

FISH AND WILDLIFE SERVICE

UNITED STATES DEPARTMENT OF THE INTERIOR

**REPORT ON THE MEXICO / UNITED STATES OF
AMERICA POPULATION RESTORATION PROJECT FOR
THE KEMP'S RIDLEY SEA TURTLE, *Lepidochelys kempi*,
ON THE COASTS OF TAMAULIPAS AND VERACRUZ,
MEXICO. 1997**



GLADYS PORTER ZOO



DECEMBER 1997

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RESTORATION PROJECT FOR THE KEMP'S RIDLEY SEA TURTLE,
Lepidochelys kempi, ON THE COASTS OF TAMAULIPAS AND VERACRUZ,
MEXICO. 1997**

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PERMITS

This work is conducted under the auspices, and in coordination with Mexico's Foreign Relations Secretariat (Secretaría de Relaciones Exteriores); the Environment, Natural Resources and Fisheries Secretariat (Secretaría de Medio Ambiente, Recursos Naturales y Pesca); and the Public Treasury and Credit Secretariat (Secretaría de Hacienda y Crédito Público) Customs (Aduana) Branch.

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For the tagging of 10,000 Kemp's ridley (*Lepidochelys kempi*) hatchlings and the exportation of 180 hatchlings of the same species:

Pesca de Fomento Permit No. 170497 - 213 - 03 - 1027

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U.S. CITES Import Permit No. 675990 (valid until 030998)

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1997 KEMP'S RIDLEY (*Lepidochelys kemp*) POPULATION RESTORATION PROJECT

1997 was the twentieth year of a bi-national program in which Mexico and the United States of America cooperated in an attempt to recover the nesting population of the world's most endangered sea turtle, the Kemp's ridley, *Lepidochelys kemp*.

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In Rancho Nuevo and Barra del Tordo:

Scouts from Tampico, Ciudad Madero and Ciudad Valles, coordinated by Felipe

Romero Gamboa, and students from Cet Mar No. 9 in Ciudad Madero

INTRODUCTION

Of the eight species of sea turtles in the world, the Kemp's ridley, *Lepidochelys kempi*, it's the most vulnerable and endangered. It is also the smallest sea turtle and the only species which nests primarily during the daytime. Because of its critically low numbers, the Kemp's ridley, called "tortuga lora" in Spanish, is also considered to be a conservation dependant species.

This sea turtle has received continuous attention on the part of the Mexican government since 1966, when the National Program for Research and Conservation began. In 1978, a collaborative bi-national program between Mexico and the United States was developed to try and restore this species' population to a self sustainable level.

Sea turtle research and conservation in Mexico was formalized in 1962 with Instituto Nacional de la Pesca (INP) then named Instituto Nacional de Investigaciones Biologico-Pesqueras (INIBP) being the lead agency. Conservation efforts for the Kemp's ridley were initiated in 1966; the project began on the beach near the ranching community of Rancho Nuevo, in the municipality of Aldama, Tamaulipas. This locale is the only one in the world where massive nesting aggregations, "arribazones", of this sea turtle were and are known to occur. Because of it being the only known major nesting beach for the "tortuga lora", this beach was declared the first National Reserve for the Management and Conservation of Sea Turtles in Mexico on July 4, 1977.

From 1966 to 1987, conservation efforts focused on the area of Rancho Nuevo with the camp located first at Barra Calabazas and then at Barra Coma where it presently exists. In 1978, the U. S. joined with Mexico at Rancho Nuevo. In 1988, the program, now a bi-national one, expanded to the south to Barra del Tordo with a camp at Playa Dos. In 1989 a third camp was established to the north at Barra Ostionales on Rancho Los Pericos. The north camp's location was changed 10 kilometers to the north of its original location, to near the town of Tepehuajes in 1996 for logistical reasons. In 1996, in coordination with the Tamaulipas' State Government, as in Tepehuajes, a camp was established in La Pesca. CRIP Tampico and CetMar No. 9, have also expanded the project to include the beaches of Tampico and Altamira. This year, also in coordination with the Tamaulipas' State Government, Playa Bagdad and El Mezquital, in Matamoros, were also surveyed during the latter part of the season; and the area of Lechuguillas, municipality of Vega de Alatorre, Veracruz, was protected in cooperation with CRIP Veracruz.

The scope of the project this year was essentially the same as in preceding seasons. The United States field assistance group, the INP and Tamaulipas' State Government crews, under the supervision of trained sea turtle biologists aided in beach patrols ("recorridos"), tagging turtles with monel metal tags in the trailing edge of the left foreflipper, and passive integrated transponder ("pit") tags were also injected into the muscle tissue through the dorsal side of the foreflipper. 835 monel metal tags were applied on the nesting females and 505 specimens were tagged with "pit" tags. Relevant data were recorded; subsequently, most of the egg clutches were translocated to facsimile nests within protective corrals.

This season, 2,340 nests were protected, 2,270 in corral, 42 in styrofoam boxes and 28 *in situ* for a total of 229,802 protected eggs. 149,567 hatchlings were released from the coasts of Tamaulipas and Veracruz into the Gulf of Mexico.

In 1997, 361 turtles were scanned with a magnetometer at the Rancho Nuevo, Tepehuajes and Barra del Tordo camps in an attempt to detect the non-magnetized wire tags used in headstarted / experimentally imprinted turtles, and as in previous seasons, all beach workers were trained to look for living tags from the National Marine Fisheries Service Headstart Program carried out in the Galveston laboratory, but, as in previous years, wire tags were absent in all scanned turtles and living tags were not verified during 1997.

We wish to thank the U. S. Department of the Interior, Fish and Wildlife Service, for supporting the major part of the U. S. assistance portion of this project. Special thanks go to Nancy Kaufman, Regional Director, Region 2, U. S. Fish and Wildlife Service, Albuquerque, New Mexico, Leslie Dierauf, Acting National Sea Turtle Coordinator for USFWS, and Richard A. Byles, former National Sea Turtle Coordinator for USFWS for their interest and support.

The Texas Parks and Wildlife Department again was instrumental in the issuance of the necessary permits for the importation and transportation of Kemp's ridley hatchlings within the state of Texas. Thanks also to Angelica Narvaez, from the U. S. Embassy in Mexico City, for working with her Mexican counterparts to secure several permits needed to facilitate the movement of equipment and personnel.

Sea Turtle Incorporated of South Padre Island, Texas, provided financial assistance for the conservation efforts at the Barra del Tordo and Tepehuajes camps. A sincere thanks goes to Patty Marshall and the Phillips Petroleum Company, for providing two much needed vehicles and their continuing support for the sea turtle and environmental education programs. This effort to involve the local communities in the project's work reached more than 2,000 adults and children. A report on these programs is included herein. The van provided by the Southwestern Bell Telephone Company was again used in the sea turtle education camp located at Altamira, Tamaulipas. Early on the season, biologist Ignacio Flores, in charge of the camp at Altamira, located and protected a leatherback (*Dermochelys coriacea*) nest which produced 25 hatchlings; Mr. Flores also reported that a nest of this species was destroyed by high tide in the last week of March. Also, a leatherback false crawl was recorded south of the Barra del Tordo camp, near Barra Chavarría. These data, along with *Caretta caretta* and *Chelonia mydas* nesting information is included elsewhere in the report.

Dr. David W. Owens and the Sea Grant program of the Texas A & M University helped immeasurably with research efforts and resources for the work. Dr. Owens, along with Heather Kalb and students from the Biology Department at Texas A & M, College Station, Texas, presented the second reproductive biology course at the Rancho Nuevo field station. This workshop, focusing on laparoscopy and ultrasound techniques, was well attended and enthusiastically received by Mexican sea turtle biologists and veterinarians from several conservation programs in the Gulf of Mexico and the Pacific Coast who attended this course in the last week of May.

A summary of this second reproductive biology course, as well as the data from the turtles examined in the 1996 season is included in the appendices.

In the last part of the 1996 season a percentage of the annual production of hatchlings was lost due to hurricane "Gabrielle" passing near the Rancho Nuevo field station and causing the flooding of the protective corral. This season, a formal hurricane preparedness plan was implemented; the details of this contingency plan are included in the appendices.

This season, the transfer of 180 Kemp's ridley hatchlings to the U. S. was achieved thanks to the help of Dr. Roger Zimmerman, laboratory director, Dr. Charles Caillouet, and Theodore Williams of the Galveston National Marine Fisheries Service Laboratory. Bradley A. Robertson, a fishery biologist from NMFS, went to Rancho Nuevo to coordinate the transfer of 180 hatchlings which were to be exported to the U. S. In addition, Mr. Robertson coordinated and instructed turtle camp personnel in mass tagging techniques. Ten thousand hatchlings were tagged this season. The Mexico and U. S. crews from the three main camps, along with students from Universidad del Noreste in Tampico, Tamaulipas, participated in this technology transfer.

A very special thank you goes to Wayne N. Witzell of NMFS for his continuing enthusiasm, hard work and encouragement at the camps.

This season, industry provided considerable support to the project. Thanks to ZB Industries and Mr. John Blazeovich for providing a Jeep which proved essential during "arribazones" for transporting eggs and personnel. The National Fisheries Institute, and in particular Mr. Dick Guting, have been instrumental in providing needed resources for equipment and staffing, particular thanks to Mr. Harley Londrie for his interest and help. Rich Sea Pak donated 1,000 thick-walled styrofoam ice chest to be used for the sea turtle nest evacuation plan. Mr. Dick Monroe and the Darden Restaurant Foundation provided resources to help with equipment and support for beach personnel. The Texas Shrimp Association donated an All Terrain Motorcycle (ATC) to help with beach reconnaissance. This broadening base of support made this year's expanded effort possible and the work successful.

Media provided excellent coverage this season. Highpoints included the excellent coverage on the CBS evening news; and locally, Richard Moore produced an outstanding three segment documentary which was aired on KGBT, Channel 4. Texas Sea Grant Magazine, Texas Shores, published an outstanding overview of the Kemp's ridley program.

Very special thanks go to Mr. Les Hodgson, Mr. Robert Bartlett, Mr. Charles Solitaire and Mr. Ralph Hacker of Marco Sales at Brownsville, Texas; as well as to Don Silverio Di Costanzo of Impulsora de Pescados y Mariscos at Tampico, Tamaulipas for all of their support and hard work to involve the fishing industry in the restoration of the Kemp's ridley sea turtle population.

RANCHO NUEVO HATCHLINGS FOR RESEARCH 1997

Nineteen-ninety seven was the twentieth year in which *Lepidochelys kempi* eggs or hatchlings have been donated to the United States of America as a part of the effort to conserve this species. On the morning of July 19, 1997, in Rancho Nuevo, municipality of Aldama, Tamaulipas, Mexico, officials of the Mexican Government's Instituto Nacional de la Pesca, executed documents donating 180 Kemp's ridley hatchlings to the United States of America.

The planned movement of the hatchlings to the National Marine Fisheries Service Laboratory in Galveston, Texas, was coordinated by camp biologists and administrators to correspond with the hatching dates of the May 30 "arribazon", when more than 300 turtles came ashore to nest at Rancho Nuevo.

This season's hatchlings, as in preceding seasons, are to be maintained by the National Marine Fisheries Service Laboratory in Galveston, Texas for non-invasive scientific research geared towards enhancing this species' survival.

METHODOLOGY

The egg clutches were closely monitored for hatching activity. Once on the surface, the hatchlings began their sea-finding frenzy. They were then allowed to crawl down the beach within "runways" made of naturally occurring beach materials and into the surf to allow for a natural hatching sequence. Shortly after the baby turtles had entered the water, they were captured with small aquarium fish nets and placed in plastic trays measuring 20" x 14" x 6" high and ventilated with ¼" holes in their sidewalls. Three hundred hatchlings were imprinted, and once they were taken to the camp, Bradley A. Robertson, of the National Marine Fisheries Service Laboratory, separated and placed ninety baby turtles into each of three plastic trays.

Following the official donation, the hatchlings were transported overland to Brownsville, Texas, in an air conditioned vehicle provided by Mr. Les Hodgson of Marco Sales in Brownsville.

Patrick M. Burchfield of the Gladys Porter Zoo in Brownsville, and Bradley A. Robertson of NMFS, represented the U.S. and cared for the hatchlings during their transport to Brownsville, where they cleared customs and U.S. Fish and Wildlife Service requirements. The hatchlings were then flown by commercial jet to Galveston, where they arrived without any losses.

MASS WIRE TAGGING OF KEMP'S RIDLEY HATCHLINGS

In 1996, the U. S. National Marine Fisheries Service's Galveston Laboratory, the Gladys Porter Zoo and Instituto Nacional de la Pesca of Mexico, initiated mass tagging of hatchling Kemp's ridleys at Rancho Nuevo. Personnel from the three agencies tagged 3,336 hatchlings with non-magnetized wire tags. The tags (manufactured by Northwest Marine Technology, Shaw Island, Washington) were injected into the right foreflipper. The plan to wire-tag up to 10,000 more hatchlings in the left foreflipper in 1997, in order to distinguish them from the 1996 year-class was carried out in the third week of July and coordinated by Bradley A. Robertson, from the NMFS Galveston Laboratory. The following table indicates the numbers tagged and released by day:

Date hatched	Date tagged	Number tagged	Date released
07/15/97	07/15/97	862	07/15/97
07/16/97	07/16/97	3,548	07/16/97
07/17/97	07/17/97	2,304	07/17/97
07/18/97	07/18/97	2,288	07/18/97
07/18/97	07/18/97	1,000	07/19/97

Total : 10,002



From July 15 to July 18, members of the INP and Gladys Porter Zoo crews started their day wire tagging the hatchlings born just a few hours earlier. The NMFS Galveston Laboratory's plan for the mass wire tagging estimated that it would take two weeks to complete the tagging, the short period in which the tagging was actually accomplished was in great part due to volunteers from Universidad del Noreste in Tampico, Tamaulipas (photo courtesy of Sheryl Shea)

KEMP'S RIDLEY TURTLE CONSERVATION CAMPS SUMMARY, 1978 - 1997
(USFWS / NMFS / INP DATA, R. BYLES, R. MARQUEZ, P. BURCHFIELD)

Includes all known nests from Tamaulipas and Veracruz: nests protected, nests left *in situ*, nests taken by predators, nests not located and nests poached
 (see graphics on page 15 for detailed data on years and locations)

YEAR	NESTS	EGGS	HATCHLINGS	PERCENT HATCH
1978	924	85,217	48,009	56
1979	954	98,211	63,996	65
1980	868	82,374	37,378	45
1981	897	89,906	53,282	59
1982	750	77,745	48,007	62
1983	746	77,432	32,921	43
1984	798	80,798	58,124	72
1985	702	67,633	51,033	75
1986	744	65,357	48,818	75
1987	737	72,182	44,634	62
1988	842	83,229	62,218	75
1989	828	84,516	66,802	79
1990	992	93,937	74,339	79
1991	1,178	114,992	79,749	69
1992	1,275	120,964	92,116	76
1993	1,241	113,648	84,605	74
1994	1,562	150,169	107,687	72
1995	1,930	174,489	120,038	68
1996	2,080	191,974	119,196	62
1997	2,387	229,802	149,567	65

SUMMARY DATA ANALYSIS

Lepidochelys kemp

1997 Nesting Season

Rancho Nuevo *Began operations on April 1*

Recorded nests: 1,514

Corral: 1,469

Box: 27

In Situ: 8

Taken by predators: 10

Stolen: 0

Not located: 0

Protected eggs: 148,994

Hatchlings released: 102,131

Hatch rate: 68.5%

Tepehuajes *Began operations on April 4*

Recorded nests: 358

Corral: 345

Box: 5

In Situ: 3

Taken by predators: 5

Stolen: 0

Not located: 0

Protected eggs: 34,575

Hatchlings released: 19,488

Hatch rate: 56.3%

Barra del Tordo *Began operations on April 4*

Recorded nests: 349

Corral: 337

Box: 3

In Situ: 2

Taken by predators: 3

Stolen: 2

Not located: 2

Protected eggs: 32,654

Hatchlings released: 20,151

Hatch rate: 61.7%

La Pesca*Began operations on April 6*

Recorded nests: 39

Corral: 36

Box: 0

In Situ: 1

Taken by predators: 1

Stolen: 1

Not located: 0

Protected eggs: 3,907

Hatchlings released: 2,223

Hatch rate: 56.8%

Altamira*Began operations on April 5*

Recorded nests: 76

Corral: 53

Box: 4

In Situ: 5

Taken by predators: 8

Stolen: 6

Not located: 0

Protected eggs: 5,969

Hatchlings released: 4,182

Hatch rate: 70.0%

Lechuguillas*US Group began operations on April 30*

Recorded nests: 48

Corral: 30

Box: 0

In Situ: 10

Taken by predators: 1

Stolen: 3

Not located: 4

Protected eggs: 3,429

Hatchlings released: 1,181

Hatch rate: 34.4%

Tampico

Recorded nests: 3 (protected in box)

Protected eggs: 274

Hatchlings released: 211

Hatch rate: 77.0%

Matamoras

No recorded nests

TOTALS

Recorded nests: 2,387

Corral:	2,270
Box:	42
<i>In Situ</i> :	28
Taken by predators:	29
Stolen:	12
Not located:	6

Protected nests: 2,340

Protected eggs: 229,802

Hatchlings released: 149,567

Hatch rate: 65.0%

Turtles actually seen: 993

- 985 turtles were recorded in the coasts of Tamaulipas, 8 in the Veracruz area
- First tags (turtles with no tags or tagging scars): 516
- Recaptures: 477 (turtles with PIT and/or monel tag, and turtles with tagging scars)
- Recorded nesting frequency:

One time nesters: 613

Two time nesters: 307

Three time nesters: 59

Four time nesters: 3

False crawls: 11

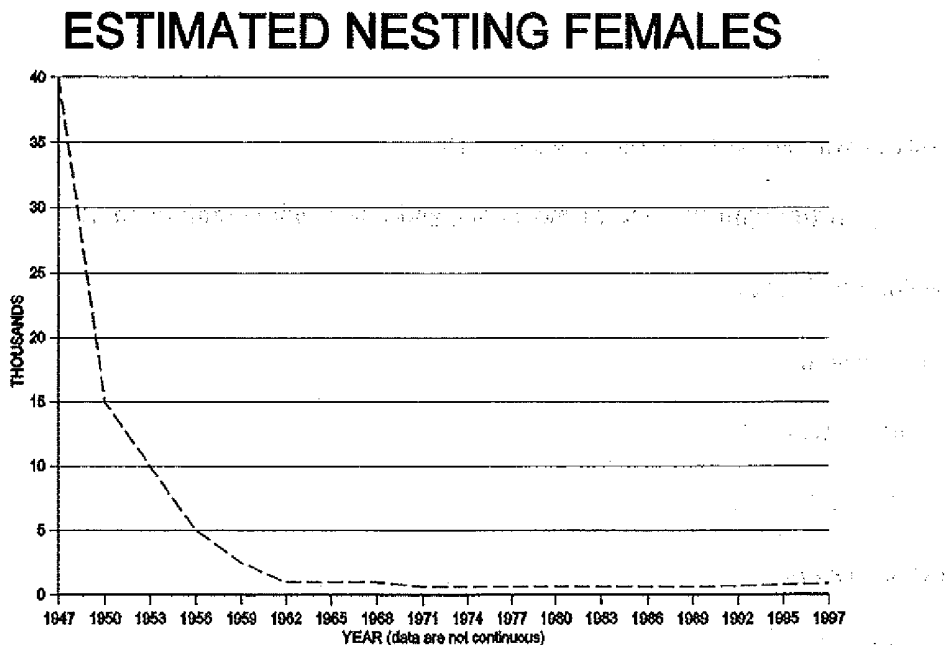
-- 962 nests were found without recording the turtle

KEMP'S RIDLEY NESTING FEMALES IN TAMAULIPAS 1947 - 1997

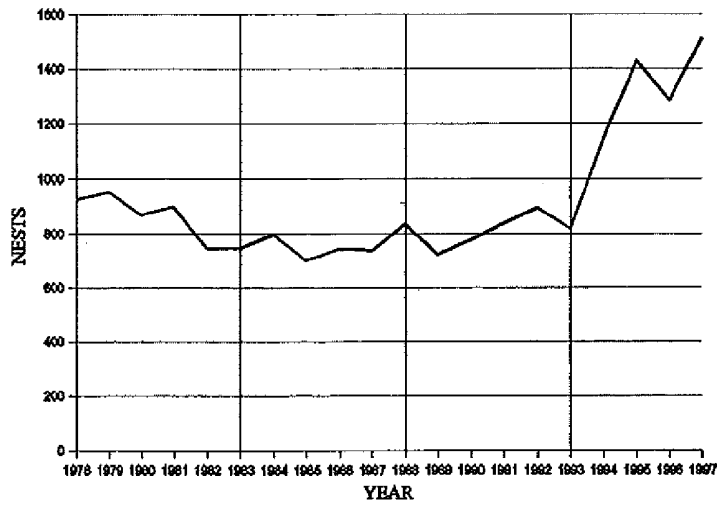
Estimates of numbers of females were the number of nests / 2.7 for 1978 - 1994.

The number of females from 1995 to 1997 was estimated through the recording of metal tags.

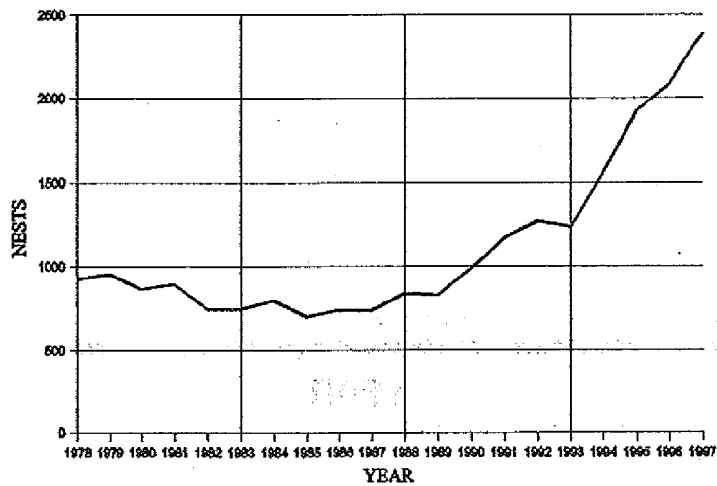
Prior to 1978, estimates were made by extrapolation from large "arribazones". The Rancho Nuevo camp was established in 1966. The conservation efforts at Barra del Tordo were initiated in 1988. The north camp, located first at Barra Ostionales and then at Tepehuajes as of 1996, began operations in 1989. The project expanded in 1996 with camps at La Pesca and Altamira, and in 1997 with a camp in Lechuguillas, Veracruz (data from Veracruz are not included in graphic).



KEMP'S RIDLEY NESTS AT RANCHO NUEVO

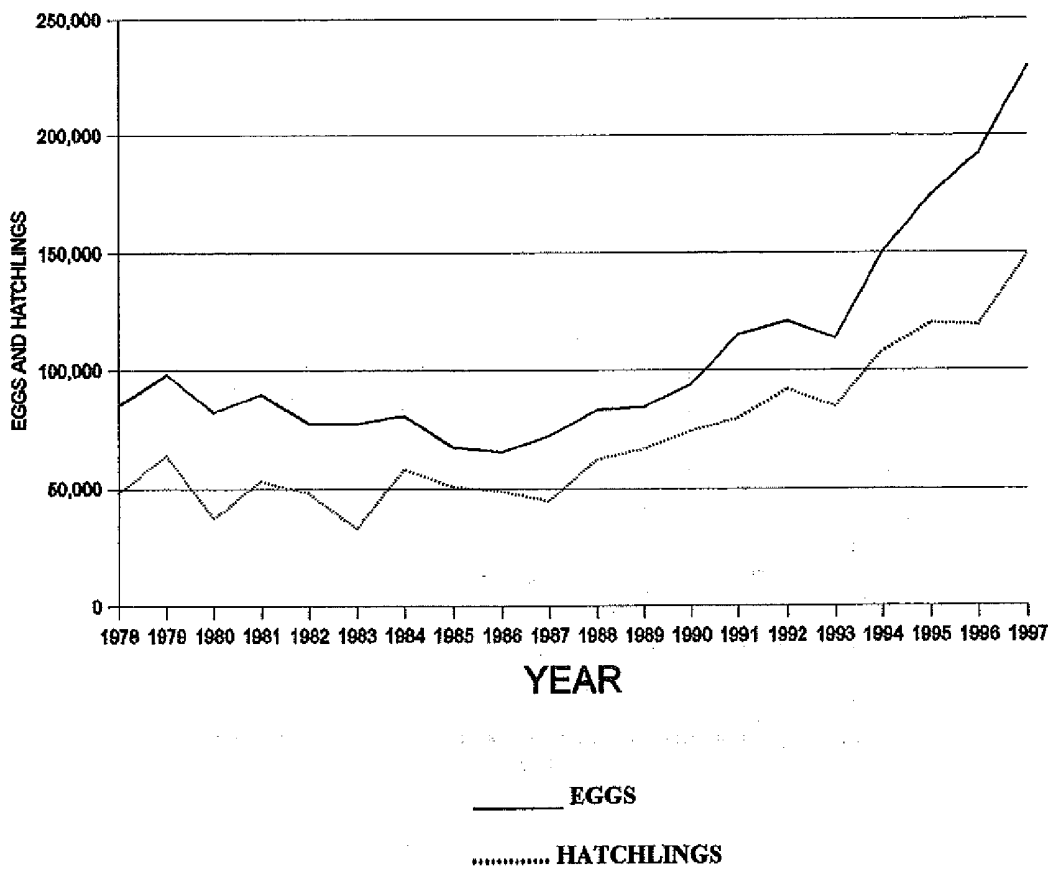


KEMP'S RIDLEY NESTS AT THE SEA TURTLE CAMPS IN TAMAULIPAS AND VERACRUZ



THE BI-NATIONAL PROJECT WAS INITIATED AT RANCHO NUEVO IN 1978. STARTING IN 1988, DATA INCLUDES NESTS FROM THE SOUTH CAMP, STARTING IN 1989, DATA INCLUDES NESTS FROM THE NORTH CAMP. IN 1996 DATA INCLUDES NESTS RECORDED IN LA PESCA AND ALTAMIRA, AND IN 1997, NESTS FROM THE LECHUGUILLAS CAMP LOCATED IN VERACRUZ.

TOTAL NUMBER OF KEMP'S RIDLEY EGGS AND HATCHLINGS -- 1978 - 1997



TAGGING SUMMARY

PIT tags

Applied: 505

335 in Rancho Nuevo, 77 in Tepehuajes, 90 in Barra del Tordo, 1 in La Pesca and 2 in Veracruz

425 in turtles with no tags or tagging scars

80 in recaptures (recapture metal and re-tag metal)

263 turtles had PIT tags from previous seasons

11 turtles were scanned with a PIT tag reader, but not tagged due to a lack of PIT tags

In total, 778 nesting females were scanned with a PIT tag reader in the Rancho Nuevo, Tepehuajes, Barra del Tordo and Lechuguillas camps (79.6% of the turtles actually seen in those camps).

Inconel metal tags

Applied: 835

564 in Rancho Nuevo, 122 in Tepehuajes, 125 in Barra del Tordo, 1 in La Pesca, 14 in Altamira and 9 in Veracruz

516 in turtles with no tags (metal or PIT) or tagging scars on either foreflipper

263 re-tags on turtles that did not present a PIT tag, only a metal tag scar on one or both their foreflippers

4 first Inconel tags in turtles with a PIT tag but no tagging scars on either foreflipper

52 re-tags on turtles with a metal tag scar, and a PIT tag from a previous season

RECORDED INCUBATION PERIOD (days)

	Corral	Box	<i>In Situ</i>
Maximum	53	61	52
Minimum	44	51	44
Average	47	53	50
N	1,969	27	8

Corral data are from nests at Rancho Nuevo, Tepehuajes and Barra del Tordo

Box data are from Rancho Nuevo

In Situ data are from Rancho Nuevo

CARAPACE LENGTH, CLUTCH SIZE AND RECORDED INTERESTING INTERVAL

	Carapace length (cm)	Clutch size	Interesting interval (days)
Maximum	77.0	161	60
Minimum	59.0	1	7
Average	69.5	99.2	24
N	993	2,300	380

Carapace length data are from all the camps

Clutch size data are from nests protected at the camps in Tamaulipas

Recorded interesting interval data are from Rancho Nuevo, Tepehuajes and Barra del Tordo

NESTING DISTRIBUTION BY ZONE

Zone	Name	Number of nests
0125		14
0124	La Pesca	16
0123		9
0122	Soto La Marina	41
0121	Punta de Piedra	55
0120	Tepehuajes (<i>North Camp</i>)	102
0119	Ostionales	160
0118	Carrizo	123
0117	Aparejo	146
0116	San Vicente	121
0115	Cachimbas	126
0114	Calabazas	160
0113	Jarcias	111
0112	Cementerio	104
0111	Barra Coma (<i>Main Camp</i>)	86
0108	Brasilito	158
0105	Brasil	379
0104	Barra del Tordo (<i>South Camp</i>)	27
0103	Estero	27
0102	Barrita	18
0101	La Boya	5
0100	Punta Piedra	46
0099	Punta Jerez	34
0098	Los Troncos	36
0097	El Arbol	30
0096	El Camaronero	51
0095	Barra de Chavarria	75
Altamira		76
Tampico		3
Lechuguillas		48

TURTLE MORTALITIES

A total of 41 turtle mortalities were recorded from March to September, 1997, in the camps located in Tamaulipas and Veracruz; 21 Kemp's ridleys, 10 green sea turtles, 8 loggerheads, and 2 hawksbills. The only recorded turtles with tags were a Kemp's ridley female in the north camp and one juvenile green found in March, north of the camp located in La Pesca, Tamaulipas (for more detailed data on this turtle see Observations of Special Interest). In most cases, causes of death were undetermined due to post mortem autolysis (CCL is the curved carapace length in centimeters).

Location	Date	Species	Observations
La Pesca	031697	<i>C. mydas</i>	Juvenile, sex undetermined, CCL: 33. NMFS tags: SST-346/347
	041097	<i>L. kempi</i>	Male, CCL: 63
	041897	<i>L. kempi</i>	Sex undetermined, CCL: 58
	042397	<i>L. kempi</i>	Sex undetermined, CCL: 73
	042397	<i>L. kempi</i>	Female, CCL: 61
	050697	<i>L. kempi</i>	Sex and CCL undetermined, mutilated
	052597	<i>L. kempi</i>	Sex and CCL undetermined
	060697	<i>C. mydas</i>	Female, CCL undetermined
	061197	<i>L. kempi</i>	Male, CCL undetermined
Tepehuajes	040597	<i>C. caretta</i>	Male, CCL: 95
	041997	<i>C. caretta</i>	Female, CCL: 59
	042197	<i>L. kempi</i>	Female, CCL: 73
	051297	<i>L. kempi</i>	Male, CCL: 69
	051297	<i>L. kempi</i>	Sex undetermined, CCL: 59
	052297	<i>C. caretta</i>	Male, CCL: 75
	070797	<i>L. kempi</i>	Female, CCL: 68. INP tag: BA-547, neck vertebrae completely crushed
	090997	<i>C. mydas</i>	Juvenile, sex undetermined, the turtle presented kyphosis
Rancho Nuevo	040397	<i>L. kempi</i>	Male, CCL: 64
	051297	<i>C. caretta</i>	Female, CCL: 67
	060297	<i>C. mydas</i>	Juvenile, sex undetermined, CCL: 39
	070997	<i>C. caretta</i>	Female, CCL: 95
	071297	<i>C. mydas</i>	Juvenile, sex undetermined, CCL: 35
	072297	<i>C. caretta</i>	Female, CCL undetermined

TURTLE MORTALITIES (continued)

Location	Date	Species	Observations
Barra del Tordo	042097	<i>L. kempi</i>	Sex undetermined, CCL: 60
	042297	<i>L. kempi</i>	Male, CCL: 63
	042997	<i>L. kempi</i>	Female, CCL undetermined
	050397	<i>E. imbricata</i>	Juvenile, sex undetermined, CCL: 36
	051697	<i>C. mydas</i>	Juvenile, sex undetermined, CCL: 34
	052897	<i>L. kempi</i>	Male, CCL: 78
	070197	<i>C. mydas</i>	Male, CCL undetermined
	082597	<i>C. mydas</i>	Juvenile, sex and CCL undetermined
	082997	<i>C. caretta</i>	Sex and CCL undetermined
Altamira	052197	<i>L. kempi</i>	Female, CCL: 67
	070697	<i>C. caretta</i>	Female, CCL: 79
	072497	<i>L. kempi</i>	Female, CCL: 59
Lechuguillas	061697	<i>L. kempi</i>	Male, CCL undetermined
	070197	<i>C. mydas</i>	Female, CCL 103, flippers mutilated

At Playa Bagdad, Matamoros, Tamaulipas, four turtle mortalities were recorded: two female Kemp's ridleys, one female green and one juvenile hawksbill, data on these mortalities is pending.

Kemp's ridley strandings in Florida and Texas

An adult female Kemp's ridley tagged with the INP metal tag AA-669 was found stranded dead (moderately decomposed) on 071997 in the town of Sunnyside Beach in the Florida Panhandle (approx. 10 miles west of Panama City Beach). This turtle had first been recorded and tagged at Tepehuajes on 042396 (stranding information provided by Wendy Teas, STSSN Coordinator).

An adult female Kemp's ridley tagged with the INP Inconel metal tag BB-047 was found stranded dead (moderately decomposed) on 110497 in Port Lavaca, Lavaca Bay in the county of Calhoun, Texas. This turtle had first been recorded and tagged at Barra del Tordo on 050397, and it was recorded again at Rancho Nuevo on 053097 (stranding information provided by Donna Shaver & Cynthia Rubio, PAIS).

TURTLES WITH DEFORMITIES AND PRE-EXISTING INJURIES

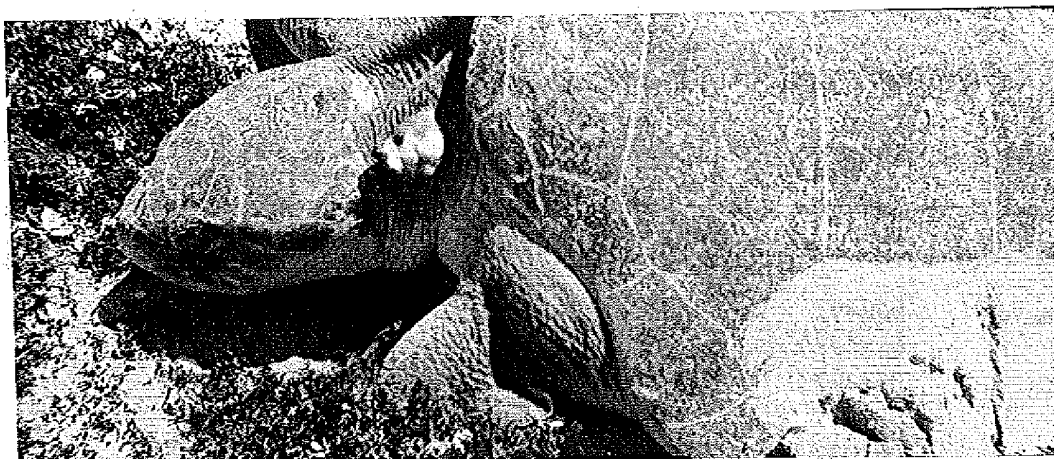
All are Kemp's ridley nesting females

Location	Date	Tag number	Observations
Tepehuajes	042697	BA-214	Fibropapillomas in neck. Also recorded in Rancho Nuevo on same date, it only nested in Tepehuajes
	051097	BA-273	Left side of carapace broken, left hind flipper mutilated
Barra del Tordo	050397	BB-047	Left hind flipper mutilated
	050397	BB-024	Left hind flipper mutilated
	051097	BB-091	Fibropapillomas in neck and left front flipper.
	062097		Also recorded nesting in Rancho Nuevo
	051097	BB-024	Left hind flipper partially mutilated
	051097	BB-090	Left hind flipper partially mutilated
	052897	BB-020	Left hind flipper mutilated
	053097	BB-098	Kyphotic
Rancho Nuevo	042697	AA-780	Carapace broken on right side
	042697	AA-974	Carapace broken on posterior side
	042697	AL-500	Carapace broken on left side
	042697	AA-658	Upper carapace broken
	042697	BA-018	Left front flipper partially mutilated
	042697/	BA-020	No rear flippers.
	051097/		It did not lay on any of the dates that it was recorded
	060797		
	050397	BA-431	Left hind flipper mutilated
	051097	BA-456	Deformed carapace
	051097	BA-080	Deformed carapace
	051097	BA-505	Broken carapace
	051097	BA-088	Broken carapace
	051097	AB-549	Broken carapace
	051097	BA-079	Broken carapace
	051097	AP-851	Left hind flipper mutilated
	051097	T-1740	Broken carapace
	051097	BA-438	Broken carapace
	051097	BA-076	Broken carapace
	051497	BA-474	Apparent fibropapillomas
	051997	BA-686	Shark bite on left side of carapace
	052497	BA-409	Broken carapace
	052497	BA-022	Carapace cracked in the middle

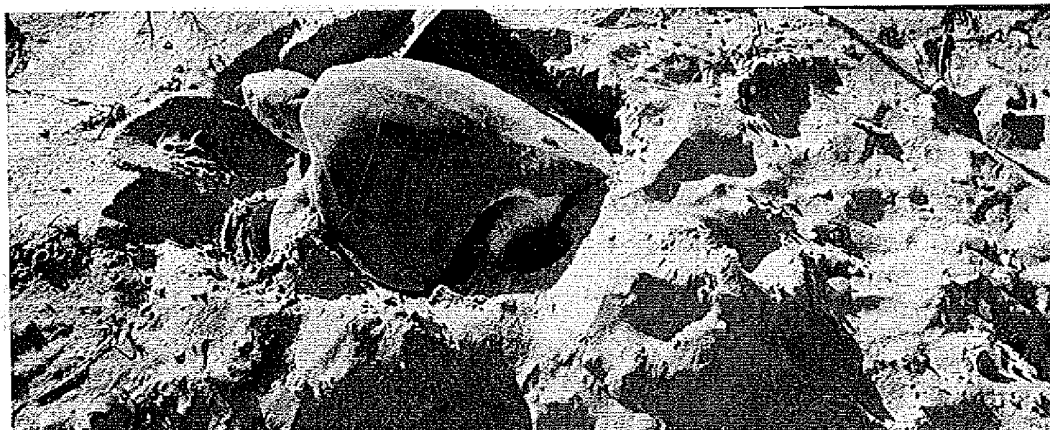
TURTLES WITH DEFORMITIES AND PRE-EXISTING INJURIES (continued)

All are Kemp's ridley nesting females

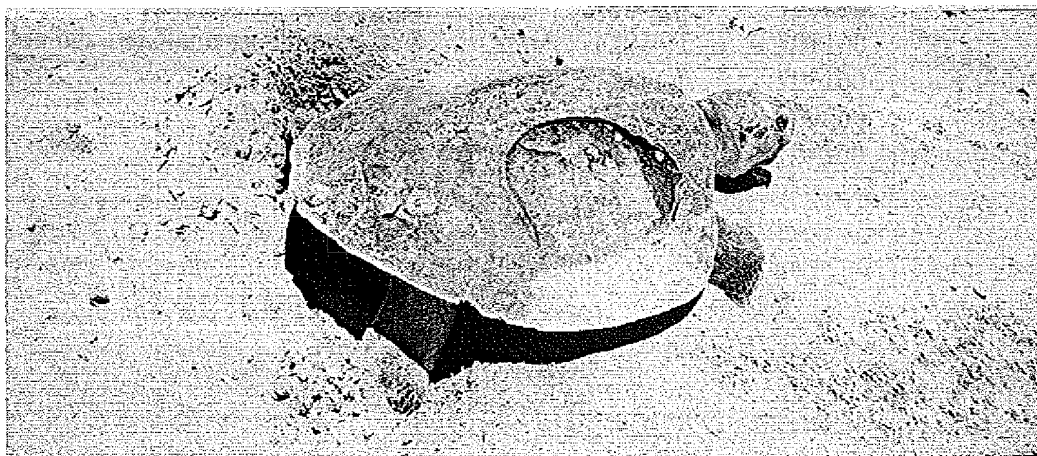
Location	Date	Tag number	Observations
Rancho Nuevo	052497	J-1599	Right hind flipper mutilated
	052497	BA-604	Broken carapace
	052497	BA-756	Broken carapace
	052897	BA-066	Broken carapace
	053097	BA-768	Fibropapillomas in neck
	053097	BA-813	Deformed carapace
	053097	BA-607	Fibropapillomas in left front flipper
	053097	AB-049	Injured beak
	053097	BB-015	Broken carapace
	053097	BA-637	Broken carapace
	053097	BA-461	Broken carapace
	053097	BA-713	Broken carapace
	053097	BA-484	Broken carapace
	053097	BB-007	Broken carapace
	053097	BA-561	Broken carapace
	053097	BA-448	Apparent shark bites on carapace, did not lay
	060697	BB-253	Apparent shark bites on right side of carapace
	060697	BA-219	Injured left hind flipper
	060697	BA-725	Broken anterior marginal scutes
	060697	BA-890	Fractured cranium, did not lay
	060797	BA-687	Broken carapace
	060797	BA-026	Apparent shark bites on left side of carapace
	060797	BA-454	Injured left front flipper
	061197	BA-024	Left hind flipper mutilated, did not lay
	061397	J-1436	Broken carapace
	062097	AP-839	Broken carapace
	062197	BB-300	Broken carapace



Five turtles presenting fibropapillomatosis were recorded this season (Photo courtesy of Gustavo Vazquez)



A turtle with an apparent shark bite is recorded at Rancho Nuevo (Photo courtesy of Gustavo Vazquez)



Many turtles presenting unknown mechanical injuries such as this one were seen at Rancho Nuevo, Tepehuajes and Barra del Tordo (Photo courtesy of Alfredo Salgado)

OBSERVATIONS OF SPECIAL INTEREST

National Marine Fisheries Service Tagged turtles

PPS-902 was tagged 1/11/89 off Cape Canaveral, Florida, during trawling work by NMFS. Recorded in Rancho Nuevo 4/26/97; tagged with the INP Inconel metal tag BA-047 in right front flipper and PIT tag 4101220612 in left front flipper. Clutch size: 120 eggs.

SSA-892/SSA-893 was tagged 5/1/94 at Sabine Pass, Texas, by Texas A & M University. Recorded in Rancho Nuevo 4/26/97; tagged with the INP Inconel metal tag BA-034 in right front flipper and PIT tag 4101164874 in left front flipper. It did not nest.

SST-346/SST-347 was a green sea turtle tagged 9/24/96 at Port Mansfield Jetties by Donna Shaver. Found dead north of the La Pesca camp (exact location not known) on 3/16/97. Curved carapace length: 33 cm. No other data have been made available.

Rancho Nuevo female recorded at Padre Island National Seashore

On June 13, a Kemp's ridley female was sighted at the Padre Island National Seashore beach, it did not nest; tagging data are as follows:

Inconel metal tag: BA-456
PIT tag: 410156502D

This specimen was first recorded and tagged in Rancho Nuevo on May 10, laying 92 eggs. At that time it did not present tags (metal or PIT), or tagging scars.

INFORMATION FROM OTHER NESTING BEACHES

In 1997, nine confirmed Kemp's ridley nests were found on the Texas coast. Five were found by visitors and four by Padre Island National Seashore (PAIS) turtle patrollers. One of the nine nests was located on Mustang Island, seven on North Padre Island, and one on South Padre Island. The 968 undamaged eggs from the nine nests were transferred to Padre Island National Seashore for protected incubation. Hatching success was 92.6%. Three hatchlings died prior to release and the remaining 893 were released at PAIS.

(Information provided by Donna Shaver-Miller)

Chelonia mydas

Data are only from Tamaulipas

Location	Nests	Eggs	Hatchlings	Percent hatch
La Pesca	5	652	144	22.0
Tepehuajes	18	1,658	1,114	67.1
Rancho Nuevo	16	1,932	674	34.8
Barra del Tordo	15	1,522	442	29.0
Altamira	5	640	248	Hatching data from one nest is pending

Caretta caretta

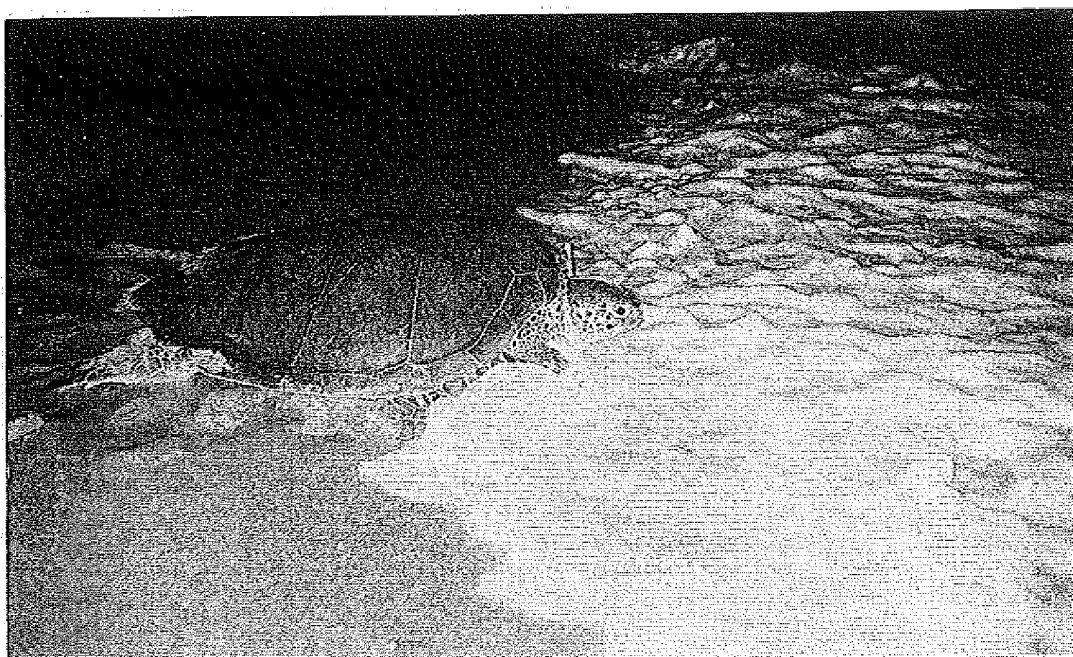
Data are only from Tamaulipas

Location	Nests	Eggs	Hatchlings	Percent hatch
Rancho Nuevo	5	520	130	25.0
Barra del Tordo	1	103	76	73.7
Altamira	1	85	63	74.1

Dermochelys coriacea

Data are only from Tamaulipas

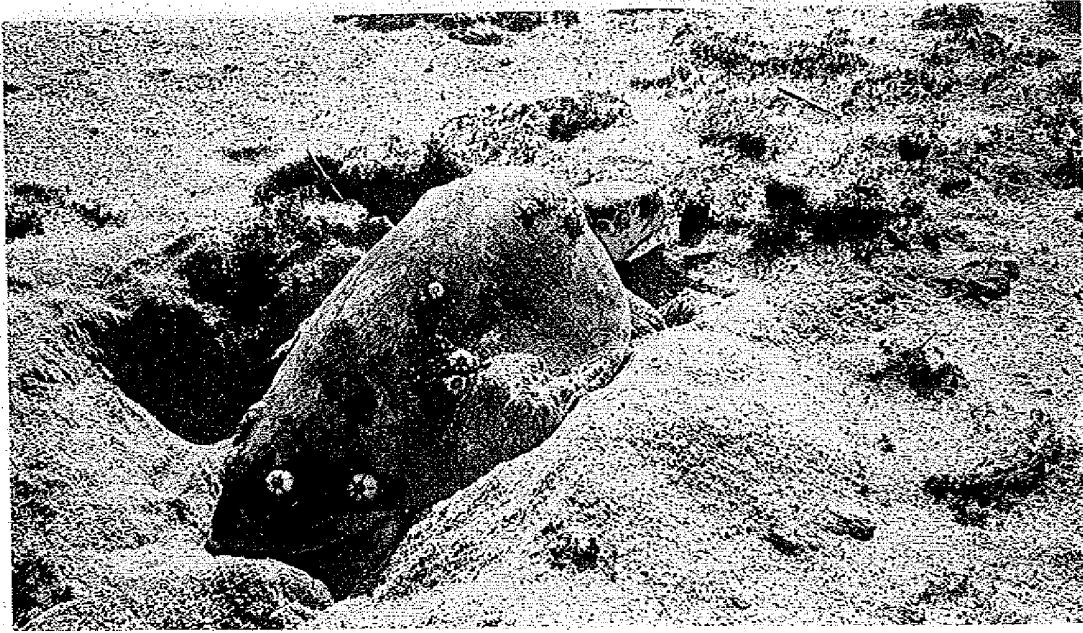
Location	Nests	Eggs	Hatchlings	Percent hatch
Altamira	1	106	25	23.5



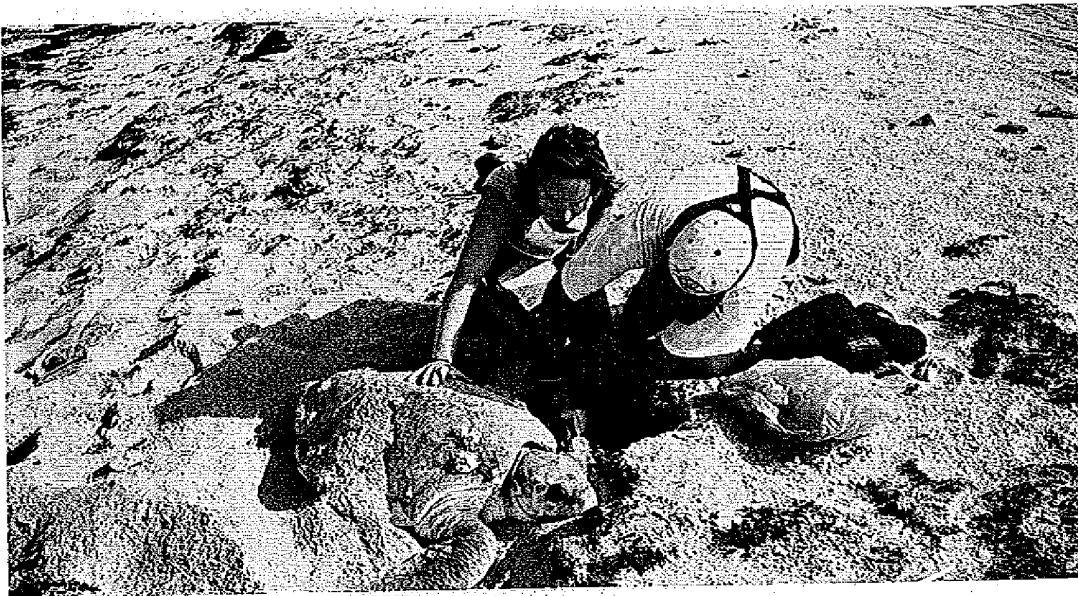
This season, two green turtles were recorded in Rancho Nuevo and were tagged with the INP Inconel metal tags BA-863 and BA-676. BA-676 was recorded twice in the Rancho Nuevo area
(Photo courtesy of Jaime Ortiz)



Carol Reed, a volunteer from Sea Turtle, Inc. helps U. S. crew member Gustavo Vazquez Luna transplant a green turtle nest into a styrofoam box (Photo courtesy of Mary Laddis)



Two loggerhead turtles were recorded in Rancho Nuevo and were tagged with the INP Inconel metal tags BB-226 and BB-301. BB-301 was recorded twice in the Rancho Nuevo area. These turtles were also tagged with the PIT tags 4077524636 and 41007F2E71 respectively (Photo courtesy of Sheryl Shea)



Lara Mrosovsky and Jaime Peña of the U. S. crew tag a loggerhead turtle seen on the first week of June. The two loggerheads that were recorded this season were seen during the day, between noon and six p.m. (Photo courtesy of Sheryl Shea)

APPENDICES

Magnetometer study at Rancho Nuevo, Tepehuajes and Barra del Tordo

P. Burchfield, G. Vazquez Luna, J. Peña Villalobos

Reproductive biology course at Rancho Nuevo

D. Owens, H. Kalb

Sea turtle and environmental education programs

M. Sandoval Ramos, J. Peña Villalobos

Emergency sea turtle nest evacuation plan

P. Burchfield

Magnetometer Study at Rancho Nuevo, Tepehuajes and Barra del Tordo

During the eleven years of 1978 through 1988, all Kemp's ridley turtle hatchlings headstarted by the National Marine Fisheries Service Laboratory at Galveston, Texas, were tagged with a non-magnetized wire tag prior to their release into the Gulf of Mexico. In the 1994 season, the effort was begun to search for these turtles among the nesting population at the Rancho Nuevo camp. 305 turtles were scanned at Rancho Nuevo in the 1997 season. With the additional two magnetometers received at the end of the 1996 season, 33 turtles were scanned at the Tepehuajes camp and 23 at the Barra del Tordo camp.

Turtles scanned with a magnetometer in order to detect the presence of a wire tag in Rancho Nuevo

Monel tag	Wire tag	PIT tag	Observations
	M-	4101271440	NO Inconel
AP881	M-	4101472A23	REC
AA226	M-	1F477F1A01	REC
AP879	M-	41012D6828	FIRST TAG
AP854	M-	4101534746	REC
AA627	M-	4101413921	REC
AA933	M-	7F7D364015	REC
AP891	M-	4101010442	REC
AP884	M-	410153273C	FIRST TAG
AP885	M-	4101503C60	FIRST TAG
AP886	M-	410138497C	REC
BA025	M-	7F7F36094C	REC
AA257	M-	7F7F36422B	REC
AP894	M-	4101484D7C	FIRST TAG
AP873	M-	410143593C	FIRST TAG
AP888	M-	4101501A4D	FIRST TAG
AP887	M-	41013A191C	FIRST TAG
BA036	M-	1F2A465E13	REC
AP890	M-	4101581F23	REC
BA042	M-	20015B661E	REC
AA237	M-	41010A653F	REC
BA033	M-	7F7F364442	REC
AA855	M-	7F7F362E53	REC
AP889	M-	7F7F373F01	REC
BA035	M-	7F7E1D720A	REC
BA043	M-	41013E2412	FIRST TAG
BA040	M-	41012B6843	FIRST TAG
BA037	M-	4101481C58	REC
AL159	M-	7F7F483E0E	REC
BA032	M-	1F767A363B	REC
BA082	M-	4101582136	REC
BA053	M-	4101377929	FIRST TAG
AP777	M-	4101077E5F	FIRST TAG
BA029	M-	4101075872	FIRST TAG

**Turtles scanned with a magnetometer in order to detect the presence
of a wire tag in Rancho Nuevo (continued)**

Inconel tag	Wire tag	PIT tag	Observations
AA952	M-	41012F5C28	REC
BA058	M-	7F7F357926	REC
BA019	M-	4101577737	REC
BA055	M-	41013F7716	FIRST TAG
BA061	M-	41012F7659	FIRST TAG
	M-	7F7F3B743A	NO Inconel
BA059	M-	41011E3E09	FIRST TAG
BA021	M-	41012F2D0F	FIRST TAG
BA031	M-		FIRST TAG. NO READER
	M-	7F7D364C08	REC
AP898	M-		FIRST TAG. NO READER
J1558	M-	7F7E351D05	REC
BA016	M-	41014A1063	FIRST TAG
BA023	M-	41014A6144	FIRST TAG
J1558	M-	7F7E351D05	REC
BA016	M-	41014A1063	FIRST TAG
BA023	M-	41014A6144	FIRST TAG
AA633	M-	7F7D41071A	REC
BA018	M-	4101437B0B	FIRST TAG
AL498	M-	7F7F3F6A56	REC
AL667	M-		REC. NO READER
BA068	M-		FIRST TAG. NO READER
AA489	M-	7F7F40253A	REC
BA070	M-	41013A336D	FIRST TAG
BA501	M-		FIRST TAG. NO READER
BA420	M-	410139246D	FIRST TAG
T00756	M-	7F7F364A69	REC
BB219	M-		REC. NO READER
BA454	M-	41014E0A63	REC
AP870	M-	7F7D264071	REC
BA421	M-	4101431C7C	FIRST TAG
BA047	M-	40370F1842	REC
BA050	M-	7F7E1C2F51	REC
BA044	M-	7F7F357067	REC
AP880	M-	41012D0971	REC. READER
AJ791	M-	41014F0D7A	REC
BA446	M-		FIRST TAG. NO PIT
BA429	M-	41012B583E	REC
AA354	M-	7F7E1D4965	REC
BA435	M-	4101486A72	FIRST TAG
BA433	M-	41013F3478	FIRST TAG
AA844	M-	7F7E346841	REC
J1754	M-	4101606115	REC
AJ867	M-	410149282B	REC
BA979	M-	4101093151	REC
BA448	M-	1F34021E0D	REC

**Turtles scanned with a magnetometer in order to detect the presence
of a wire tag in Rancho Nuevo (continued)**

Inconel tag	Wire tag	PIT tag	Observations
AJ501	M-	7F7F36365A	REC
BA428	M-	41012D7F5B	REC
BA431	M-	41014F6B2E	FIRST TAG
BA434	M-	7F7F3F6977	REC
AA522	M-	41010C7304	REC
BA445	M-		FIRST TAG. NO PIT
BA426	M-	7F7F3F2A08	REC
BA450	M-		REC. NO PIT
AL311	M-	40392F7666	REC
BA049	M-		REC. NO READER
BA427	M-		FIRST TAG. NO PIT
BA430	M-	7F7D427F29	REC
BA436	M-	410121473B	FIRST TAG
BA509	M-		FIRST TAG. NO PIT
AA063	M-	7F7D42485D	REC
AP847	M-	4101432A2F	REC
BA505	M-		REC. NO READER
BA504	M-		REC. NO READER
BA088	M-	4101106440	FIRST TAG
BA548	M-		FIRST TAG. NO PIT
BA417	M-	410132744	FIRST TAG
BA513	M-	4101445026	FIRST TAG
J1065	M-	7F7F3F5B60	REC
	M-	410136160C	FIRST TAG. NO Inconel
AL496	M-	1F3D78723A	REC
AA988	M-		REC. NO READER
AP854	M-		REC. NO READER
AP625	M-	41010B7C30	FIRST TAG
BA528	M-	4101373D4A	FIRST TAG
BA404	M-	41013D3312	FIRST TAG
BA512	M-		FIRST TAG. NO PIT
BA534	M-	4101302C68	FIRST TAG
BA535	M-	41013F1142	FIRST TAG
BA049	M-		REC. NO READER
J1823	M-	7F7F373B37	REC
BA508	M-		REC. NO READER
BA510	M-		FIRST TAG. NO PIT
BA405	M-		REC. NO READER
BB262	M-	41011E6903	FIRST TAG
AA381	M-		REC. NO READER
BA098	M-		FIRST TAG. NO PIT
BA503	M-	4101127926	FIRST TAG
AP850	M-		REC. NO READER
AP617	M-	4101132173	FIRST TAG
AP822	M-	7F7F361132	REC
AA150	M-	1F3D5F390C	REC

**Turtles scanned with a magnetometer in order to detect the presence
of a wire tag in Rancho Nuevo (continued)**

Inconel tag	Wire tag	PIT tag	Observations
BA526	M-	4101452F7D	FIRST TAG
BA550	M-	4101554020	FIRST TAG
AP898	M-		REC. NO READER
BA565	M-	7F7E34363F	REC
BA685	M-	4101143265	REC
T1612	M-	7F7F481F49	REC
BA560	M-	41012C1D01	REC
AP895	M-	410143005	REC
BB256	M-		FIRST TAG. NO PIT
BA653	M-		REC. NO READER
BA409	M-	410149706A	FIRST TAG
AJ524	M-		REC. NO READER
BA047	M-		REC. NO READER
AJ793	M-		REC. NO READER
BA501	M-		REC. NO READER
BA630	M-	41013A5539	FIRST TAG
BA056	M-	7F7B314426	REC
BA573	M-	41012C253A	REC
BA761	M-	4101390B25	FIRST TAG
BA760	M-	4101532112	FIRST TAG
BA028	M-	1F485A6659	REC
BA624	M-	7F7B265C2D	REC
AJ763	M-	7F7D372B14	REC
BA099	M-	4101521755	REC
AP875	M-	4101530F79	REC
BA627	M-	7F7F360834	REC
AA952	M-	41012F5C28	REC
BA633	M-	7F7F364F66	REC
BA639	M-	41014B4F3B	REC
AP823	M-		REC. NO READER
BA039	M-		REC. NO READER
BA646	M-		REC. NO READER
AA988	M-		REC. NO READER
BA641	M-		FIRST TAG. NO PIT
AJ561	M-		REC. NO READER
BA643	M-		REC. NO READER
BA647	M-		FIRST TAG. NO PIT
AP691	M-		REC. NO READER
BA098	M-		REC. NO READER
BA787	M-		FIRST TAG. NO PIT
BA971	M-		FIRST TAG. NO PIT
AP861	M-		REC. NO READER
BB218	M-		REC. NO READER
BA571	M-		REC. NO READER
AJ667	M-		REC. NO READER
AA780	M-	2003063720	REC

**Turtles scanned with a magnetometer in order to detect the presence
of a wire tag in Rancho Nuevo (continued)**

Inconel tag	Wire tag	PIT tag	Observations
BA711	M-		REC. NO READER
BA783	M-		REC. NO READER
J1264	M-		REC. NO READER
BA077	M-		REC. NO READER
BB004	M-		REC. NO READER
BA570	M-	407756590F	FIRST TAG
AP868	M-		REC. NO READER
AP813	M-		REC. NO READER
BA433	M-		REC. NO READER
BA566	M-		REC. NO READER
	M-	4101306574	FIRST TAG
BA558	M-	4101495069	FIRST TAG
BA782	M-		REC. NO READER
J1781	M-		REC. NO READER
BB128	M-		REC. NO READER
BA447	M-		REC. NO READER
BB081	M-		REC. NO READER
AP873	M-		REC. NO READER
AJ852	M-		REC. NO READER
BB036	M-		REC. NO READER
BB077	M-		REC. NO READER
BA781	M-		FIRST TAG
BA205	M-		FIRST TAG
BA701	M-	7F7E1C2F51	REC
AA071	M-		REC. NO READER
BA486	M-		FIRST TAG
AA037	M-		REC. NO READER
AA596	M-		REC. NO READER
BA713	M-		REC. NO READER
BA097	M-		REC. NO READER
BA268	M-	4101365B0A	REC
BA567	M-		REC. NO READER
J1745	M-		REC. NO READER
BA044	M-		REC. NO READER
BA544	M-		REC. NO READER
BB033	M-		REC. NO READER
AA474	M-		REC. NO READER
AP853	M-		REC. NO READER
BA715	M-	7F7E342903	REC
BA095	M-		REC. NO READER
	M-	4101382E0B	FIRST TAG. NO Inconel
BA785	M-		REC. NO READER
AA945	M-		REC. NO READER
AA501	M-		REC. NO READER
AE226	M-	7F7F3F5B7C	REC
AP814	M-		REC. NO READER

**Turtles scanned with a magnetometer in order to detect the presence
of a wire tag in Rancho Nuevo (continued)**

Inconel tag	Wire tag	PIT tag	Observations
J1885	M-		REC. NO READER
BA561	M-		REC. NO READER
BA559	M-	4101580D69	FIRST TAG
BA557	M-		FIRST TAG. NO PIT
AP812	M-	41013A683B	FIRST TAG
BA450	M-		REC. NO READER
BA033	M-		REC. NO READER
BA033	M-		REC. NO READER
BA707	M-		FIRST TAG. NO PIT
BA483	M-		REC. NO READER
AP881	M-	4101472A23	REC
AJ576	M-		REC. NO READER
BA845	M-		FIRST TAG
AJ576	M-		REC. NO READER
BA845	M-		FIRST TAG. NO PIT
BA849	M-	40773F6101	FIRST TAG
BA848	M-	4077582266	FIRST TAG
AJ515	M-		REC. NO READER
BA890	M-	4101321723	FIRST TAG
AP898	M-	410133066A	REC
BA891	M-	7F7F365940	REC
BA036	M-	1F2A465E13	REC
BA789	M-	410103366C	FIRST TAG
BA278	M-	41013B4C36	REC
BA819	M-	41011F0C54	REC
BA693	M-	40772B2E53	REC
BA693	M-	40772B2E53	REC
BA451	M-	7F7D266013	REC
BA089	M-	7F7E2C1B04	REC
AP824	M-	41010C2852	REC
BA608	M-	410144693	REC
BA572	M-	41013F5D67	REC
BA040	M-	41012B6843	REC
BA801	M-		REC. NO READER
BA759	M-		REC. NO READER
BA268	M-		REC. NO READER
BB222	M-		REC. NO READER
BA652	M-		REC. NO READER
BA816	M-		REC. NO READER
BA280	M-		REC. NO READER
AP811	M-		FIRST TAG

**Turtles scanned with a magnetometer in order to detect the presence
of a wire tag in Tepehuajes**

Inconel tag	Wire tag	PIT tag	Observations
AA583	M-	1F2A663021	REC
AA606	M-		REC. NO READER
AA-616	M-	41014E7A67	REC
AA-637	M-	41013A0841	REC
AA657	M-	4101410C65	REC
AA660	M-	4101461735	REC
AA983	M-	7F7D39687F	REC
AB016	M-	4039276142	REC
AB-025	M-	403A797B6C	REC
AE300	M-	4101473869	REC
AJ511	M-	41007C5828	REC
AJ535	M-	410151133C	REC
AJ841	M-	7F7F362C02	REC
AL257	M-	41012E1637	FIRST TAG
AL307	M-	40357358D	REC
AL487	M-		REC. NO READER
AP714	M-	7F7D433D7E	REC
BA061	M-	41012F7659	FIRST TAG
BA201	M-	41012A4F59	FIRST TAG
BA206	M-	41012A7E07	FIRST TAG
BA213	M-	410158406F	FIRST TAG
BA217	M-		FIRST TAG. NO READER
BA218	M-	410131C6016	FIRST TAG
BA223	M-	4101304808	FIRST TAG
BA232	M-		FIRST TAG. NO READER
BA261	M-	41012D5D6C	FIRST TAG
BA-269	M-	4101376111	FIRST TAG
BA403	M-	4101301A3B	FIRST TAG
BA498	M-	4101392077	FIRST TAG
BA548	M-	4101016216	FIRST TAG
BA665	M-	4101436D5B	FIRST TAG
BB096	M-	41013A262A	FIRST TAG
T1894	M-	7F7F356B78	REC

**Turtles scanned with a magnetometer in order to detect the presence
of a wire tag in Barra del Tordo**

Inconel tag	Wire tag	PIT tag	Observations
BB001	M-	4101467458	FIRST TAG
BB002	M-	4101563B06	FIRST TAG
BB003	M-	41014E2977	FIRST TAG
BB007	M-	7F7D371D33	REC
BB008	M-	4101540F06	FIRST TAG
BB009	M-	4101532326	FIRST TAG
BB011	M-	410144481E	FIRST TAG
BB012	M-	41012B0A0D	FIRST TAG
BB014	M-	41014174A	FIRST TAG
BB015	M-	4101577A48	FIRST TAG
BB016	M-	7F7F362C17	REC
BB017	M-	4101265B66	FIRST TAG
BB018	M-	41014F1461	FIRST TAG
BB019	M-	4101327A26	FIRST TAG
BB020	M-	410148215A	FIRST TAG
BB021	M-	7F7F422E62	REC
BB022	M-	4101542B1F	FIRST TAG
BB023	M-	4101333A4B	FIRST TAG
BB024	M-	4101080D58	FIRST TAG
BB029	M-	41012A5909	FIRST TAG
BB030	M-	41012D2F5C	FIRST TAG
BB037	M-	4101563C0B	FIRST TAG
T1359	M-	7F7B1E3C42	REC

M - → Wire tag absent

M + → Wire tag present

FIRST TAG → Turtle presented no metal or PIT tags or tagging scars

REC → Tag recapture (metal and/or PIT)

NO READER → Worker lacked PIT tag reader

NO PIT → Worker had PIT tag reader but lacked PIT tags

Reproductive Biology Course at Rancho Nuevo

Introduction

As sea turtle populations in the Americas begin to recover from the intense exploitation of the past several decades, an intense interest has developed in their conservation and long-term husbandry. With the advent of turtle conservation camps at nesting beaches and large elaborately equipped marine aquaria throughout Mexico and the United States, many government agencies have developed strong programs and specialized teams of researchers. The Texas A & M Sea Turtle Research group has worked on marine turtle reproductive biology and conservation in Grand Cayman, Mexico, Costa Rica and the U. S. Since 1978. At the request of Mexico's Instituto Nacional de la Pesca (INP), the Kemp's Ridley Working Group, we initiated two intensive short courses on the reproductive biology and conservation of marine turtles. The primary lecturers for these courses have been David Wm. Owens, Heather Kalb, and Dr. Rene Marquez from INP, with the assistance of several other instructors including Patrick M. Burchfield from the Gladys Porter Zoo.

Part of the philosophical basis of these courses is to ensure an academic exchange between Mexico and the U. S. In this regard, the materials are presented in both English and Spanish, as well as the students and participants being from both countries. At the same time, because we were working with the most critically endangered sea turtle, we went to considerable effort to make sure that no live turtle was harmed or compromised in any way.



Course Specific Results

The first course was held at Rancho Nuevo from May 14-17, 1996; it was taught at the introductory level and included several lectures on the basic anatomy and physiology of sea turtles as well as conservation issues being dealt with in Mexico. We did an extensive necropsy of a stranded dead green sea turtle and each student was able to spend a good amount of time describing their own research site and research interests. The interactions among the students from both countries were outstanding and filled with lively discussions. After an extensive series of demonstrations of the laparoscopy method, each student was able to spend time using the instruments and examining the inside of an adult Kemp's ridley nesting female.

The 1997 course was held from May 26-30, and it was even more successful than the 1996 version. The lectures and lab work in reproductive physiology were even more detailed and intense than what we did in 1996. We had the added advantage of several lectures by Andrea Cannon of the NMFS Lab in Galveston, who discussed all of the various tagging methods, their merits and costs. Another important and informative set of lectures and lab exercises on population biology were provided by Selina Heppel of the Duke Marine Lab of North Carolina. With added lectures by Dr. Marquez and Patrick Burchfield, we were able to present a very well rounded and practical synthesis of sea turtle reproduction and conservation research today.

Acknowledgments

The participation in these courses by the Texas A & M Sea Turtle Research group has been funded by the Texas A & M Sea Grant College Program through grant # NA56RG0388 to DWO. Additional support was provided by the Biology Department of the Texas A & M University, the Gladys Porter Zoo, Instituto Nacional de la Pesca, the National Marine Fisheries Service, and the United States Fish and Wildlife Service. Photos courtesy of Carlos R. De Leon



**RESULTS OF LAPAROSCOPY EXPERIMENT IN RANCHO NUEVO, TAMAULIPAS, MEXICO.
MAY 1996 - 1997**

Metal tag	Date	Year	Nesting History	Glucose mg/dl	Status (Exam)	Ultrasound				Atretics				Laparoscopy		Old Tag Scars
						Follicles		Lt.		Lt.		Lt.		Corpora Lutea	Corpora Albicans	
AE-285	0520	1996	0619	89	Gravid	2.4	2.2	2.4	2.4	1.7		2.7	1.8			No
AL-118	0521	1996		80		2.6	2.6	2.6	2.6			1.8	2.3			No
AL-119	0522	1996		68	Dep	2.3	2.3	2.3	2.5					Yes	Yes	PIT tag
AL-120	0523	1996	0605	92	Gravid	2.4	2.5	2.6	2.6					No**	No**	No
AL-121	0523	1996	0619	46	Gravid	2.1	2.1	2.4	2.3	1.7	1.7	1.2	0.9	Yes	Yes	No
AL-254	0523	1996		85	Gravid	2.5	2.7	2.7	2.7	1.0	1.1	1.1	1.4	Yes	Yes	No
AL-323*	0520	1996		85	Dep	2.0		2.0	1.9			1.9	1.1	Yes		No
AL-324	0524	1996		68	Gravid	2.5	2.1	2.6	2.5	2.1				Yes	Yes	PIT tag
AL-433	0523	1996	0610	101	Gravid	2.5	2.6	2.7	2.6	1.4	1.5	1.7	1.3	Yes		No
AL-463	0524	1996	0623	64		2.5	2.7	2.6	2.5	0.8	0.7			Yes	Yes	No
BA-746	0528	1997		59	Partial	2.3	2.5	2.3	2.6	1.3	1.0	1.3	1.3	Yes	**	Yes
BA-698*	0528	1997		95	Partial	2.3	2.5	2.6	2.6	2.7	1.3	1.5	1.2	Yes	Yes	Yes
BA-089	0528	1997			Gravid	2.5	2.5	2.6	2.6	1.5	1.1	1.1	1.3	Yes	Yes	No
BB-014	0529	1997		116	Partial	2.4	2.5	2.4	2.3	0.9		1.1	0.7	Yes	**	PIT tag
BA-777*	0530	1997		191***	Gravid	2.5	2.6	2.4	2.6	1.6	1.3			Yes	Yes	No
BB-047	0530	1997		52	Dep	2.4	2.2	2.3	2.2	1.9	1.6	0.9	1.4	Yes	Yes	PIT tag
AJ-673	0530	1997		89	False crawl											
BA-611	0530	1997		89	Nester											
NO TAG	0530	1997		95	Nester											

	<u>Follicles</u>	<u>Atretics</u>
Average	2.45	1.41
St. dev.	0.18	0.47
Sample	73	41
St. error	0.02	0.07
Number of turtles: 16 (+1)		(Standard error is based on number of follicles and not the number of turtles)

* Post nester - eggs present

**Visibility obscured by mesentary

***Glucose measured on serum only

Sea Turtle and Environmental Education Program

The Kemp's ridley project's environmental education program personnel's main goal is to involve the communities adjacent to the sea turtle conservation and field research stations in helping to protect and conserve the turtles.

One of the objectives of this program is to familiarize the local people with the work and activities that take place in the different camps. How things are done and why. This goes a long way toward dispelling a commonly heard comment that the biologists want the eggs for personal profit.

This year, the program began with talks during the month of June in the rural towns near the main camp at Rancho Nuevo, the north camp at Tepehuajes and Barra del Tordo. These talks consisted mainly of a general overview of the sea turtles of the world and some of the threats they face; this is done with the help of photos, drawings and posters. In June, the children from Rancho Nuevo, Buena Vista and San Vicente celebrated World Environment Day at the Rancho Nuevo main camp; the children and the workers shared ideas on what to do to help the environment, as well as the Kemp's ridley. As the nesting season came to a close, the education program began in earnest starting with a conference given by Manuel Sanchez Perez from Instituto Nacional de la Pesca, biologists Mario Sandoval Ramos and Jaime Peña Villalobos from the Gladys Porter Zoo crew, and T.P. Eduardo Gonzalez Jara from CRIP Tampico. This conference took place during the first week of September at Universidad del Noreste in Tampico, Tamaulipas, and was enthusiastically attended by the biology faculty teachers and students, as well as Preparatoria del Noreste high school students. Then, the following places were visited during the second and third weeks of September:

Rancho Nuevo	Buena Vista	San Vicente
San Rafael	Nuevo Progreso	Barra del Tordo
Tepehuajes	El Porvenir	La Pesca
Aldama	Altamira	

This season, as in 1996, more than 2,000 children and adults participated in this year's sea turtle and environmental education efforts, as mentioned above, posters, drawings and photographs were the main tools used for the purpose of teaching the children about the Kemp's ridley, the project and the work that takes place at the camps, slide presentations were used when possible. Following the presentation, the first activity was answering a sea turtles of the world questionnaire, then, several games and activities such as the "predator and prey" game followed. Sea Turtle Inc. bi-lingual sea turtle conservation books were distributed among the students, and all the teachers received several copies of the book as well as educational posters from the Gladys Porter Zoo and Sea Turtle Inc.

We wish to thank the following persons for their help and support: Juan and Martha Gonzalez and Maria Cruz Arevalo in Rancho Nuevo, Sonia Villanueva and Raul Flores in San Rafael, Juan Antonio Guerra and Nancy Hernandez in Buena Vista, Rene Galvan in San Vicente, Jorge Ramirez in Nuevo Progreso, Nicasio Fonseca Munguia from SECUDE and Lisa Ayala and Jaime Escamilla from the Public Relations Department at the Gladys Porter Zoo for providing the posters. A special thank you goes to the Phillips Petroleum Company and Patty Marshall for making the bilingual Sea Turtle Inc. books available for the children.



U. S. field crew member Mario Sandoval Ramos, environmental education coordinator for the Kemp's ridley project, gives a talk about sea turtles to children of a visiting school at the Rancho Nuevo field station. This year, eight rural communities and four cities, including Tampico, participated in this educational effort (Photo courtesy of Carlos de Leon)



Children at the town of Buena Vista enjoy the "predator and prey" tag game, one of the most popular activities that are part of the education program (Photo courtesy of Jaime Peña)

Emergency sea turtle nest evacuation plan

This season, a formal hurricane preparedness plan was implemented. In several previous seasons over the twenty year bi-national program history, a percentage of the annual production of hatchlings was lost due to storm tides, inundation and hurricanes.

Clearly, the less manipulation of sea turtle eggs during incubation, the better. However, the possibility of being faced with an impending disaster such as the one which recently devastated sea turtle camps in south western Mexico, prompted us to develop an emergency plan for the excavation, evacuation and artificial incubation of Kemp's ridley eggs in the face of a direct hit by a hurricane. Our thinking is that some production is better than no production and as long as the eggs are excavated carefully and properly incubated, we anticipate a good hatch rate in nests which are well along in the incubation process.

To this end, we stored more than 300 Styrofoam ice chests, bales of vermiculite (mica), and measuring apparati for water at Impulsora de Pescados y Mariscos, a fisheries plant in Tampico, Tamaulipas, Mexico. We developed the following protocol for the incubation of these eggs based on INP's established methodology to protect nests in styrofoam boxes and our previous experience during the artificial imprinting-headstart experiment from 1978 to 1988. The following is a quick cookbook protocol for a vermiculite and sand mixture to be used instead of sand alone; this procedure can be accomplished quickly and under field conditions.

1. Mark inside of 5 gallon bucket 12 ½ cm from the top
2. Fill bucket to mark with dry vermiculite (other means of measuring could be 11 dry quarts, or 1 ½ kg dry vermiculite)
3. Thoroughly mix 790 ml water into dry vermiculite.
4. Lay a bed of moistened vermiculite 4 ½ cm deep into the bottom of a clean, dry ice chest (up to second joint of first finger). Sprinkle a thin layer of sand above the vermiculite.
5. Put a layer of eggs, top side up, on the bed of vermiculite. It is important that the eggs be excavated, moved and transplanted in their original position. Eggs must touch one another, but leave a 3 cm (1 eggs width) space from each side of the ice chest.
6. Fill in the space between the peripheral eggs and the side of the ice chest with a thin layer of nest sand and then the vermiculite mix.
7. Place second layer of eggs above the first, and so on.
8. Place a thin layer of nest sand over the top of the clutch and use the remainder of the vermiculite mix to cover the eggs and fill in around the periphery of the clutch.
9. Close ice chest. Be certain the nest is marked with its correct data card (ficha) number.
10. Place ice chests in the barracks building up off of floor level.

IMPORTANT NOTE: IF SAND IS WET, DO NOT USE IT. COMPLETE ENTIRE PROCEDURE USING VERMICULITE MIXTURE ONLY! SOMETIMES THE NEST CAVITY SAND AND THE BEACH SAND ARE ALREADY TOO WET FROM TORRENTIAL RAINFALL FOR SUCCESSFUL EGG INCUBATION.

We are indebted to Don Silverio Di Costanzo of Impulsora de Pescados y Mariscos, Mr. Ramiro Ochoa Sanchez from CANAINPES, and Charles Solitaire of the National Fisheries Industry, Marco Sales, for their help and the use of their storage facilities for this facet of the program in 1997.

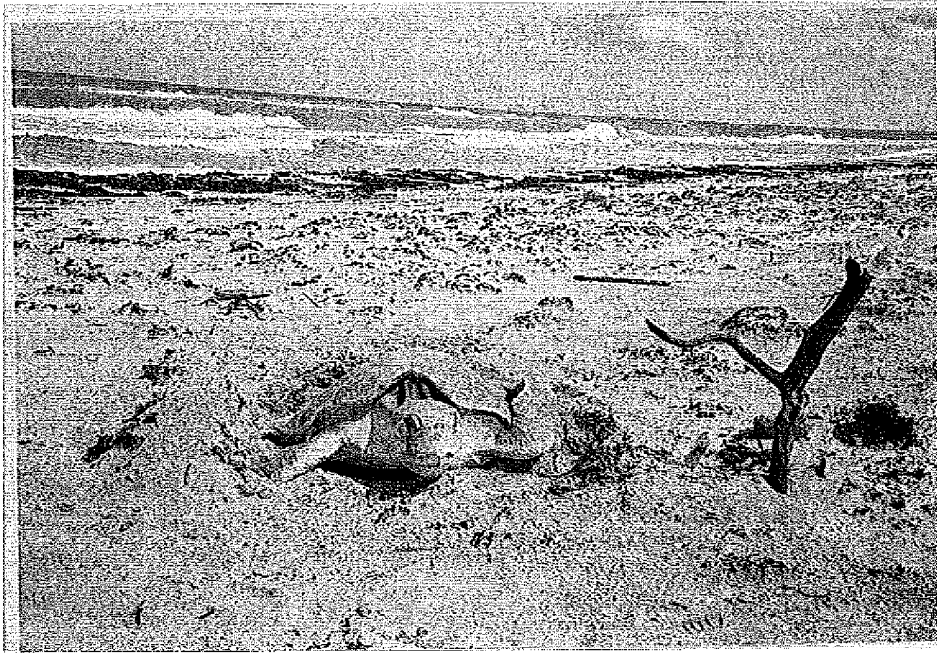
RECOMMENDATIONS FOR FUTURE SEASONS

- 1.- Again, as in virtually every season of this twenty year project, a means of expeditiously importing and re-exporting the equipment such as all-terrain motorcycles, trucks, radios and other research equipment critical to the program needs to be found. In 1997, difficulty in importing the equipment resulted in over a week's delay. Fortunately, cool weather slowed the turtles arrival. This lack of equipment could have dramatically altered what proved to be an otherwise excellent season.
- 2.- The bulk of the knowledge of the biology of the Kemp's ridley sea turtle pertains to nesting females, hatchlings, sub-adults in nearshore waters, and strandings. There continues to be a dearth of data on the males of this species. A considerable number of anecdotal reports by fishermen describe ridley turtles and copulating pairs of ridley turtles during the months of December, January, February and March in the nearshore areas adjacent to La Pesca and Barra del Tordo. If these reports prove to be true, these data can provide considerable important information about the Kemp's ridley. Do males migrate or are they resident? Do the females copulate in the winter months and nest a month or two later, or do these females migrate to feeding grounds and return the following season? The potential hypotheses are numerous. Suffice it to say we need to concentrate our efforts on filling in this piece of the reproductive biology of the Kemp's ridley by putting satellite transmitters on post-nesting season males and females in front of the principal nesting beaches.
- 3.- The area that comprises the sea turtle field stations in Tamaulipas and Veracruz represents one of the most important nesting sites for *Chelonia mydas* in the western hemisphere. For 1998, approximately 200 nests are expected to be deposited in the Tamaulipas' coast alone. Because of previous seasons' experience, Mexico's Instituto Nacional de la Pesca has requested our assistance for additional protection and resources; genetic material (blood samples) need to be collected from up to 60 green turtles in an attempt to determine whether or not this nesting population is related to the large number of sub-adult turtles in the Laguna Madre of Texas; if so, this population, like the Kemp's ridley, is a shared responsibility. We recommend that the U. S. contingent's working permit be written year to year (January 1 to January 1), so as to accommodate this request for assistance.
- 4.- In order to enhance hatchling production we must develop a better understanding of the microhabitat within the nest cavity. Sand grain size clearly affects water retention and possible hatchability in some sea turtle nests. We propose to study nest microhabitat parameters in the three major sea turtle conservation field stations located at Rancho Nuevo, Tepehuajes and Barra del Tordo.

PHOTOS

Kemp's ridley nesting female
Photo courtesy of Patrick M. Burchfield

Nest transportation at Rancho Nuevo
Photo courtesy of Patrick M. Burchfield



A Kemp's ridley nesting female is seen nesting near the Rancho Nuevo field station. In 1997 993 turtles were recorded; 985 in the coasts of Tamaulipas and 8 in the Veracruz area.



U. S. group assistant coordinator Vicente Mongrell and crew member Gustavo Vazquez get ready to transport several nests to the protective corral at Rancho Nuevo. This season, a total of 2,387 nests were recorded, 2,339 in Tamaulipas and 48 in Veracruz

Egg clutches are transplanted into the protective corral at Rancho Nuevo
Photo courtesy of Patrick M. Burchfield

Kemp's ridley hatchlings
Photo courtesy of Sheryl Shea



Students from Universidad del Noreste in Tampico, Tamaulipas, help in the corral at the Rancho Nuevo field station. From April to the first week in September a total of 229,802 Kemp's ridley eggs were protected at all the camps in Tamaulipas and Veracruz



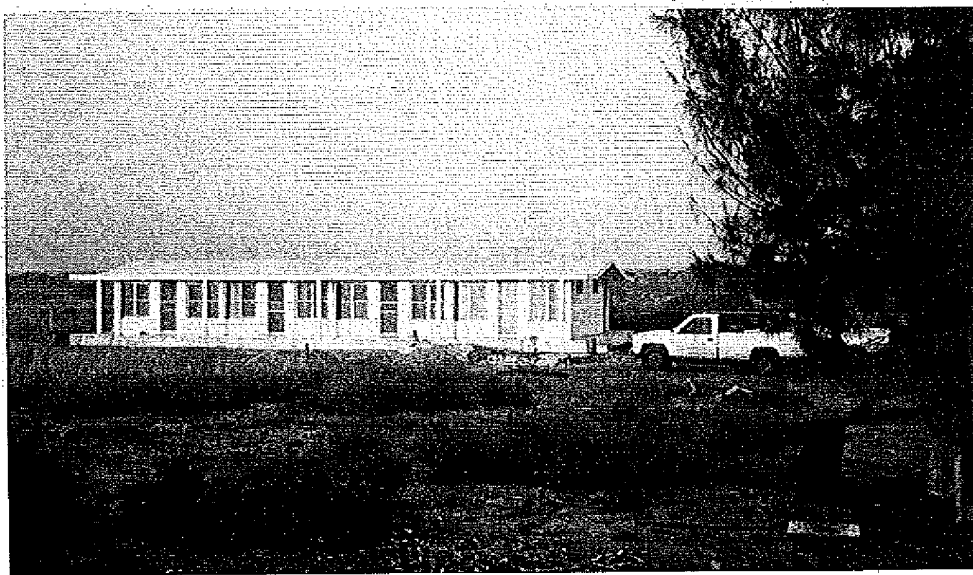
Hundreds of Kemp's ridley hatchlings get ready to be released after being wire tagged at the camp in Rancho Nuevo. This year, a total of 149,567 hatchlings were released into the Gulf of Mexico

U. S. crew member in Jeep at Rancho Nuevo
Photo courtesy of Patrick M. Burchfield

New barracks building at Rancho Nuevo
Photo courtesy of Jaime Peña



This season , a Jeep donated by ZB Industries proved invaluable in transporting personnel and egg clutches during "arribazones"



The recently completed barracks building for field crew personnel will provide greatly improved living conditions for future seasons. The building is designed to take advantage of prevailing Gulf breezes.

Wayne Witzell and the U. S. Crew at Rancho Nuevo
Photo courtesy of Patrick M. Burchfield

**Dr. Rene Marquez with INP personnel and part of the
U. S. crew at Rancho Nuevo**
Photo courtesy of Mario Sandoval

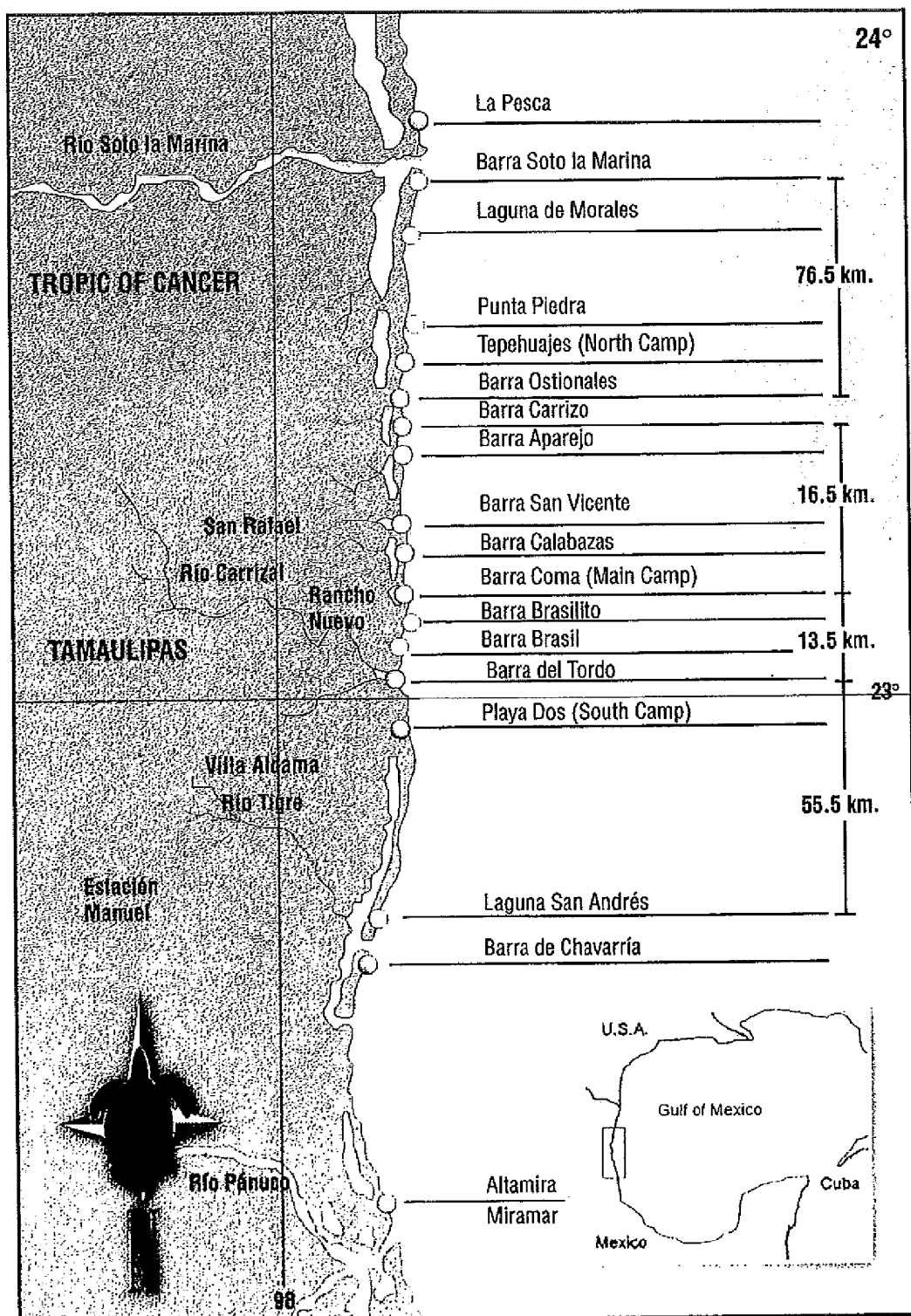


Pictured with Wayne Witzell of the National Marine Fisheries Service are the 1997 U. S. Rancho Nuevo crew members; from left to right: Erick Gonzalez, Alfredo Salgado, Jaime Peña, Gustavo Vazquez, Ana L. Cruz, Jamye Morris, Gustavo Andrade, Lara Mrosovsky and Mario Sandoval. Wayne Witzell has volunteered his expertise, experience and hard work at Rancho Nuevo for the past several nesting seasons

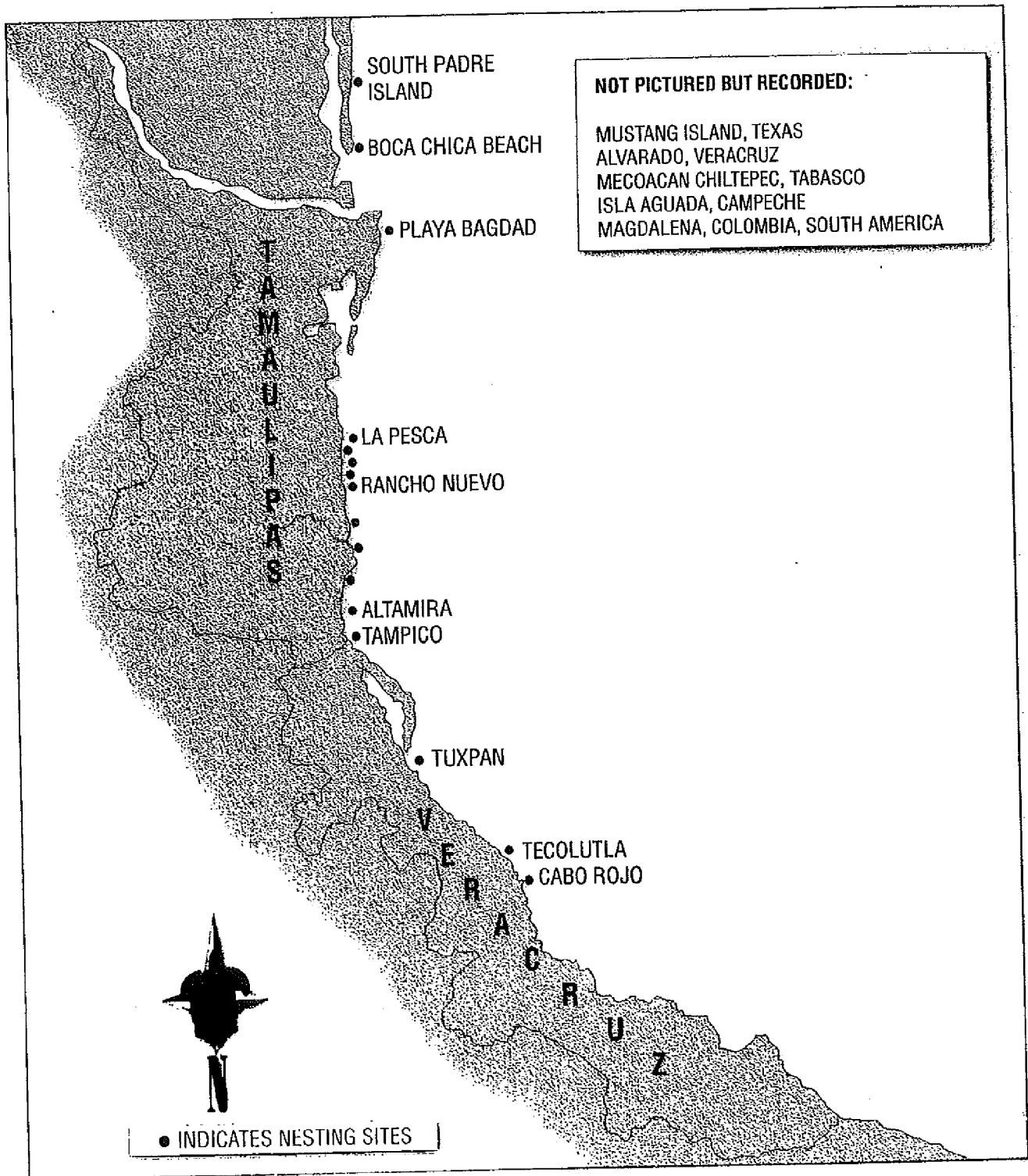


CRIP Tampico's assistant camp coordinators biologist Alma Leo Peredo (in the middle) and Enrique Conde Galaviz (far left), along with the U. S. crew, met at Rancho Nuevo with Dr. Rene Marquez (far right), INP's National Sea Turtle Coordinator, on April to discuss the objectives for the 1997 nesting season (not pictured are Juan Diaz Flores and Manuel Sanchez Perez, camp coordinators for INP, and Miguel A. Carrasco Aguila, of CRIP Manzanillo)

MAPS



KEMP'S RIDLEY NESTING BEACH, TAMAULIPAS, MEXICO



RECORDED *Lepidochelys kempi* NESTING SITES
 Also recorded but not pictured: Florida east and west coasts, South Carolina and North Carolina

Gladys Porter Zoo
Operated by
Valley Zoological Society
500 Ringgold Street
Brownsville, Texas 78520

U. S. Fish and Wildlife Service
Endangered Species
Permit No. 7 9 2 8 4 2



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