeding-habitat survey.

Roze (1954) reports that the hawksbill comes to the beaches of Isla Margarita on occasion for purposes of egg laying, and hawksbills caught in the waters around the island provided the basis for a local Carey industry. Roze (1955) offers an earlier comment on this industry, with thoughts on the relative merits of extracting the Carey from live and from killed hawksbills.

It is vital that studies be conducted of turtle nesting (particularly hawksbill nesting) on other islands of the Venezuelan coast, including Orchila (east of Los Roques) and La Tortuga, due west of Isla Margarita. La Tortuga island lacks permanent inhabitants, is of large size (about 11 x 22 km), and has a beach along its entire northern side.

Hawksbill nesting on the Venezuelan mainland is extremely sparse. However, an informant at Güira, on the Gulf of Paria coast of eastern Estado Sucre, stated that the hawksbill was one of two species that regularly nested in that area in August. Bjorndal (in Caribbean Conservation Corporation, 1980) similarly heard reports of hawksbill nesting on beaches of the Gulf of Paria. This coincides in a general way with the peak nesting of hawksbills at Shell Beach, in Guyana some 70 km from the Venezuelan border (Pritchard, 1969), although the other species that use the beach (spends, leatherbacks, and ridleys) do so considerably earlier in the year. It is interesting that this extremely atypical habitat (muddy, estuarine waters) should provide habitat for the hawksbill, a species typical of coral reefs, but Shell Beach may be the best nesting ground for this species on the South American mainland.

Very small numbers of hawksbills have been found in Aves Island, Brownell and Guzman (1974) reported having encountered six specimens in Aves Island waters in the course of four expeditions, though none had been seen nesting. All were immature, weighing between 10 and 20 kilos each. Laiz Blanco (1979) mentioned another Aves Island hawksbill, 1,805 g in weight and 265 mm in carapace length.

w) Populations of the Hawksbill turtle, *Eretmochelys imbricata*

In Venezuela, populations of this species appear to be concentrated on offshore islands, from which the quality and quantity of information available ranges from very good to non-existent.

In the Netherlands Antilles, hawksbills are almost extinct (de Boer et al., 1973), though they may have existed in somewhat greater abundance in the past.

In the Los Roques Archipelago (a complex of mangrove, beach and reef islands about 150 km due north of Caracas) extensive studies have been conducted in the last two or three years on hawksbill populations, and these have included an ambitious "head-starting" program. The islands are a National Park and scientific studies here are administered by the "Fundación Los Roques", based in Caracas; there is a field research station in the archipelago, the Estación de Biología Marina Dos Mosquises. Intensive studies on the sea turtle population were initiated in 1979, and continue. Several mimeographed reports are available on the first season's work (Maldonado, 1981; Buitrago, 1981; Anon, 1980). Findings may be summarized as follows:

Hawksbills nest in modest numbers on many islands of the Archipelago, nesting taking place from May to December but with the great majority of emergences taking place in July to October (peak month September). Absolute numbers are low, in 1979, one nest was recorded in April, one in May, four in June, ten in July, twelve in August, seventeen in September, ten in October, four in November, and one in December. The most used nesting islands were identified as Dos Mosquises, La Pelona, Cayo de Agua, Bekave, Salsky, Carenero, Cayo de Sal, and Cansky. These islands are concentrated in the western side of the archipelago, the islands in the east, although much larger, are extensively mangrove bordered with little beach.

Although the area is a National Park there are still resident fishermen who constitute an ongoing threat to turtle nests; most nests that are not found immediately by the research and conservation team are robbed by egg collectors. The preferred course of action by the conservation team in finding a fresh nest is to camouflage it or dig a small hole to give the impression that the egg has already been taken. Broken eggshells scattered around the nest complete the impression of a "robbed" nest. Other nests are left in place for artificial incubation and head-starting. In 1979, 21 nests were camouflaged; only two of these were robbed. Of 20 nests found in 1980, 18 had already been robbed (2 green turtle nests, 12 hawksbills).

There have been two long-distance recoveries of turtles "head-started" at the Los Roques facility. One of these was a hawksbill, hatched on Los Roques 8/11/74 and released 27/12/75 when it measured 30.2 x 21.4 cm and weighed 3.26 kg. It was captured in Jamaica on October 21, 1976.

The other was an Aves Island green turtle, artificially incubated and hatched at Los Roques 10/11/73 and released 15/9/74 when it measured 19.8 x 15.8 cm and weighed 875 g. It was caught in Santos, São Paulo, Brazil, on 28/8/76, at which time it measured 33 x 28 cm and weighed 4 kg. It was retained for the Santos Aquarium. This is one of the longest turtle movements on record, however, whether a turtle would naturally embark on a journey of that nature is uncertain, since the turtle entered the sea at an unnatural location and age.

v) Breeding colony of the green turtle, *Chelonia mydas*, in Estado Sucre.

Several published reports draw attention to the nesting of green turtles in Estado Sucre. Flores and Hoyt (1965) mention an individual that was captured while nesting at 2 a.m. on October 18, 1965 at Playa Niguata, near Cumana. It laid 160 eggs and the carapace measured about 112 x 90 cm; the estimated weight was 160 kg.

Laiz Blanco (1979) reported on a aerial survey of the beaches of the Península de Paria, and found a single turtle track and three beaches that appeared suitable for nesting.

Ogren (1980) mentioned an aerial survey in Estado Sucre in August 1979, reported to him by G. Cuellar, Head of Projects for FUDENA. This survey took place between Carupano and San Juan de los Galdones, and only a single turtle track was seen. The coast was reported to consist of small stretches of beach, separated by rocky cliffs.

In the course of my 1981 aerial survey, the northern coast of Estado Sucre was the only place in which we found regular turtle tracks. Seven fresh nests were seen, nearly all on beaches immediately east of Cabo Tres Puntas. The three beaches at the eastern end of the peninsula mentioned by Laiz Blanco (op. cit.) were not surveyed.

Detailed information on the location of the nests seen and the beaches along the coast of Estado Sucre may be obtained from the flight log and the maps appended herewith. Although identification of the species that made the nests is uncertain, my judgment is that they were made by green turtles; they were certainly not leatherback or ridley nests.

A few green turtle nests in northern and western Trinidad, which is a geological extension of the Península de Paria, separated by just a few miles of ocean at Boca del Dragon. Bacon (1973) records green turtle nesting from Mayaro, Matura, Metelat, and Big Bay, Trinidad. Following the mainland coast to the south-east from the Gulf of Paria, the next beaches of any kind are in north-western Guyana (Shell Beach, where moderately dense nesting by green turtles takes place (Pritchard, 1969).

A fisherman interviewed on Isla Margarita on 21 February 1978 declared that he considered the following beaches on Isla Cubagua between Isla Margarita and the mainland) to be possible nesting sites for *Chelonia mydas*: La Colada; Corral el Barlovento; Corral del Sotavento, and possibly Puntarenas.

Several shells of immature green turtles were seen for sale on Isla Margarita; three of them had the following dimensions: 61.3 x 52 cm, 41.9 x 36.5 cm, 47.0 x 37.5 cm. Prices ranged from 25 to 40 Bolívares.

Some turtle nesting was reported to take place on Playa Manzanilla, Isla Margarita, but the species was uncertain.

w) Nesting by the loggerhead turtle, *Caretta caretta*, in Venezuela.

The loggerhead is rather scarce in Venezuela, and only a few nesting records are available. This contrasts with the Colombian coast, where *Caretta* is the common nesting turtle, however, east of Venezuela, in the Guianas, the loggerhead has never been recorded nesting in Guyana or French Guiana, and only a single

specimen has been found nesting among thousands of leatherbacks, olive ridleys, and green turtles in Surinam. In Trinidad, Bacon and Maliphant (1971) report a single nesting by the loggerhead, at Las Cuevas Beach, in 1970; however, the photograph of this turtle, although somewhat indeterminate, looks more like a hawksbill, and the carapace length (85 cm) is more typical of that of a nesting hawksbill than a loggerhead.

A few loggerheads nest in the Los Roques Archipelago, though the predominant turtles there are hawksbills. Suñtrago (ms) recorded seven loggerhead nestings in Los Roques during the 1979 season - five in May, one each in April and June.

Fieras (1968) reported that the loggerhead is frequently observed in the waters of Sucre and Isla Margarita, Venezuela, and that it nests on sandy shorelines of coasts and the islands of eastern Venezuela. I saw three loggerhead skulls in the collections of the Instituto La Salle on Isla Margarita; the largest of these 27.5 cm wide and 24.5 cm in basiscranial length, is equal to the largest skull of this species that I have seen.

AERIAL SURVEYS

Two major aerial surveys were conducted in the course of the consultancy reported herein. The first of these started from Caracas and proceeded west, maintained high altitude until Puerto Cabello, and then followed the coast at a low level to Coro and completely around the Paraguana Peninsula. No sign of turtles nesting was seen on this flight; because of this and extreme turbulence the journey from Punto Fijo to Maracaibo was completed at high altitude. The second flight started from Caracas, again maintaining high altitude for some time following take off, and descended to low survey altitude at Niqueroe. The survey continued to the east, passing along the southern shore of the Peninsula de Parí. A landing was made in Güiria, after which we crossed to the north coast of the peninsula, and flew west along the coast, finally crossing the narrow water separation to Isla Margarita where a landing was made and the flight abandoned because of battery failure in the aircraft. One turtle nest was seen on the coast of Anzoategui and several in Sucre, described in detail in the flight log. It is unfortunate that aircraft failure prevented survey of the coasts of Isla Blanquilla and Tortuga as had been intended.

Certain other data are available from Venezuelan surveys other than those two. On 25 March 1977 Pedro Trebbau and I flew the coast of the Orinoco delta and onward to Guyana at an altitude of about 300 feet, in each of the reputed beach of "Punta Playa", on which leatherback nesting was supposed to occur. However, the entire coast was composed of mud and eroding mangrove forest throughout the delta area and the first beach encountered was Shell Beach, Guyana. The latter is a uniquely important nesting area, not so much for the absolute number of turtles utilizing it, as for the fact that it is an important site for no fewer than four species (leatherback, green, olive ridley, and hawksbill).

Pedro Trebbau also reported to me that he had flown the coast of Aragua and the Distrito Federal west of Caracas on Feb. 19, 1981, in search of a downed aircraft. The flight covered the shoreline from Maiquetia to Puerto Cabello. However, despite an intensive visual search of the coast and water surface from a low altitude, no traces of sea turtles or their nests were seen.

A more positive observation was reported by Leopoldo Garcia of the Parque Zoológico "El Pinar" in Caracas. Garcia reported that in the course of an aerial survey in May 1981, he had observed a group of green turtles swimming in and out of a trench through a limestone reef offshore from Las Salinas, in the Distrito Federal between Chichiriviche and Costa La Mar. The turtles were estimated to be between 50 and 100 cm. in carapace length, and were between 9 and 15 in number, at least five being of adult size.

- 12 -

SUMMARY OF FLIGHT LOG: Caracas west to Paraguana Peninsula

DATE: July 18, 1981

PILOT: Luis Arturo Ayala M.D.

COPILOT: Pedro Trebbau D.V.M.

OBSERVERS: Peter C.H. Pritchard, Ph.D.
J. Robert McMorris
Luis Arturo Ayala Jr.

AIRCRAFT: Piper Twin-Engine Low wing Monoplane; Registration YV-1562P

(This type of aircraft was less than ideal for aerial surveys, being rather fast and with low wings, so observers were forced to sit in the rear-most seats and look backwards).

9:26 a.m. Take-off, El Centro Airport, Caracas. Required by air traffic regulations to fly over high mountainous section west of Caracas; descended to observation altitude near Puerto Cabello.

9:48 Cliffs and forest covered hills, with occasional yellow sand beaches, relatively or completely inaccessible; some pebble beaches.

9:48:18 Puerto de Cota. Sandy bay with development including two highways.

9:48:50 Larger beach but with town behind.

9:49:20 Another curved beach, behind. Still forest-covered behind coast. Bahía de Turiamo - some beaches in bay, but small; shoreline mostly rocks. Steep cliffs.

9:53:16 Mangrove inlet with complex border. Isla Larga and Isla Alcatraz: beaches along southern shores, with yachthouses and vacationers.

9:55:45 Puerto Cabello. Large port city.

9:57:20 Beaches extend outside city, but in many areas fringed by rocks (on seaward side).

9:57:53 Wrecked ship.

9:58:23 Cement factory.

9:58:45 Refinery. Beach starts after refinery.

9:59:25 Power station with riprap-bordered cooling water channels. More beach; another refinery.

10:00 More beach; another refinery.

10:01:18 Boca de Yaracuy (small town at river mouth). Beach front development, bathers. Beach runs until 10:03:21.

10:05:00 Boca de Arca - beachfront town. Beachfront development, highway. Developed all the way to Tucacas.

10:07:20 Tucacas. Mangroves and small beaches. Flew over Morrocoy National Park - extensive complex of mangrove islands, coast

10:11:30 reefs, and small beaches; small groups of people seen on most of the best beaches.

10:12:42 Cliffs with more beach, and extensive coconut groves. Passed beach in front of the Chichiriviche Lagoon.

10:15:30 Chichiriviche - coastal town. Long, empty beach after the town, with coconut plantations.

10:16:10 More beach and coconut plantations. Much driftwood on shore.

10:16:10 Boca de Toyuco (coastal town). Muddy water west of river mouth; much driftwood on beach. Beach flat, continuous, with flat land behind beach. Highway 1/2 mile inland. One scarlet ibis seen.

10:19:40 San Juan de los Rios (coastal town). Beachfront development. Very wide beach beyond town, with development. Coconut plantation. Two scarlet ibis seen.

10:21:50 Beach with natural vegetation (low scrub forest); eroding cliffs; muddy water.

10:25 Long beach with few huts, and coconut grove.

10:26:10 High cliffs, narrow beach. Water still muddy.

10:27 1/2 Small town. Circled until 10:29. Five scarlet ibis.

10:30:24 Cliffs.

10:32 Beach with human footprints.

10:32:40 Huge coconut grove on point.

10:35 Beach with huge coconut grove.

10:36:40 Good beach.

10:38 Good beach, with hill behind; some coconut palms.

10:38 Long beach, high dunes, coconuts, some muddy water.

10:41 More beach, coconuts. Streets of muddy water in sea.

10:44 Puerto Cumanaco (coastal city with airport). Much beach. Flight becoming turbulent. Cliffs, cactus.

10:54:30 Landed at Coro airport.

11:30:15 Took off from Coro; headed north along Paraguana Peninsula. Flight still rough and turbulent. Long rock-bordered beach along neck of peninsula, much sand, dunes, etc. Highway about 300 yards inland (4-lane with median). More beach, without rock fringing; highway becomes single. Dry old lagoons inland. Endless beach - looks good for turtles, but no tracks.

11:40:55 Huts and huts on beach.

11:41:20 More huts and huts; also off-road vehicle tracks.

11:42:50 Adicora (coastal town); beachfront development.

11:44 Town, beach development, lagoon.

11:46:23 Offshore rocks and reef. Town on ocean. Whole peninsula visible - all flat except for two isolated peaks of great altitude (2722 feet).

11:47 Mgr sand flats, reef-fringed beaches.

11:48 Town. Turbulence getting worse.

11:48:50 Beach gives way to rock.

11:51:40 Wide beach, sandy point, isolated rocky patches. Tracks of vehicles and people, huts on beach. Beach front development.

12:02 Climb, to cross Barrera de Coro; no turtles seen and too turbulent for ascent, so continued fast and at high altitude to Maracaibo.

- 14 -

- 15 -

SUMMARY OF FLIGHT LOG: Caracas east to Guiria, west to Isla Margarita
 Date: July 24, 1961
 Pilot: Carlos Palmer
 Observers: Peter C.H. Pritchard, Ph.D.
 Lady Cecilia Acosta
 Aircraft: Cessna 182 High-wing, four seat monoplane.
 Take Off Time: La Carlota (Caracas) 9:43 a.m.

Required by flight traffic regulations to fly over mountains east of Caracas directly to Higueroe. Much light cloud at 5,000 feet, scattered higher cloud.

8.03 a.m. Descending to Higueroe. Long beach extended from point north of Higueroe, with considerable beachfront development.
 8.05.30 Wide beach with much driftwood. Sea brown and muddy with effluent from rivers. Inland flat, undeveloped, with scattered green trees near the coast becoming thicker inland.
 8.07.10 River mouth; muddy effluent. Beach otherwise continuous.
 8.07.45 Small coastal town, low density, with recreational beach. One or two high-rises, scattered development, several beach access roads.
 8.08.50 River mouth. Recreational beach, extensive coconut groves
 08.50 End of beachfront development. Some young coconuts planted behind beach. Wheel tracks on beach. Swamp inland, with many dead trees.
 8.11.25 Town at entrance to lagoon. More beach. Water now less muddy. Some coconut groves. Dense vegetation and open water in alternating parallel strips behind beach, with lagoon full of mangrove islands.
 8.13.25 Coconut groves continue, with some beach houses. Many frigate birds and boobies around aircraft.
 8.17 Lagoon ends in a series of mangrove islands in long strips. Beach and coconut plantations continue.
 8.17 Fresh turtle track seen, possibly green turtle.
 8.18 Many frigate birds.
 8.19.15 Small town situated on a river mouth.
 8.20 River mouth, more coconut groves. Tractor tracks on beach.
 8.21 Shrimp boat seen about one mile offshore. Huge coconut grove extends about one mile inland. Plane getting too high descends from 600 feet to 400 feet.
 8.26.10 Playa Pineda airport. Small city, more beach (medium energy wave action, yellow sand).

8.27.15
 8.30
 8.30.20
 8.30.50
 8.34.30
 8.37.30
 8.39
 8.41
 8.42
 8.50
 8.53
 8.58
 10.02
 10.05.30
 10.07.02
 10.11.10
 10.14
 10.17
 10.17.50
 10.18
 10.21.30
 10.22.44
 10.26.30

Lagoon begins. Narrow beach strip between lagoon and sea, with development and recreation, many swimmers. Development ends but coconut grove continues.
 Coconut grove ends.
 Sandbar at entrance to lagoon, with brown and muddy water.
 River mouth, muddy effluent. Next lagoon begins. Beach continues with scattered coconut palms, narrow strip of vegetated dunes between the sea and lagoon. No development, cattle tracks.
 Aircraft forced to ascend to higher altitudes over Puerto Piritu. Beach continues uniformly.
 Puerto Piritu. Lagoon mouth with effluent of muddy water. Had to fly still higher as we approached Barcelona (Military Regs).
 Beach continues, with undisturbed bush behind. Old beach ridges visible inland from present beach. Beach looks excellent, but we were too high to see in detail.
 Barcelona. Aircraft at 6700 feet. Big port city, with complex islands offshore. Beach ends at Barcelona.
 Hilly islands, with very little beach and what beach does exist covered with huts. Islands look dry and sterile, with sparse vegetation.
 Passing "Isla Caracas" with some small uninhabited crescent beaches. Islands again hilly and arid.
 A few isolated crescent beaches visible before Cumand.
 Flying over tip of Peninsula de Araya. A few beaches around tip but sporadic development and very dry inland. Flight path along southern shore of Peninsula de Araya.
 Town with boats and pier. Coast with dry hills; water dark blue and looks deep. Some dark, gravelly beaches - do not look suitable for turtle nesting. Red, eroded hills with extremely sparse vegetation.
 Entrance to small inlet or bay. Water mill looks dark blue and deep.
 Hills becoming more densely vegetated and fertile. Occasional greyish, gravelly, narrow beaches, occasional coves with boats.
 Beaches getting longer and sand becoming more yellow. Very low energy system, well protected, with no visible waves.
 Small fishing village.
 Hills becoming lower, occasional lagoons, shoreline made up of beaches and mangroves.
 River mouth, small town, many fishing boats (small, open type).
 White sandy point with salt lagoon. Lagoon terminates in mangroves. Brown water with inflowing rivers and muddy marshes.
 Overland crossing to Gulf of Paria. Some excellent intact rainforest visible to left.

- 16 -

- 17 -

10.37 Carupano Airport visible several miles due north. Countryside hilly, covered with nice forest.
 10.41.10 Flying over El Pilar.
 10.44 Dense forest dominated by a species of tall palm. Hills to left.
 10.45 Extensive swamps.
 10.47 Coastal swamp forests, intact on right side of aircraft (i.e. to south), with brown estuaries. Gulf of Paria - muddy, brown water. Mangrove and hardwood bordering shorelines, intact for miles inland on both sides. Very nice.
 10.53.45 Flying along south side of Peninsula de Paria. Signs of coastal erosion - tall mangroves leaning over at shoreline.
 10.54 Mud flats. Cloud very low (1,000 feet).
 10.56.30 Dramatic line in water between muddy river water and dark, clear, sea-colored sea water.
 10.58 First small beach seen.
 10.59 Several small sandy beaches, several outflows of very muddy water.
 11.00 Narrow yellow beach fairly continuous.
 11.02 Coastal village.
 11.03 Another village. Continuous narrow sandy beach, with swamp forest behind. Part of Guiria visible, with breakwaters to create harbor. Forest surrounds, with tall *Coccoloba casti* visible.
 11.08 Landed at Guiria. Talked with a one-eyed informant at airport, who said that there were a lot of turtles around Guiria, and both the Carey and one other species nested in the area around August.
 11.24 Take-off from Guiria; went north across peninsula to north coast. Peninsula is thickly covered with rain forest and slopes up to a ridge near the north coast which plunges abruptly into the sea. Thick clouds over the hills. Occasional, totally isolated thatched huts.
 11.30 Beach north coast. Small cove beaches with wave action visible even from high altitude. Water deep and clear.
 11.34.13 Turtle Track (fresh). Several beaches with small villages behind.
 11.38.51 Another Turtle Track.
 11.38 Another Track. These appear to be medium-sized fresh nesting tracks, probably greens but possibly hawkbills.
 11.38.25 Another Track.
 11.39.50 Another Track.
 11.39.50 Long beach with huts at point. Hills behind, mainly rock cliffs behind beach.
 11.41 Small town, beaches. Still steep hills plunging down to the sea.
 11.43 Fresh nest at end of beach.
 11.43.30 Village.
 11.44.30 Large village, beach, steep rocky islands.
 11.46.40 Small village, beach.
 11.48 Village and beach, with rocks, many boats (about 30) off shore in tight group, presumably fishing.

11.48
 11.50.35
 11.53
 11.54.30
 11.57
 11.58
 12.02
 12.03
 12.05
 12.05.42
 12.08.30

Beach.
 Five beaches, two with houses. Cliffs behind.
 Large town, beach in cove.
 El Morro de Puerto Santo town at base of narrow-necked peninsula; lots of boats in harbor in western side of neck.
 Passing Carupano offshore.
 Passing long beach behind Carupano. Some rocky outcrop. 3-4 very long beaches (1-3 miles each).
 Deep cove with three beaches. Steep hills with sparse cactus forest.
 Town in cove.
 Turtle Track on end of beach. Two boats at sea operating a large circle net, about 80 yards in diameter.
 Town in deep, wide cove.
 Several beaches separated by rocks. Passed over Morro de Chicopata (peninsula) and gained height for flight to Isla Margarita. Smells acidic, burning smell developed during this flight, on landing in Margarita it transpired that the battery was dry, burned out, and so hot that the plastic fittings were melting. Peter Pritchard and the other observer abandoned the flight at this point; pilot called for a pickup truck for a boost to start his engine, and returned to Caracas.

- 18 -

SURVIVAL OUTLOOK FOR VENEZUELAN TURTLES

For many decades, the Araya Island green turtle nesting colony was subject to periodic, perhaps sometimes intensive, poaching of breeding adults and eggs by fishermen and sailors from the Lesser Antilles. This caused an almost certain major decline in the breeding population over the years, though quantification is difficult, especially since the numbers of adult green turtles that reach breeding condition in any given season is variable and impossible to predict, so that "good" and "bad" nesting years may have little bearing on the overall status of the population. The colony was probably headed for extinction had it not been for the establishment of a permanent military base, the "Base Cientifica Isla San Blas", on Araya Island in early 1975. This construction, built on high dunes on the reef to avoid disturbance to the terrestrial ecosystem, is described and illustrated by Branch (1981); a permanent garrison ensures that poaching of turtles and eggs on the island no longer takes place, and prospects appear to be good. There is still concern of turtles on the feeding grounds, and egg may other risks to be minimized, but the outlook is clearly to be optimistic. Several concentrations of waterbirds, such as the great cormorant, are found on the nesting beaches, and periodic removal of the birds on the island by harassment, continues but should be tolerable. However, the island is constantly changing in size and shape, and it is only time the land masses were to disappear permanently, the turtle colony would eventually disappear, though until the egg-laying female turtles would die in an immaturity of the colony is interesting to contemplate.

The turtle colonies that exist partially in Venezuelan waters, the Tortuguero green colony and the Sarapiquí colony, are both currently well protected on their nesting grounds. The colonies are probably principally threatened by human encroachment by the shrimp trawlers that abound in the waters off the Galapagos; whether the decline in numbers on the nesting beach at El Estero, Sarapiquí, during the last fifteen years is attributable to this, to resentment failure during the many years of total egg exploitation, or to a shift of the nesting turtles away from the nesting beach at El Estero to lower sites to the west, is still not determined. However, according to the usual habit of numbers of females nesting on Sarapiquí grounds, the other colony in Northern South America is in serious trouble. The Tortuguero green turtle colony is no longer subject to industrial-level exploitation anywhere in its range, at least for the moment, and it is probable that the sub-adults and virgin females taken from Nicaragua to Guadalupe (and Portuguese) is tolerable, though one should not be complacent.

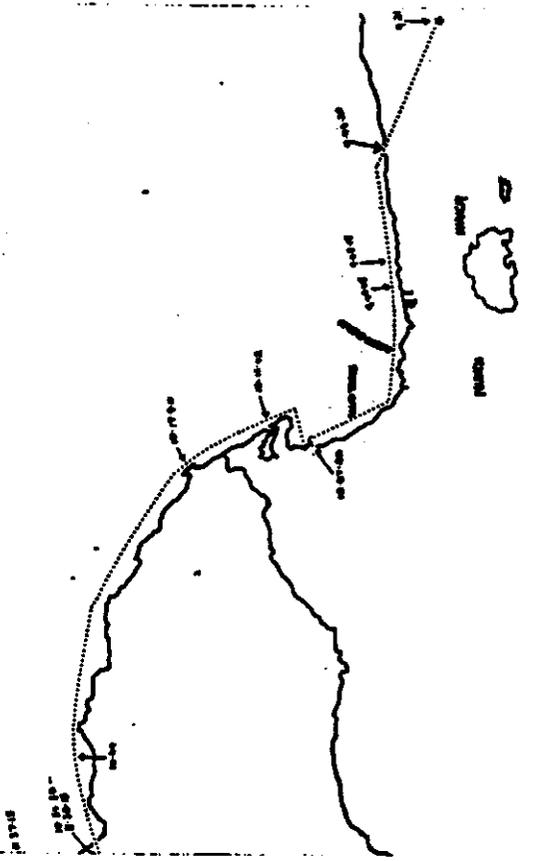
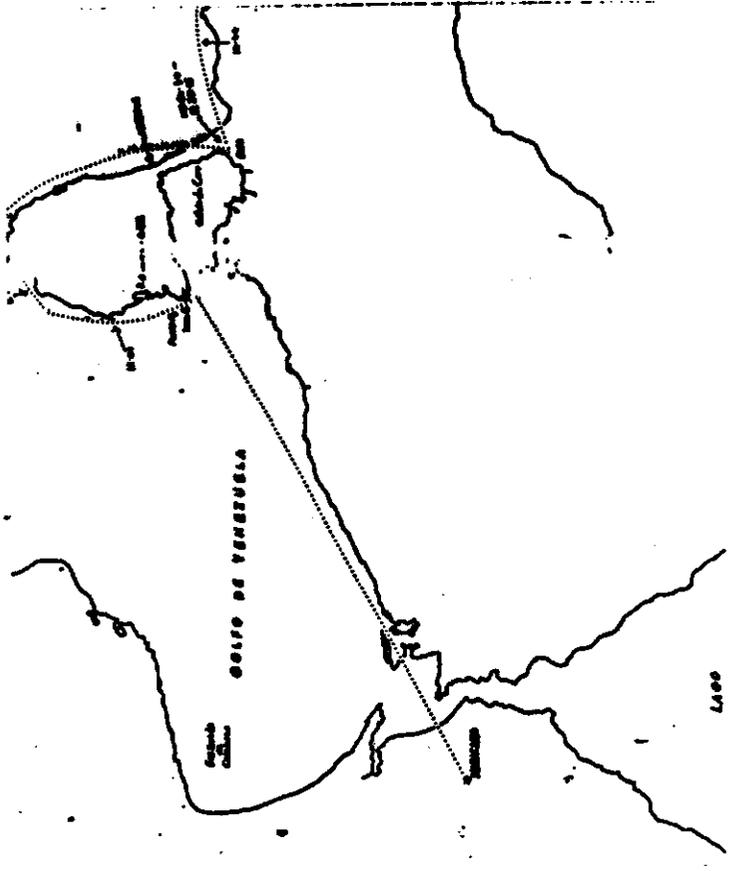
Prospects for the hawksbill colonies nesting in Venezuela favorably on the island are probably poor. Even in the Los Roques Archipelago, which is a national park, virtually all nests are raided by local resident fishermen unless the conservation crew from FUNDECIMA is able to get them first. Displacement of all residents to some outside the national park is a major desideratum, but may be difficult to achieve. The situation on the other Venezuelan islands where hawksbills nest remains to be determined; some islands are protected by their isolation, or by the very low numbers of nesting turtles that make them unprofitable to hunt, but wherever there are people there is likely to be egg robbing.

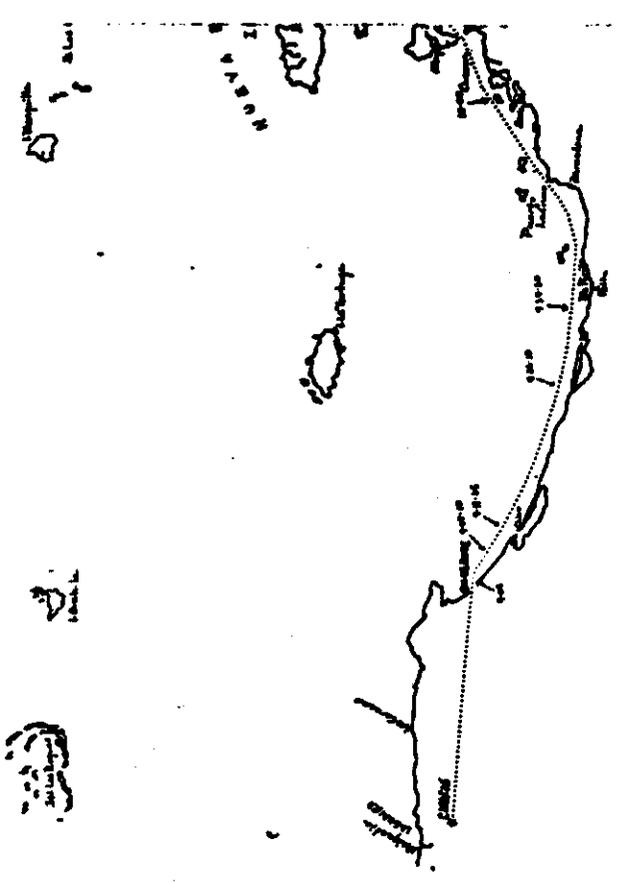
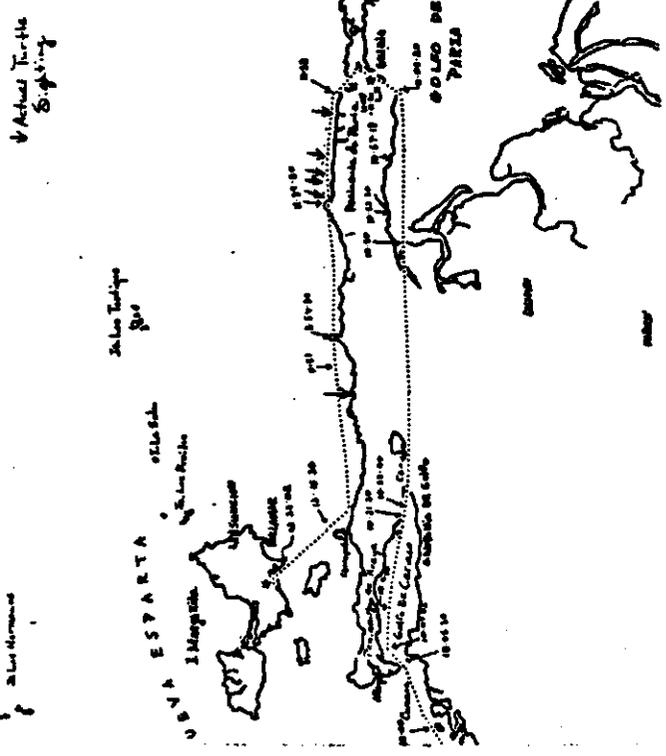
The small nesting colony of green turtles in Escudo Nuevo appears to be subject to significant poaching, but this has yet to be quantified. The area is remote and difficult to reach, but there are numerous small villages along the north coast of the Peninsula de Parí where the turtles nest, and this juxtaposition is unlikely to be beneficial to the turtles.

RECOMMENDATIONS FOR FUTURE WORK

It is unlikely that the central Venezuelan coast will yield significant numbers of nesting sea turtles, and it is therefore not recommended that resources be committed to ongoing aerial surveys there except on an opportunistic basis. However, the Gulf of Venezuela remains unexplored on either the Venezuelan or Colombian sides, and this should be done, both aerially and on ground, as soon as feasible. The beaches of the Peninsula de Parí require further investigation. Surveys so far have revealed that both green turtles and hawksbills nest there, and efforts should be made to quantify this. Such studies will need to rely initially upon aerial surveys, since the large number of small beaches on the peninsula are inaccessible to each other by difficult terrain. Aerial identification of prime beaches and interviews with local fishermen and fishermen is the recommended procedure.

A high priority is survey of the Islands of Blanquilla, La Tortuga, and Chubbi. These remote islands have much apparently unexplored beaches and adjacent habitat for sea turtles, and preliminary information suggests that turtles are there. It is also strongly recommended that the existing study and conservation programs on the Islands of Araya and Los Roques be continued and augmented as the





LITERATURE

- Aguiar, C.E. 1953. La tortuga leoncillo (*Chelonia olivacea* Agassiz) en Cuba. Mem. Soc. Cubana de Hist. Nat., 21 (2): 211-218.
- Anon. 1980. Protección y Recuperación de Poblaciones de Tortugas Marinas en el Archipiélago Los Roques. Mimeo. Fundación Científica los Roques. 5 pp.
- Bacon, P.R. 1973. The status and management of the sea turtle resources of Trinidad and Tobago. Report to Parliament Ser'y. Min. of Ag., Land and Fisheries. Mimeo. 69 pp.
- Bacon, P.R. and G.K. McPherson. 1971. Further studies on sea turtles in Trinidad and Tobago. The Trinidad Field Naturalists' Club Journal. Pp. 2-17.
- Brecht, H. 1967. Isla de Aves. VIASAR (VIASA Airlines Magazine) No. 24: Pp. 84-89.
- Brewer, W. and C. Guzman. 1974. Ecología de la Isla de Aves, con especial referencia a los Picos. Mem. Soc. Carr. Mar. La Salle, 34 (98): 91-168.
- Buñaga, J. 1967. Las Tortugas Marinas de Los Roques, Venezuela. Cita en Caserío con Fines de Repoblación. Mimeo. 24 pp.
- Calwell, D.W. 1969. Pacific ridley turtle, *Lepidochelys olivacea*, in Puerto Rico. Bull. So. Calif. Acad. Sci. 68 (2): 112.
- Caribbean Conservation Corporation. 1980. Survey and preliminary census of marine turtle populations in the Western Atlantic. Final report to National Marine Fish Service. Mimeo. 74 pp. and 12 maps.
- Carr, A.F., M.H. Carr and A.S. Meylan. 1978. The ecology and migrations of sea turtles. 2. The West Caribbean green turtle colony. Bull. Amer. Mus. Nat. Hist. 182 (1): 1-48.
- de Beer, B. D. Hoogwerf, I. Krauseman and J. Peet. 1973. Antillean Fish Guide (STINAPA No.7). Caribbean Marine Biological Institute, Curacao, North. Antilles. 110 pp.
- Dennis-Barra, R. 1964a. Nota sobre *Lepidochelys olivacea* en la costa de Cumana. Laguna, No.2, p. 20-21. Instituto Oceanográfico, U.D.D., Cumana. Venezuela.
- 1964 b. Anecciones sobre las tortugas marinas de Venezuela. Laguna No. 3, p. 26-31. Instituto Oceanográfico, U.D.D., Cumana Venezuela.
- Flores, C. 1966. Nuevos Registros de *Lepidochelys olivacea* (Günther) en la costa oriental de Venezuela. Laguna, No. 12, p. 37-39. Instituto Oceanográfico, U.D.D., Cumana Venezuela.
1968. Nota sobre registros acústicos de Venezuela y su importancia económica. Laguna, No. 21-22, pp. 1-19 and 5 figs.
- 1970 and D. E. Holt. 1965. Nota sobre la tortuga verde o de sopa en los alrededores de Curacao (Edo. Sucre, Venezuela). Laguna, No. 8: 37-39.
- Hummelshel, P. W. 1982. Norte Aves, een Vogelstrand in de Caribische Zee. De West-Indische Gids, 33: 23-34.
- Lutz Bianco, J. 1978. Conservación del Ecosistema "Isla de Aves" con especial énfasis en el control y manejo de la Tortuga Verde (*Chelonia mydas*) y de las Aves Residuas y Migratorias. FUDENA, Caracas. Mimeo. Pp. 1-82.
- Layell, J.D. 1967. The ternary on Aves Island in March. Condor, 69 (1): 87-89. Cooper Ornithological Society.
- Maldonado, S. 1981. Proyecto Tortugas. Actividades Nov. Dic. 1980. Mimeo. 11 pp.
- Meloney, N.J. and C. Schubert. 1969. La Isla de Aves: una isla que desaparece? (7). Acta Cient. Venezolana 18: 133-134.
- Nieto de Meris, N. 1963. Tortugas marinas de Colombia. Bol. Inst. La Salle (182-183), pp. 1-8.
- Ogden, L. 1980. Trip report - Costa Rica, Venezuela and Guyana February 28 - March 11, 1980. Mimeo. 19 pp.
- Pridmore, P.C.H. 1966. Sea Turtles of Shell Beach, British Guiana. Copeia (1): 123-125.
1969. Sea Turtles of the Guianas. Bull. Florida State Mus. 13: 85-140.
1973. International migrations of South American sea turtles (*Chelonia* and *Dermochelys*). Avian Behav. 21: 19-27.
1976. Post-nesting movements of marine turtles (*Chelonia* and *Dermochelys*) tagged in the Guianas. Copeia (4): 749-754.
- Raney, W.E. 1971. Reconnaissance of the green turtle (*Chelonia mydas*) nesting aggregations at Aves Island, Lesser Antilles. Unpublished report, Island Resources Foundation, St. Thomas, V.I. 24 pp.
- Rena, J. 1955. Las Tortugas Marinas de Venezuela. Revista Pinar del April 1955: 8-11.
1964. La Herpetología de las Islas de Margarita, Venezuela. Mem. Soc. Cient. Nat. La Salle. No. 69 (24): 209-241.
- Schultz, J. P. 1964. Zerschiltpadden, deel II: Zerschiltpadden in Surinam. Mimeo. Dieret. Landbouwbeker Suriname. 44 pp.
- Tufts, C.E. 1972. Report of the British Marine Turtle Nesting Reserve with Emphasis on Biological Data from "Operation Tortuga 1972" and recommendations for the future. Mimeo. 73 pp.
- Zuloaga, G. 1956. The Isla de Aves story. Geographical Review, 46 (2): 172-180