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

<u>VENEZUELA</u>

NATIONAL REPORT PRESENTED BY

Peter C. H. Pritchard for Harry Ortega

The National Representative

Address:

<u>Director</u>

<u>Direccion General Sectorial</u>

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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. <u>National Report for Venezuela</u>, 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

	Km of Shoreline								
Marine Shoreline Characteristics*	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)

^{***} Please see description of entire shoreline as given in "Turtles of the Spanish Main" (Report to NMFS, 1981)

TABLE 3. NESTING BE	ACH INVENTORY		
List beaches in geograph	nic 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. Archipielago 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		
Caretta caretta	Сс		
Chelonia mydas	Cm		
Dermochelys coriacea	D		
Eretmochelys imbricata	E		
Lepidochelys kempi	Lk		
Lepidochelys olivacea	Lo		

⁻⁻⁻⁻⁻

^{**} Human development or use (See MANUAL)

^{*} *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 C	ENSUS FOR BEACH: Isla	de Aves, 1971	
Table summarizes census	s data for each beach listed	in Table 3. Tables numbered	l sequentially.
Species	Number	of Nests	Dates of collection
·	Nest/Night (average)	Nest/Season (estimated)	
Caretta caretta			
Chelonia mydas	16 in 3 nights; i.e., 5.35	174 pits prior to June 24	June 24-27
Dermochelys coriacea	<u>-</u>		
Eretmochelys imbricata			
Lepidochelys kempi			
Lepidochelys olivacea			

	ENSUS FOR BEACH: Isla d	•	
Table summarizes censu	is data for each beach listed i	in Table 3. Tables numbered	sequentially.
Species	Number	Dates of collection	
	Nest/Night (average)	Nest/Season (estimated)	
Caretta caretta			
Chelonia mydas	470 emergences, 70% estimated to have nests, in 60 days; i.e. 8 per night	500-1,000; ~ 750	July, August; 62 days
Dermochelys coriacea			
Eretmochelys imbricata			
Lepidochelys kempi			
Lepidochelys olivacea			

		7.31	
Species	Number	Dates of collection	
	Nest/Night (average)	Nest/Season (estimated)	
Caretta caretta			
Chelonia mydas	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	
Dermochelys coriacea			
Eretmochelys imbricata			
Lepidochelys kempi			
Lepidochelys olivacea			

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) April-June 1979; Caretta caretta 60 days 2-3 Chelonia mydas Dermochelys coriacea Eretmochelys imbricata <1 April: 1; May: 1; June: 4; April-December; July: 10 [--?--] August: 12 275 days [--?--]; September: 17; October: [--?--] Lepidochelys kempi Lepidochelys olivacea

Editor's note (2009): "[--?--]" 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.

D-1-	Danahaa O				N I I	af Nia ati	Tl		
Date	Beaches St	urveyea	0-	_			ng Tracks		N- ID
			Сс	Cm	D	E	Lk	Lo	No ID
June 08, 1983	Coast of Venezu Peninsula de La								
June 10, 1983	Coast of Estado starting at Marao to Isla La Tortuga		X	1	1				
June 11, 1983	Isla la Tortuga		_		?	_			
June 12, 1983	Isla la Tortuga to Margarita	Isla		1					
June 13, 1987	Isla Margarita to Blanquilla, via Es to Trinidad		6	3	1				
July 18, 1981	Caracas west to de Paraguaná	Peninsula		_					
July 24, 1981	Caracas east to to Isla Margarita	Guiria, then		7					
	Species	Abbreviation	1						
Caretta ca	retta	Сс							
Chelonia n	nydas	Cm							
Dermoche	lys coriacea	D							
Eretmoche	elys imbricata	E							
Lepidoche	lys kempi	Lk							
	lys olivacea	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		rox. Area	Species Foraging	Nature of Evidence				
(or give coordinates)		Km ²)	(use abbreviations & approx. numbers)	(observation, fishery, incidental catch)				
 Gulf of Venezuela 		minate area; uncertain	Cm; numbers unknown	Return of tags by fishermen; Turtles were tagged in Costa Rica				
Isla Margarita to Trinidad		minate area; uncertain	Lo; numbers unknown	Return of tags by fishermen; Turtles were tagged in Surinam				
Species		Abbreviation	Abbreviation					
Caretta caretta		Cc						
Chelonia mydas		Cm						
Dermochelys coria	cea	D						
Eretmochelys imbr	icata	E						
Lepidochelys kemp)i	Lk						
Lepidochelys olivad	cea	Lo						

TABLE 8. TURTLE SPECIES PRESENT ON FORAGING AREAS

Please complete one of these tables for each of the areas identified in Table 7. Number each table as enumerated in Table 7 (7-1, 7-2, etc.).

Species		Month								Months of Greatest Activity			
	J	F	M	Α	M	J	J	Α	S	0	N	D	
Caretta caretta													
Chelonia mydas	Х	Х	Χ	Х	Х	Х	Х	Х			Х	Х	Probably year-round
Dermochelys coriacea													
Eretmochelys imbricata													
Lepidochelys kempi													
Lepidochelys olivacea*	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х		

^{*} 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 Goméz, 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).

TABLE 11. LANDI	NG SITES	FOR	TURTLES AND TURTLE PRODUCTS						
Name of Port or Site	Species Landed (use abbrev)		Landed		Numbers & Weights (estimate)				
Peninsula de Paraguaná (eastern side)	Cm		Unknown immature and mature turtles caught and sold locally and available in restaurants, etc. in Coro	Landings					
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		Λbbr	reviation						
Caretta caretta		Cc	eviation						
Chelonia mydas		Cm							
Dermochelys coria	cea	D							
Eretmochelys imbr		E							
Lepidochelys kemp		Lk							
Lepidochelys oliva	cea	Lo							

shing operations (e.g., shrimp trawling)
Method of Determination
*
*
*
*
*
*
*

Year	Type of Fishing Activity & Method of Estimation			
	*			
	*			
	*			
	*			
	*			
	*			
	Year			

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		Hatch	nery Operation	ons		Holding Live Turtles			
	Eggs Collect.	Eggs Hatch	No. Release	Age at Release	No. Retain	No. of Juvs.	Adult Females	Adult Males	
Caretta caretta									
Chelonia mydas	4 nests	3 nests not viable; only 1 produced hatchlings	Not available						
Dermochelys coriacea									
Eretmochelys imbricata		About 5,000	About 4,000	11-18 months					
Lepidochelys kempi									
Lepidochelys olivacea									
* 1979-1982 ag	ggregate d	ata. Head-star	ting at Los R	logues					

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		Sea turtle studies and headstarting in
Caracas		Archipelago Los Roques
Venezuela		

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	

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.	

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 Proteccion 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 F List turtle research activit			y.
Project Title	Date		Name and Address of Institution &
	Start	End	Chief Investigator
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.
- Anon. 1980. Protección y Recuperación de Poblaciones de Tortugas Marinas en el Archipiélago Los Roques. Fund. Los Roques. 5pp.
- 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=S0378-1844200800020006&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 Proteccion 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 311 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 if 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 fro m 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 (Fundacion 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.

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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

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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 Higuerote, 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 Higuerote, 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:

- 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 Guzmen (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:

	FIC LOCALITIES REC TING GREEN TURTLI	ORDED AS OF 30 JUNE 1977 FOR TORTUGUE ES *	RO-VENEZUELA
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	16September 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

^{*} Editor's note (2009): 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.

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 Adícora" (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, <u>cawana</u> being used for either the loggerhead or the leatherback, and <u>carey</u> 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 kempi) 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. kempi; 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 kempi. 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

^{**} Editor's note (2009): 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.

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.

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	10June 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

^{**} Editor's note (2009): Original National Report listed location as 63°30'N 10°58'N

Flores (1969) reports this species (which he erroneously identified as *Lepidochelys kempi*) 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 this 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 Roques10/11/73 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 sire.

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, neat 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 is 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

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

was uncertain.

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 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. Bahia 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 Parkextensive 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 Higuerote. Much light cloud at 5,000 feet, scattered higher cloud.

9.03 a.m.	Descending to Higuerote. Long beach extended from point north of Higuerote, 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 cast 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.
9.09.50 4	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 ertrance 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.

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⁴ Editor's note (2009): The time was listed as "09.50" in the original National Reported. 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 grace 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 beech 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, gravely, 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 hat 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 quantifies, 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 ridleys 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.

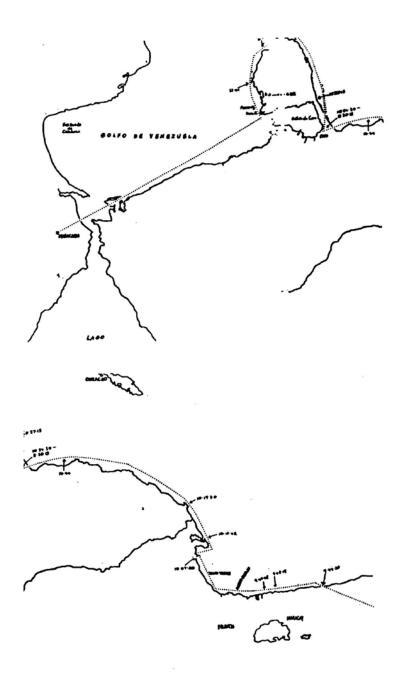
RECOMMENDATIONS FOR FUTURE WORK

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.

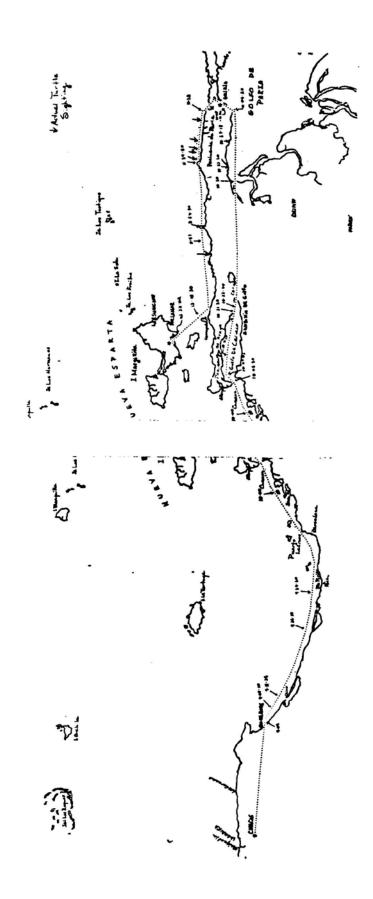
The beaches of the Península de Paria require further investigation. Surveys so far have revealed that both green turtles and hawksbills nest there, and efforts should be made to quantify this. Such studies will need to rely initially upon aerial surveys, since the large number of small beaches on the 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.



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THE NATIONAL REPORT EL REPORTE NACIONAL





HARRY ORTEGA

VATIONAL REPRESENTATIVE/REPRESENT/

Simposio de Tortugas del Atlantico Occidental Western Atlantic Turtle Symposium

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



MESTERN ATLANTIC TURTLE STIPOSIUM

San Jose, Costa Rica ALL 1883 MATIONAL REPORT FOR THE COUNTRY OF

VENEZUELA

Herry Ortega The National Representative MATIONAL MEPORT PRESENTED BY Peter C. H. Pritchard for

- Piso 28, Centro Simon Bolivar Address: Director General Sect de Administracion del

RATIONAL REPORT PREPARED BY

Peter C. H. Pritchard

Maitland, Florida

DATE SUBMITTED: July 17, 1963

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Peter C. H. Pritchard, Ph.D.

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FLORIDA AUDUBON SOCIETY

1101 Audubon Way Kaisland, Florida 32751

DESCRIPTION OF THE COAST

The mainland coast of Venezuela follows an approximately east wern course and extends between the latitudes of Bit W end 71° 30 W. The cross fire entirely within the proposal being between 10° and 12° not fit of the Equation, and it exemptees the assert half of the southern boundary of the Castilizers like. The curviation of assert Venezuela is very and, and is dominated by the huge, paired, narrow necked, desciered 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 Maracibo, the largest lake in South America. East of Paraguana Peninsula, whose southern base is composed of startie, rolling sand dures 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 Chichitwich the otherwise nearly continuous beach is interrupted by a spectacular complex of mangrove islands, some of which have small beaches, that together comprise the Morrocoty National Perk.

In the Central Part of the Venezuelan coast, the coastal mountains reach to the

small beaches, that together comprise the Monorcopy National Park.

In the Central Part of the Venezuelan coast, the coasts mountains reach to the seashore. In this area, which lies between Puerlo Cabello and Higuerote, 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 bere areas of red soil between the tress and shrubs.

East of Higgerote, as far as Bercelons, the coast is flat, although low hills reach

Est of Higuerote, as far as Bercelona, 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 clivies of versible size, and huge areas immediately behind the beach dedicated to the monoculture of coconuts, in places natural vegetation still enists.

Between Bercelona and Cumans, 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 Cumans, the Gulf of Cerisco extends eastward for about 75 kilometers, being bounded on the northern side by the Araya Peninsula. The water in the Gulf of Cerisco is derived blue and deep, the Araya Peninsula is composed or the Gulf of Cerisco is derived blue and deep. The Araya Peninsula is composed of the Peninsula, however, the kills are more vegetated and fertile. There are a few small; gravelly beaches on the southern shorts of the Araya Peninsula. To the east the leasons nowever, the hills are more vegetance and retrile. Inter are a tell small, growiny beaches on the bouthern shore of the Araya Peninsula. To she east, the legion peters out into a complex of mangrove awards with inflowing brown-water rivers, followed by dense tropical forest. As one approaches the Gulf of Paris from the asstern and of the Gulf of Araya, the forest continues, in places dominated by pelms, and ehewhere very awardny. The Peninsula de Paris, forming the north shore of the Gulf of Paris, is a relatively narrow but rather high mountain ridge, shickly clad with tropical rainforest. Along the Gulf coast of the perinsula, the others but then to an exemption tends to the others.

weline is dominated by mangrow forests but there are occasional small beating.
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From the western corner of the Gulf of Paris to the Guyana border about 400 km to the south-east, the coast is dead itsi for miles indand, and is statisfy deminished by the huge estuary and delts of the Orinace fliver. 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 buschess this area (though, as mentioned above, there are some small ones on the northern shore of the Gulf of Paris), and the water is very muddy and af reduced selectly. In striking contrast is all other countries of northern South America, the off-shore waters of Venezuela are dotted with islands, many of large size. The principal klands and archipelagoes, from west to east, are as follows: Arube, Curaço, Jonaire; Avet, Los Roques; Orchila, La Torruga, Blanquille and Los Hermanos; Margeria, Cubapue and Coche; Los Frailes; Los Testigos, and Trinidad. Arube, Curaço, Jonaire; are not politically Venezuelan but are included in the Netherlands Antities, and Trinidad is part of the British Commonwealth. These islands, with the exception of Trinidad, are rather an very arid. The smaller islands are all very left, but the larger ones; including Trinidad. Margeria, and the Netherlands Antities, have significant elevation.

Politically included within Venezuela in an one of the mest important surrie resting islands in the Atlantic system - is tiny Aves Island, located about 500 km to the north of Corupeno (Edo. Suzra). Aves is a mere sandbork of negligible shiude, and her a coestine that changes from year to year and that may even be uplit in two. after burricanes. Aves is the only emergent point of the Aves Ridge, a vest suben, crite gestloged to measure in the eastern Cerlobean.

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SEA TURTLE POPULATIONS IN VENEZUELA

Although nesting of sea turtles on the mainland coast of Venezuela is sperse, the waters and islands of Venezuela provide either feeding or breeding habitat for

several oppositions 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, Chelonie my dat, on Aves Island. This spoulation appears to migrate to feeding grounds in the Lesser Antillas and the Dominican Republic.

and the Commiscen required:

ii) A feeding population of the green turde, Chelonie mysles, in the Gulf of Venezuela, derived from the breeding population at Torruguero, Costs Rica. Although generally separated, members of populations i) and ii) may occasionally be found in the same areas.

III] A feeding population of the plive ridley, Lepidochelys olivece, in west-ern Venezuele (Sucre, Nueva Esperta, and Delta Amegura) derived from nesting

grounds in Surinam.

in! Populations of the hawkabilit turtle, Evelmochelys Imbricate, both breeding on and feeding near many of the islands off the Variatuellan coast, especially the smaller and less in-habited ones.

y] A low density bi-reding population of the green surtle, Chelonia anadax, of unknown migratory habits, in Estado Sucre.

vi) A very small breeding population of the loggerhaed, Carette carette, in the Los Roques Archipelago, and with rare nesting alsowhere on the stanos and the

maintains of Venezueta. In addition to the above, the testherback, Dermochetys corinces, mass in quite good numbers in Trinided and is caught sporadicarry in Venezuetan waters but no nesting in Venezuetan territory has been recorded. It has, however, been found nesting in both Guyana and Colombia, and in great numbers in Surinam and French Gulana.

I) Green surties nesting on Aves Island.

Aves Island is a tiny, rock-cored, footprins-shaped sendbar located almost 800 km north of the costs of Essado Sucre, Venezuela, and about 200 km wern at 600 km north of the costs being 16° 40°N, 83° 36°N. The Island is of fluctuating form. It is only about 520 meters long, and 200 meters wide of its soldest part (at the northern 16). The green surtle solony on Aves Island has been discussed in a considerable body of hierarure, relevant references include hoursendent, (1852), Lazell (1867), Meloney and Schubert (1868), Zuloogs (1865); Reiney (1971); Brownell and Guzman (1874); and Lais Blanco (1879).

While Aves has been visited by voyagers for decades, the first systematic trady of the Aves Island green surtle colonius was that of Reiney in 1971-74. Reiney found turtles nesting an Aves from June through August, as is typical of the northern hemisphere marine surtle colonius.

.3.

in 1871 he counted 174 nest pits made prior to his arrival on June 24, and tegged 16 nesting turtles during the adeacuers three nights. Nean carepace length was found to be 42.4" (107.7 cm) and mean weight 380 its. (173.4g). The Avea Island turtles are this distinctly lerger than those nesting at Torsupero, Costa Rica, and closer in size to the South American maintend nesters in Suringm and Guyana. After a history of several seasons, FUDENA re-initiated an Avea Island turtle tegging program in 1978. In that year, the research teem spent 39 days on the island, arriving in July and departing in October but being forced to leave for a time by the pattage of historicane Dovid on August 25. Maps were drawn showing the change in form of the Island before, immediately after, and 44 days ofter the passage of the hericane, which shoulded the Island of and, worked away all turtle oggs, and reprived the nearow inthinus connecting the northern and southern pears of the Island is that the a brief period Aves caralisted of two separate Islands.

Without the threat being period Aves caralisted of two separate Islands.

Without series tagged in arrier years by Rainey and his co-workets were found, but 1988 Neat's have not been analyzed. 670 nesting amergences were recorded in Avity Mid August, the vest majority in the Island and an estimated 70% of these relatived in restings. List Blanco (1979) estimated that as many as 55,280 negs teen destroyed by the functions on August 25. The resting took place all broads. A few hostoling energences were winessed during July and August, elementaries by Curr, Cerr and (August 1978) and by Ceribbeen Conservation Corporation (1980), Recovery locutions recorded included Makin Kerys, Nicaragus (22), Isla Mujerus (Makaica); D.minican Republic deversel; iste La Terruge; Gereadies, Braininique (22); and Guadeloupe. The pessibility cannote be discounted that some of the recovery locution fact made from usees peaching in voters and beaches of Aves Island leaff, with the recovery locution teaching

(ii) Green territor in the Gulf of Venezuele.

Although green territo entring has not been reported in the Gulf of Venezuele, the species is often encountered there, and is caught for human consumption in both the Guajire and Prespuene Funiteles. Both immenters and resource turties are caught; a number of the meuter fenneles found have borne top indicating that they depreviously nested as Terrupuero, Carea Rica. Western Venezuele thus appears to be an outlying feeding area for the Torsupuero breading colony, which is the largest breading sempagation of green surfus in the Carbbiases and which primarily unities feeding prounds off the coests of Nicarapus, Panema, and Culambia with excessional recoveries at largest enimate as for every as Campache, Key West, and Puerso Rico (Cerr, Cerr and Meyten, 1878).

During the periad of 1985-1879, seventeen Torsupuero green turties were recevered in the Gulf of Venezuele, and oligin more on the Certaral Venezuelen coest, between Las Reques off Cerease and Guinie on the south speet of the Paris Penissel Scarr, Carr and Meyten, op. etc.). Reactive lecalisies recorded as at 30 June 1977 for these Torsupuero-Venezuelen migrants were:

The occurrence of the groun turtle and other marine turtles on the Paraguana Peninasia was discussed in an undered nevespace article by Arreage smittled "Lus Torrups de Adician" (El Nacional, Carcan). I made a wisk to the Peninasia in February 1978, and found several campaces of green turds that had been caught and buschered locally. Two of these that had been revise that had been caught and buschered locally. Two of these that had been presented measured 194.1 x 77.5 cm in fig., matural) and 84.1 a 83.8 cm (ii.a. immeture). I also found six intext shall neer a givest sown on the mouth of the legion poposity Saria Rita. One was ablet (198.4 x 83.2 cm), while the remainder were immeture formwhet distorted, but generally 80.75 cm in largh).

Interviews were combucted with local inhabitants regarding turds nating in the area. Long-time German residents in Punta Fije sold that surties were not found in algoriticant numbers on the waters side of the Paraguane Peninasia, and if they nested there at all there could not be many. In Adicore, on the centern lake of the Peninasia, greet combulen was found with common names of turties, gramma being used for either the leggerhead or the isotherback, and gray being applied to both the healthfull and the male green surties. This condition of common names was also supported in the popular article by Arteage cited above. Nevertheless, one Adicore relation convincingly described the nesting of a green turtie nearby, and he had two shalls in his yard to confirm his special identification. Another letterment reported that the pening of the male green surties described and used for availation and aphrendiate purposes, and he showed to semications died and used for availations. Concentrations of fereging sea turties of unrecorded species have the eity of Tuccesses, excerding to G. Cueller (see: econom. to L. Open, 1880).

III) Feeding grounds at the affec ridley, Lepidocheths advaces, in eastern Vane-

and passing states are value, passacrops solves, in section to the past. Epidochelys allivore (mistakenly identified as Lapidochelys Asinpi) was first excerded in Venazuella by Danoso-Berras (1964), 1964b), who chas the enty locality record sociable to him for the country as "Curtania". Buterescrity, Fieres (1966) reported three Vanazuella specimens, including two carepases from Firhal de Barlovento and a nearly mature five famale from lab La Transga, shaugh he periodend in the misidentification as L. Armpri the correct identification to in-recisionly apparent from the photographs, which show a surfice with cover left costs and oils right correct, a condition common in slowers but unknown in Armpl. Flores closel local vernacular names for officers as "Torouga monita" and "Torouga basilo". The subodult temple specimen had covapose discretions of \$7.5 s 88.5 cm and the stempes sentenced sentences of vegetation, being fish, certilopinous fish, and generapode.

generated.

At about the same sine as these discoveries, I first encountered and recorded the nasting of Lepidechriys obveree in Guyana, and Schulz found the same species nasting in larger numbers in eastern Surinam. Principed, 1965, Schulz 1894). Subsequently Schulz and I cooperated in a togging program for aboutce on the Surinam hortest the resulted in considerable date on migratery distributions of post-easting fernoles, 2,356 togged enimals yielding a total of 72 long-distance recoveries Principed, 1972, 1978). Recoveries from Venezuelo are Based in the

Tay No.	Date Tagged	Place of Recovery	Date of Recovery
1968	8 Supr. 1861	Las Comes de Cajoria Versanela	January 1983
1067	17 Aug. 1861	Castillete, Venezuela	25 Adv 1863
3254	18 Aug. 1864	file de Margarita	Nov. 1866
1726	2 Aug. 1951	Between Colombian and Venezuelan poessa	7 May 1000
3000	2 Aug 1863	12 mi south of fels El Gran Reason	Ant 1988
4437	10 Aug. 1867	Smi. north of Zapura Island, Gulf of Venezueta	24 April 1986
5000	24 July 1900	Coasts' maters of women Gulf of Venezuele	22 Feb. 1871
48 70	11 Sept. 1870	Castillete, Peninsulg de la Guellea	B April 1871
7629	10 Aug. 1871	Pareta Salina, Paninaula de Paressana, Estado Falcan	3 Jan. 1972
7026	16 Sapt. 1970	Punto Solina, Las Reques	16 Mar. 1872
6636	29 Aug. 1870	Cojore, Peninade Gueire	Adv 1872
6063	14 Aug. 1973	Chiero, Guejro Pon., Gull of Venezuele	2 Jan. 1973
8350	11 Sept. 1988	Quirie, Salto de Perio	8 April 1873
8034	17 Aug. 1872	Coloro, Gueilre Pen.	12 Dec. 1972
7963	21 Aug. 1872	Cajara, Guelire Pen.	12 Dec. 1072
8536	1 Aug. 1972	Caiere	Summer 1973
0403	21 July 1872	Caioro	Berney 1872
#1 第	26 Aug. 1972	Catera	Summer 1873
6836	4 Aug. 1870	Caioro	Banner 1973
6670	10 Sept. 1873	Eathern part of Para- matrix Ponts.	2 Aug. 1874
1170	4 July 1000	tale de Mergaria	16 Avec 1672
4421	8 Sept. 1967	tels de Torsus	22 Nov. 1989
GB18	27 Auto 1866	inis de Tartues	16 Adv 1870

VENEZUELAN RECOVERIES OF TAGGED LEPIDOCHELYS OLIVACEA AS OF JULY 1977

Tag	Date Tagged Surinam	Place of Recovery	Date of Recovery
£135	Juny 7 'GB; Ei	10 m, tram ME part of tale Mergarita	Aug 2, 1970
£300	May 21 '67; Ei	Punta Berimo es" 35'M, 60" 20'M)	Aug. 1, 1967
6335	Jone 2 '67; Bi	Puerso Sarno, Edo. Butro; "en la playa"	an Aug. 1975
6943	Acres 13 \$37; 81	Batto de Pario, 3 m. BE Buicio, Edo Buero	Oct. 6,1672
6886	June 12 '67; El	Sm. Wall Law Tonigns	May 18,1970
2503	June 13 '87; El	2 miles all Baldada Resk in Codres Current all E goost al Trinishes	Feb. 4, 1080
1122	June 13 W. Ei	neer tale Margarita	May 10, 1000
EGA4	Area 17 '88; 8i	25 to north of Trinidad	Fab. 13, 1900
8981	Ama 17 '88; Ei	16 m. E of Pyrtto Espails. Egilo de Verquanila	Nov. 4, 1971
8 1130	B) (14° 25 جمعل	11/2 m. He of Compane	Bept. 10, 1008
81184	Auro 39 '88, BI	Lan Castini de Porto Pindi ma, Sdo Norra España	Jan. 26, 1976
E 1300	Acre \$3 '80, \$1	8 m. N Cube Nogre Mar- garing	On. 20, 1070
11300	April 22 '00, 81	15' 22'N, 63" 43'W (hay Coupons)	Art. 22, 1671
£1336	Adv 10 Tex. El	Base de Stripiones	April 10,1975
E1638	May 5 '00; K.P.	Boss de Serpiense	March 35, 1675
E2005	June 16 '80, Ei	1 m, off moth seed of Trinidal &. of Siporlai	1972 1972
E2794	Arra 10 W. Ei	70 on 11 tale (.gs. Popliss (11° 34°11, 63° 45°01)	Ady 23, 1610
63063	Apr. 22 '88; Bab	Las Frailes Archipatago	Nov. 12, 1980
64240	May 35 70; Ei	3 m pH no exert of Trin- idea	Oct. 20, 1977
E5000	Arre 36 70. Ei	1/2 in all commonweal of Margarita L	- May 1973
B146	Juma 10 70; Ei	the malf Tano Tano, Trinidal	July 12, 1871
86799	Acre 27 '70; Ei	off Los Corress, N. wall of Tribidad	April 1877
67700	Janu 27 70; Er	1 on E Pt. Galors, M. Telesidad	March B, 1672
25480	Adv 170.6	17 or SE lain Margarita	Jan. 10, 1672
ED049	Any 16 71; Ei	ST EA'E on 11' 15'ts	Num 1672

...

25824	June 2 71; Ec	83 30'N, 10 58'N	Sept. 1971
		(rest Carupano)	
£5710	Acres 30 '71; Er	Trinigue	March 1974
E5016	Auty 7 71; El	Guit al Paris, several in all	Nov. 26, 1971
	•	Point Fartin	
E7123	Aura 20 72, Ei	Parapater, Isla Margerite	Feb. 24, 1875

(E1 = Ellerti, K.P. = Krofaje Pasi, Bab. = Babconsenti)

Flores (1969) reports this species (which he erroneously identified as Lepi-dochelys Aempi) from the vicinity of Cumana (Estado Sucre); La Tortuga; and lates Piritu (Estado Anzoetegui).

These recoveries are clearly concentrated in the area around the Orinoco delta and the area to the north and west to which the Drinoco waters are carried by the Equational Current. There is only one Yenazuelan recovery west of title La Tortupa, but this specimen (E981) reached as far as the mouth of the Gulf of Venezuela. Any fifteen mites from the Colombian border. Occasional specimens have actually been caught in Colombian waters; Nicéforo Maria (1953) and Tufts (1972) report been caught in Communicate, received as kerripi, from Caragena, Colombia.

Deher outlying olive ridleys have been recorded from 3 miles west of San Auan
Harboy, Puerto Rico (Caldwell, 1969), and from Gibera, Cuba (Aguayo, 1963).

An Immature olive ridley has been recorded from Martinique and reports have
been received of migrating individuals between tila Saona and the Dominican
Republic (Caribbaan Conservation Corporation, 1980).

Republic (Caribbaan Conservation Corporation, 1980).

An important factor relevant to the potential study of elive ridley distribution by means of serial surveys is that the Western Atlantic populations do not seem to share the East Pacific ofnacer habit of floating or sleeping on the surface for extended periods. This habit makes East Pacific ridleys particularly easy to survey fand to capture), but I have never seen Atlantic ofnacer floating or sleeping on the aurface, and if know of no published record of others horing made such an observation. The floating habit may possibly represent an attempt by ridleys in relatively sool East Pacific waters to elevate their body temperature by ellowing the central part of the caraptec to be held above the surface of the water and thus receive inflicting insolution, the characteristic high, flat topped shall of ofner or would appear to be well adopted for this strategem.

Olive refers institute institute information for this species in Trinidad as follows:

1. Tracks on Metura Beach (animal not seen), August 1969.

2. Hatching found on Manzanille Beach, August 1969.

3. Tracks and nest on Metura Beach (animal not seen), March 1970.

4. Adult femple nesting on Matura Beach, May 1970.

- 4. Adult female nesting on Matura Beach, May 1970

trimature ridleys are sometimes cought around lets Mergerita. A carapace of a specimen from the north coast seen in the Collection, lists Margarita, instituto Oceanografico was 69.3 cm wide, and had seven pairs of costal scutes.

..

Ista Bianquilla, a flat, and istand about 100 km NNW of Isla Margarita, is tikely to be another significant nesting sire for the hawkshill. This istand has no permanent inhabitance, shough fishermen camp there from time to time it is surrounded by superb seek and many fine backet During a very breef visit to the Island, on 6x5 21, 1978, with not more there so hour on the ground, it was able to find the remains of several hawkshill surties that had been halted by visiting fishermen. An attempt to survey, the Island more thoroughly in the 1981 survey was thwared by mechanical problems with the aircraft (which fortunisely took place on the flight to Isla Margarita rather than the scheduled next lag of the flight to uninhabited and waterless Isla Bianquilla). However, Bianquilla should be considered a high priority for a hawkshill resting and feeding habitat survey.

Roze (1954) reports that the hawkshill comes to the besches of Isla Klargarita on accasion for purposes of aga laying, and hewkshills sought 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 cerey from live and from killed hawkshills.

It is vital that studies be conducted of turtle nesting (particularly hawksbill). Isla Blanquilla, a flet, arid island about 100 km NNW of Isla Margarite, is likely

It is vital that studies be conducted of turtle resting (particularly hawksbill nerring) on other islands of the Verezuelan boat, including Orchia (sent of Los Roques) and La Tortuge, due west of labs Margania. La Tortuge island lacks permanent inhabitants, is of large size (about 11 x 22 km), and has a beach along its entire northern side.

manent enhabitarist, is of large laze labour 11 x 2x km), into his a backn along its entire northern side. Mankabill nesting on the Venezuelan mainland is extremely lighters. However, an informant at Güra, on the Guff of Paris cost of leastern Estado Sucre, stated that the havisbill was one of two species that regularly nested in that area in August. Sportdal (in Caribbean Conservation Corporation, 1980) similarly heard reports of hawkbill nesting on beaches of the Guff of Paris. This coincides in a general way with the peak restring of hawkbills at Shell Beach, in Guryans some 70 km from the Venezuelan Border (Princhard, 1989), although the other species that the the back greens, leatherbacks, sent ridleys) do so considerably service in the year, it is interesting that this extremely stypical habitat fimudity, estuarine waters should provide habitat for the hawkabill, aspecies typical of coral reafs, but Shell Beach may be the best nesting ground for this species on the South American mainland. Very small numbers of hawkabils have been found at Aves Island, Brownett and Guzmen (1974) reported having encountered six speciment in Aves Island waters in the course of four expeditions, though none had been seen nesting. All were immature, weighing between 10 and 20 kiles each. Lair Blanco (1979) recentioned enother Aves Island hawkabill, 1,905 g in weight and 265 mm in care-geode length.

le) Populations of the Hawkshill turtle, Eretmochelys imbricate

ret reputations us the management and the terror returning the control of the terror of terror of the terror of terr

very good to non-existent.

In the Netherland: Antilles, hawkabills are almost extinct (de Boer etal, 1873), though they may have existed in somewhat greater abundance in the pest, though they may have existed in somewhat greater abundance in the pest, which is the Los Roques Archipelago (a complex of mangrove, based and reaf islands about 150 km due north of Ceracas) extensive studies have been conducted in the about 150 km due north of Ceracas) extensive studies have been conducted in the fest two or three years on hawkshill populations, and these have included an embitious "head starting" program. The Islands are a Matinual Park and scientific studies here are administered by the "Fundacion Los Roques", based in Ceracas; there is a field research station in the archipplago, the Estacion de Biologis Marina Dos Mosquises, instantive 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; Buittago, 1981; Anon, 1980). Findings may be summerized as follows:

shills nest in modest numbers on many islands of the Archipelego, Mawkabills nest in modest numbers on many islands of the Archipelego, nesting taking place from May to December but with the great majority of emergences taking place in July to October (pesk month September). Also face in mumbers are low, in 1878, one neat was recorded in April, one in May, four in June, sen in July, twelve in August, seventeen in Septem ber, ten in October, four in November, and one in December. The most-used nesting islands were identified as Dos Mosquiese, La Palona, Dayo de Agua, Behave, Selekty, Carenero, Cayo de Sal, and Cansky. These islands are concentrated in the western side of the archipelago, the islands in the sest, although much larger, are extensively mengrows-bordered with little beach.

Although the cree is a National Park there are still resident fishermen who constitute an ongoing threst to turtle nests; most nexts that are not found almost immediately by the research and conservation team are raised by egg collectors. The prefered courte of action by the conservation team in finding a fresh wast is to camouflaged or dig a small hole to give the impression that the eggs have already been taken. Blocken eggshells assisted around the next complete the impression of a "resided" next Other nests are to the next complete the impression of a "resided" next Other nests are to the next complete the impression of a "resided" next Other nests are to the next camouflage and other next for active all neutherion and head stating. In 1979, 21 next were camouflage and other two of these were robbed OT 28 mass found in 1880, 38 had already been robbed 1.2 grain turtle nexts. 12 have been two long-distance resembles.

nexts, 17 mays torms.

There have been two long-distance recoveries of turtles "head-started" at the Los Roques facility. One of these was a haw-stabil, hatched on Los Roques 8/11/74 and released 27/12/75 when it measured 30.2 a 21.4 cm and weighed 3.35 kg. It was contured in Jamairs on October 21, 1976.

was captured in Jamaics on October 21, 1976. The other was an Aves Island green turile, entificially incubered and fatched at Los Roques 10/11/73 and released 15.9 74 when it measured 19.8 a 15.9 cm and weighed 875 g. it was cought as Sentos, São Pauto, Brazil, on 29/8/76, at which time it measured 33 a 28 cm and weighed 4 tq. it was retained for the Sentos Aquarium. This is one of the longest tursle movements on record, however, whether a turile would naturally embark on a journey of that reture is uncertain, since the turile to the sea at an unnatural location and age.

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

Several published reports draw attention to the nesting of green surfles in

Estado Sucra. Flores and Hott (1965) mention an individual that was captured
while nesting at 2 a.m. on October 18,1965 at Playa Najquata, near Cumana. It laid
160 eggs and the carapace measured about 112 x 90 cm; the estimated weight was
160 eg.

150 kg.

Laiz Blanco (1979) reported on a serial survey of the basches of the Peninsula
Paris, and found a single turnle track and three beaches that appeared suitable
for nesting.

Ogen (1980) meniloned on serial survey in Estado Sucre in August 1979,
repurted to him by G. Cuellai, Hand of Projects for FUDENA. This survey took
place between Carupano and San Juon de los Geldonas, and only a single turtle
stack was seen. The costs was reported to consult of analt stretches of beach, seperated by rocky cliffs.

In the course of my 1981 serial survey, the northern costs of Estado Sucre was

erated by rocky cliffs.

In the course of my 1981 serial survey, the northern coast of Estado Suttre was the only place in which we found regular turtle tracks. Seven fresh nests were seen, nearly all on basches immediately east of Cabo Tres Puntas. The three beseftes at the sattern end of the peninsula mentioned by Lair Stanco (op. cli.) were net

Detailed information on the location of the nexts 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 nexts is uncertain, my judgment is that they were made by given surface, they were partially not tertherback or ridley nexts.

tainly not leatherback or ridder name.

A few gren turtles nest in northern and western Trinidad, which is a geological actention of the Peninsula de Peris, separated by just a few miles of ocean at Boca del Dragon. Bacon (1973) records green turtle nesting from Mayero, Matura, Matelot, and Big Bay. Trinidad. Following the mainland coest to the south-east few He Gull of Pring, the next beaches of any kind are in north-sestern Guyane (Bheti Beach, where moderately dense nesting by green turtles takes place (Princhard, 1969).

A Schamman

1969).
A fisherman interviewed on Isle Mergerite on 21 February 1978 declared that he considered the following beaches on Isle Cubegue Batueren Isle Mergerite and the mainland) to be possible nesting sites for *Chelonia mystes*. Le Caldera; Carral el Barlovento; Carral del Sotovento, and possibly Funtarenas.
Several shells of immusture green turtles were seen for sale on Isle Mergerite; these of them had the following simensions: 81.3 x \$2 cm; 41.8 x 36.5 cm; 47.0 x 37.5 cm. Prices temped from 25 to 40 Splorests.
Some turtle nesting was reported to take place an Plays Manzanilla, tale Mergerite, but she species was uncertain.

oi) Nesting by the loggerhand turtle, Carette carette, in Venezuela.

The loggerhand is rather scarce in Venezuela, and only a few nasting recore are available. This contrasts with the Colombian costs, where Carette is the componen nasting turtle, however, asst of Venezuela, in the Guianut, the loggerhans rever been seconded nasting in Guyana ar French Guiana, and anty a sing

specimen has been found nasting among thousands of leatherbacks, aline ridleys, and green surtise in Surinem. In Trinided, Becon and Maliphant (1971) report a single nasting by the logarhead, at Las Cassas Bacch, in 1970, however, the photograph of this surine, atthough somewhat indeterminests, Jooks mere life a home bill, and the corepase length (85 cm) is more typical of that of a resting how/sbill and the corepase length (85 cm) is more typical of that of a resting how/sbill

bill, and the carepase length (85 cm) is more typical of that of a resting howishist than a loggerhaud.

A few loggerhaud nest in the Los Roques Auchipelago, shough the pradominant suries share are howishile. Buitzago (ms) recorded seven loggerhaud nestings in Las Roques during the 1979 seven—five in May, one such in April and Jung. Flores (1989) reported that the lagerhaud is frequently observed in the extens of Sucre and lale Mergerite, Venezuele, and that it nests on tendy shorelines of severe and lale Mergerite, Venezuele, it saw there loggerhaud skutts the deflections of the instituto La Salle on lale Margarite; the largest of the large to the large to the large to the large to this special state of the large to the large statut of this special sheet is have seen.

AERIAL SURVEYS

Two major serial surveys were conducted in the course of the consultancy separated herein. The first of these started from Caracas and preceded weet, read-stand high offitude smill herein Cabello, and then followed the cases 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 jeurney from Purito Fijo to Maracablo was completed at high efficient. The second flight started from Caracas, again maintaining high altitude for some time toflowing solve eff., god descended to low servey elititude at Higuerose. The survey carultured to the gant, passing along the southern shore of the Peninsula de Paris. A tending was most long the coast, finely exeming the nerror were separates to its Margerita where a landing was made and the flight abandoned because of battery follows in the aircraft. One survice nest was seen on the coast of Anzaragui and several in Secre, described in strail in the flight log. It is unfortunest that aircraft follows provanted survey of the coasts of late Bianquille and Tartuge as had been instanded. Carsini other date are avoidable from Venezuatas surveys other than these two. On 25 March 1877 Pedra Trabbou and 6 flow the coast of the Oringoo detta and annead to Gayana at an altitude of about 300 feet, in each of the reputed basern of "Punta Player", on which feetherhack nesting use subsposed to accur. Necessary the smile coast was composed of must and enabling mangrow forest throughout the delta sees and the first bear Sensonsered was Bell Beach, Cayyana. The letter is a uniquely langorumn nesting area, not so much for the stootute number of terriles utilizing it, as for the fact that it is an important site for no fever than four species descended.

Pedro Trebbau also reported to me that he had figure the coast of Aragus and the Distrito Federal went of Caracas on Feb. 19, 1981, in search of a downed abstant. The flight covered the shoreline from Maiquetia to Puerto Cabello. However, despite on internive visual search of the coast and water surface from a low at-tifude, no traces of sea turbles or their nests was sean.

A more positive observation was reported by Leopoldo Garele of the Parque Zoologico "El Pinar" in Caracas Gentle reported that in the course of an assist survey in May 1981, he had observed a group of green turbles assimating in and set of a brench through a limestone reaf offshere from Las Belims, in the Distrito Federal between Chichrish in a and Carlo La May. The turbles were astimated to be between 50 and 100 cm. in carapece length, and were between 9 and 18 in number, at feert five being of adult size.

rear's, and small beaches; small groups of people teen on \boldsymbol{m} of the best beaches.

- 12 -

- 14 -

			of the best beather.
		10.11.30	Cliffs with more beach, and extensive coconut groves. Passed
	FLIGHT LOG: Caracas west to Paraguana Paninsula	10.11.50	beach in thems of the Chichicivishe Legoon.
SUMMARY OF	LFIRM I FOR: Create past on Landania	10.12.42	Chichiriviche - coastel town. Long, empty beach after the
		10.12.42	town, with cocumus plantations.
DATE: July 18.	, 1881		More basch and coconut plantations. Much driftwood on
	· · · · · · ·	10.15.30	Acre.
PILOT: Luis Ar	turo Aysis M.D.		Beca de Toyuco (coestal town). Muddy weter west of river
		18,16.10	mouth; much driftwood on beech. Beech flat, complement,
COPILOT: Pedi	e Tretter D.V.M.		with flat land behind beach. Highway 1/2 mile inland.
CORSERVERS:	Peter C.H. Princhard, Ph.D.		One scarlet libis mon.
	Robert McMorris	10.19.40	Ban Juan de los Cayos (coastel taum). Beachfront develop-
	Leis Armeo Aela Jr.		ment. Yery wide beach beyond town, with development.
'			Coconus plantation. Two scarlet fail seen.
**************	per Twin-Engine Low wing Moneplane; Registration YV-1562P	10.21.60	Beach wish natural vegetation flow scrub forest); proding
AIRCRAFT	bit. 1860-Fideric Con. anni arturches ' and an outer		giffis; muddy weter.
		10.25	Long beach with few huts, and coconul grove.
(This type of a	rerult was less than ideal for wrist surveys, being rather fast and	10.76.10	Man stills, narrow beach, Water still muddy.
with low wings.	so observers were forced to sit in the resumost souts and look		Breat town, Circles until 10.29. Five scartet this
hackwerds).		10.27 1/2	Ciff
		10.30.24	Gesch with human footprints.
		10.32	
\$26 a.m.	Take-off, El Centro Airport, Caracas. Required by air traffic	10.32.40	Huge excenut grave on point.
	regulations to fly over high mountainous section west of	10.36	Beach with huge cocunut grove.
	Caracas; descended to observation stritude near Puerto	10.38.40	Good beach.
	Cabello.	10.36	Good beach, with hill behind; some excerns paint.
8.46	Chiffy and forces assured hills, with assurbanch yellow sand	10.20	Long beach, high dunes, according some muckly water.
	basches, retainedly or completely ineccessible; some people	10.41	blare bruch, eacurum. Streeks of Huddy water in eac.
	hearthat.	10.44	Puerra Curreratio (cosses city with airport). Much beach.
0.46.10	Puerto de Cata. Sondy Bay with development including		Flight becoming turbulent. Cliffs, cactus.
	tup highrigg.	10.54.30	Londed at Caro pirport.
0.40.60	Langer boach but with soon bohing.	11.30.16	Took off from Coro; headed north along Paraguana Panin-
9.49.70	Appetur quived beach, instated. Still forest-covered behind		sule. Flight will rough and turbulent, Long rach-bordered
BARTO.	east. Bahis de Turismo - some bouches in boy, but small;		basch slong neck of peninsule, stuch sand, dunes, etc. High-
	durating messly racks. Steep cliffs.		very pheart 300 years inland (4-lane with median).
	Manager injet with complex parter. Into Large and felo	11.37	Mary beach, without ruck framence; Nighway becomes single.
9.53.15	Alexinate beaches plans southern shores, with yeshimmen	11.30	Dry seh begrone inland. Endless beach - looks good for
		*****	turning but no tracks.
	and vecesioners.	11,40.55	House and hors on brach.
9.55.45	Puerso Cabello. Large part sity.	11.41.30	More house and hore; also off-reed vahicle tracks.
9.57.20	Beaches extend outside city, but in many areas framed by	11,42,80	Adicora (cosmai town); beachfrom development.
	racks (an seement side).		Town, beach development, legistri.
0.57.53	Wheeked ship.	11.44	Officing racks and rarf. Town an easy. Whate punincula
0.68.23	Comput factory.	11.45.23	white all the present for two instead pasts of great aft-
0.58.45	Relinery. Beach storts after relinery.		
9.59.25	Power station with ripros-bardered capting water channels.		thud: (2722 feet).
10.00	More beach; another refinery.	11.47	Huge sand flore, real-franted beaches.
10.01.18	Boco de Yaracuy famali town at river mouth). Bosch front	11,48	Town. Turbulance gessing worse.
	development, bothers. Booch hars until 10.03.21.	11.48.50	Bach gives very to rect.
10.05.00	Bace de Aras - brechfront town. Beschirom development,	11,61.40	Unde beach, sandy point, looked racky patches. Tracks of
	highway. Developed all the way to Tucatas.		valuicing and people, hurts on breach.
10.07.20	Tucacas, Managenes and proof basches. Flow over Morresoy	12.02	Beach from development.
	Masternal Park - pasensive complex of mongrove Islands, could	12.00	Climb, to creat Golfete de Caro; no turzias seen and teo
			turbulent for motor, so continued fort and at high aftitude
			no Manusiaha

		0.27.15	Lagoon begins. Narrow beach strip between lagoon and sea,
	and the second of the State of	6.27.15	
SUMMARY OF	FLIGHT LOG: Curacas east to Guirla, west to Isla Margarita	0.30	Development ends but coconut grove continues.
		8.30.20	Coconut grove ends.
Date: July 24,19	61	9.30.50	Sandbar at entrance to lagoon, with brown and muddy
		#.30.50	
Pilot: Carlos Pale	WET .	0.34.30	River mouth, muddy effluent. Next legoon begins. Beach
		4.24.30	and the second of the second pairts, review strip of
Observers: Peter	C.H. Pritchard, Ph.D.		vegetated dunes between the sea and legoon. No develop-
Ledy	Cecitia Acosto		many carrie tracks.
		9.37.30	Aircraft forced to accend to higher aftitudes over Puerto
Aiveraft: Cessna	182 High-wing, four sen monoplane.	9.37.30	Action Board continues uniformity.
		9.39	have minimal amount much with efficient of muddy water.
Take Off Time:	La Carlota (Caracas) 9:43 e.m.	6.37	Had to fly still higher as we approached Barcelona (Military
·			Rem)
		8.41	the street makes much predictive had bush behind.
Required by flip	ht traffic regulations to fly over mountains east of Ceracas directly		the beach sides visible inlend from present beach. Beach
to Houseols M	uch tight cloud at 5,000 feet, scattered higher cloud.	8.42	tooks excellent but we were too high to see in detail.
	•		Barcelone. Aircraft at 6700 feet. Big port city, with complex
		9.50	islands offshore. Beach ends at Bercelone.
8.03 a.m.	Descending to Higuerote. Long beach extended from point		sally islands, with very little beach and what beach does
	north of Higuerote, with considerable beachfrom develop-	0.63	exist covered with hurs, Islands look dry and starile, with
	ment.		enerte unnetitifit.
6:06.30	Wide beach with much driftwood. See brown and muddy		Passing "Isla Caracas" with some small uninhabited crescent
	with efficient from rivers. Inland flat, undeveloped, with	9.50	beaches, Islands again hilly and arid.
	acattered green trees near the coast becoming thicker inland.		A few innerted croscont beaches visible before Comené.
9.07.1D	River mouth; muddy effluent. Beach otherwise continuous.	10 02	Flying over tip of Peninsula de Araya. A few beaches around
9.07.45	Small coastal sown, low density, with recreational beach.	10.05.30	tip but sporadic development and very dry inland. Flight
	One or two high-rises, scattered development, several basch		path along southern shore of Peninsula de Araya.
	access roads.		Town with boats and pier. Coast with dry hills; weter dark
		10.07.02	blue and looks deep. Some dark, gravelly beaches - do not
9.08.50	River mouth. Recreational basch, extensive coconut groves		look suitable for turtle naming. Rad, graded hills with an-
09.50	End of beachfront development. Some young coconuts		eramely program undertified.
	plented behind beach. Wheel tracks on beach. Swemp inland,	10.11.10	Entrance to small inlet or boy. Water still looks dark blue
	with meny dead trees.	19,11.10	and deep
9.11.25	Town at entrance to legoon. More beach. Water from RM	10 14	Hills becoming more densely vegetated and fertile. Decasional
	muddy. Some coconut proves. Durie vegetation and open	18 14	wayish, gravelly, narrow braches, occasional coves with
	water in placemating parallel strips behind beach, with lagron		\$4.000
	full of mengrave islands	10.17	Bearing persons leaves and send becoming more yellow: Very
B.13.25	Coconut groves continue, with some beach houses. Many	10.17	tow energy system, well pronected, with no visible waves.
	frigore birds and boobies around sucreft.	10.17.50	Smell fishing villege.
9.17	Lagoon ends in a series of mangrove islands in long strips.	10.19	Hills becoming tower, occasional legoons, shoreline made up
	Beach and coconut plantations continue		of beaches and maneroves.
9.17	Fresh sursie track seen, possibly green turtle	10.21.30	River mouth, small town, many fishing boots (small , open
9,19	Many frigate birds.	102.30	type).
9.19.15	Small town situated on a river mouth.	10.22.44	White wands point with self legoon. Legoon terminates in
9.70	River mouth, more coconut groves. Tractor tracks on beach.	1444	trangroves. Brown water with inflowing rivers and muddy
0.21	Shrimp boat seen about one mile offshore. Huge coconut		mershas.
	grove extends about one mile inland. Plane getting too high-	10.26.30	Overland croming to Gulf of Paris. Some excellent imset .
	descends from 600 feet to 400 feet.	10.29.30	minforest visible to left.
0.26.10	Playa Pintade airport. Small city, more beach (medium -		The state of the s
	energy wave action, yellow tand).		

16

. 17 .

10.37	Corupano Airport visible several miles due north. Countryside		
	hilly, covered with nice forest.		
10.41.10	Ffying over £I Piler.		
10.44	Dense forest dominated by a species of fall palm. Hills to left.		
10.45	Extensive swamps.		
10.47	Coestal swemp forests, intact on right side of aircraft (i.e.		
	to south), with brown estuaries. Gulf of Paris - muddy,		
	brown water. Mangrove and hardwood bordering shoralines,		
	Insect for miles inland on both sides. Very nice.		
10.53.45	Flying along south side of Peninsula de Peria. Signs of countal		
	erosion - tell mangroves learning over at shoreline.		
10.54	Mud flats. Cloud very low (1,000 feat).		
10.56 30	Dramatic line in water between muddy river water and dark,		
	class, tan-colored sea water.		
10.58	First small beach seen.		
10.50	Several small sandy beaches, several putflows of very muddy		
11.00	wester.	11.49	Beach.
	Narrow yellow beach fairly continuous.	11,50,35	Five beaches, two with houses. Cliffs behind
11.02 11.03	Costal village. Another village. Continuous nerrow sendy beach, with	11.63	Lean street, beach in cove.
11.023	examp forest behind. Port of Güiria visible, with breekweters	11,54.30	El Morro de Puerto Santo flown at base o
	to create harbor. Forest surrounds, with tall Cereus eacti	10.00.20	peninsula; fots of boats in herbor in wester
	i propre repropr. Porest auriquings, with this Cereto Escri Visible.	11.57	Passing Carupano offshore.
11.08	Landed at Güiria. Talked with a one aread informant at air-	11.60	Puning long beach behind Carupano Som
11.08	port, who said that there were a lot of turtlet around Guiria,		3.4 very long beaches (1-3 miles each).
		12.02	Deep cove with three beaches. Steep hills
	and both the Carey and one other species nested in the area	*****	forest.
11,24	eround August. Take-off from Güirie: went north across peninsule to north	12.03	Town in cove
11,20	coast. Peninsula is thickly covered with rain forest and slopes	12.05	Turnle Track on end of beach. Two boards
	up to a ridge near the north speet which plungs abruptly		large zircle net, about 80 yards in diamete
	into the see. Thick clouds over the fills, Occasional, totally	12.05.42	Town in deep, wide core.
	Bolated therefied buts.	12.08.30	Several beaches separated by rocks. Passer
11.33	Reach north cost. Small cove basches with wave action	12.23.20	copate (peninsula) and gained height for f
11.30	visible even from high attitude. Water deep and class.		Severe scidic, burning smell developed du
11,34,13	Turrie Track (frash). Several beaches with small villages		In Margarita it transpired that the bettery
	hehind.		and so hat that the plastic fittings were m
11.36.51	Another Turtle Track.		and the other observer abandoned the fli
11.38	Another Track. These appear to be medium-sized fresh		called for a pickup truck for a boom to st
	nesting tracks, probably groups but possibly hawkshills.		eetur :ed to Caraces.
11.38.25	Another Track.		
11,39.50	Another Track.		
11.39.50	Long beach with huts at point. Wills behind, mainly rock		
	elitis behind beech.		
11.41	Small sown, beaches. Btill steep hills plunging down to the		
	RRD.		
11.43	Fresh mast at end of beach.		
11.43.30	Village.		
11.44.30	Large village, beach, steep rocky lelends.		
11.48.40	Smell village, beach.		
11.48	Village and beath, with rocks, many boats (about 30) off		

BURVIVAL GUTLOOK FOR VEHEZUELAN TURTLES

For many tracelless, the same taken of goals having an entering activities to specificate the special goals and stage to the special goals and special major deficient angular probabilities of the special should be special goals and special special goals and special special goals and special
The partic colonies that lead partially in Venazusha waters, the Torragace gain assisting pround. The indept are possiblely particularly with protecting an independent of the consisting pround. The indept are possibly printiplely theoremial by into dealed capture. The indept are possibly printiplely theoremial by into dealed capture. The indept are possibly particularly theoremial that is because off the Endowary school and dealers of the Endowary print of book of grantification as the resting based as Ellenti, Sariegou, deving the nearty years of book of grantification, as to a shift of the resting that was savely then the according best in Ellenti to better risks to the order of the resting as the water independent of the resting as the substitute of the restinguish that the activities of the restinguish are disturbed, showing an effective the substitute of the restinguish are disturbed.

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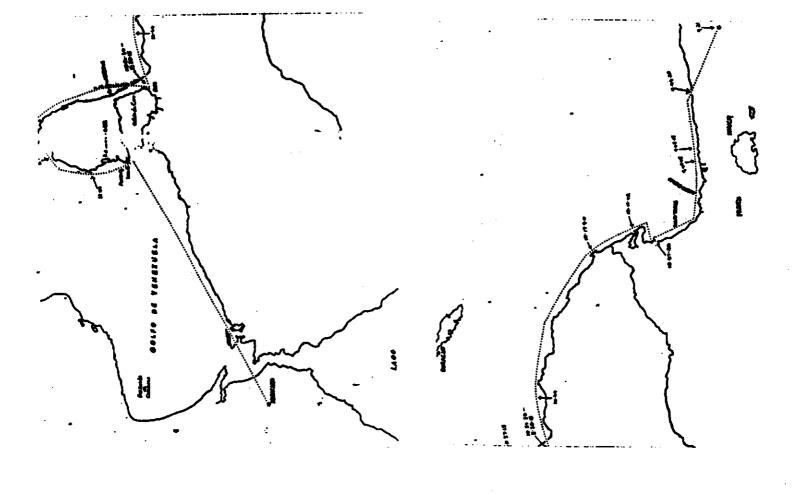
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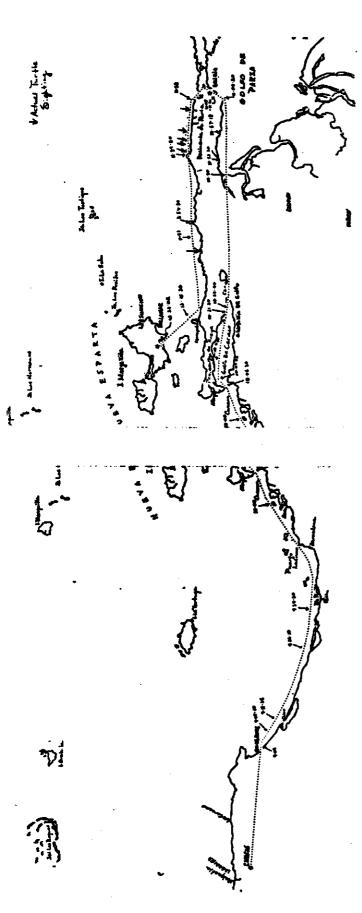
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These control laboral favor much apparently underschad banch and equacit habitet for the banch, and positively defined on apparently surface that surface are then.

It is due strongly excessmented that the existing saudy and conservation pro-





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