

PADRE ISLAND NATIONAL SEASHORE
KEMP'S RIDLEY SEA TURTLE PROJECT
1990 REPORT

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SEPTEMBER 1990

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ABSTRACT

Patrols for nesting sea turtles and related public education efforts continued at Padre Island National Seashore (PAIS) during 1990. PAIS employees, U.S. Marine Corps personnel, and volunteers spent 1,577 hours patrolling 12,640 km of beach from mid-April through July. Two sets of loggerhead sea turtle (*Caretta caretta*) tracks and 1 set of green sea turtle (*Chelonia mydas*) tracks were found on PAIS beaches this year. However, these nesting emergences were probably false crawls since no eggs were located. A hatched loggerhead sea turtle nest, containing 83 pipped egg shells and 10 dead hatchlings, was the only confirmed sea turtle nest laid on PAIS beaches (and the entire Texas coast) during 1990. Six clutches of Kemp's ridley sea turtle (*Lepidochelys kempi*) eggs laid in captivity were transferred to PAIS for incubation, but all eggs appeared to be infertile since none hatched. Thirty-one Kemp's ridley, 4 loggerhead, and 18 hawksbill (*Eretmochelys imbricata*) hatchlings and post-hatchlings were found stranded along Padre and Mustang Islands. Some of these hatchlings may have emerged from nests laid on south Texas beaches.

BACKGROUND

During each summer, from 1978 to 1988, approximately 2,000 Kemp's ridley sea turtle (*Lepidochelys kempi*) eggs were shipped to Padre Island National Seashore (PAIS) from Rancho Nuevo, Mexico in an experimental attempt to establish a secondary breeding colony of this species through imprinting. Of the 22,507 eggs received, 17,358 (77.1%) hatched and 15,875 hatchlings were shipped to the National Marine Fisheries Service Laboratory for head starting. Overall, approximately 12,000 yearlings were released into the Gulf of Mexico after 9 to 12 months of head starting. To date,

no Padre Island imprinted turtles have been confirmed to have returned and nested at PAIS. However, it is unknown how many have survived after release and none may have attained adulthood yet.

Transfer of Kemp's ridley eggs to PAIS from Rancho Nuevo, Mexico was terminated after the 1988 incubation season. Now the primary objective of the PAIS Kemp's ridley project is to identify if Kemp's ridleys return to nest at PAIS. Public education programs, beach patrols, and protection and monitoring of nesting sea turtles and nests will be continued at the park for the foreseeable future. This report summarizes these efforts during 1990.

BEACH PATROLS FOR NESTING SEA TURTLES AND TRACKS

Seasonal beach patrols for nesting sea turtles, tracks, and nests began at PAIS in 1986 and continued through 1990. The primary beach patrols travelled from the Ranger Station to the Mansfield Channel and back, approximately 193 km. Sixty-four of these patrols were made from 14 April to 30 July 1990. Included in the 64 were 11 patrols which involved overnight camping at the Mansfield Channel. Hence, park personnel participated in patrols between the Ranger Station and the Mansfield Channel on a total of 75 days, an average of 4.7 days per week. Camping trips, not used during previous patrol seasons, were initiated in 1990 to increase the number of days that park personnel could be present on the beach, increase patrol efficiency, and reduce mechanical wear of patrol vehicles. The 1990 average of 4.7 patrol days/week exceeds the average number of patrol days/week during 1989 (3.0), 1988 (3.5), 1987 (2.0), and 1986 (2.4) (Shaver et al., 1986, 1987, 1988; Shaver 1989).

Patrols to the Mansfield Channel covered park beach areas south of Closed Beach, the artificial imprinting site for Kemp's ridley sea turtles from 1978-1988. During previous patrol years, no consistent attempts were made to search beach areas north of the

imprinting site for nesting sea turtles. However, Kemp's ridley turtles should have equal probability nesting north and south of the imprinting site and this year 37 patrols were conducted to detect northern nesting. Seventeen of these 37 patrols covered the entire distance from Closed Beach to the Nueces/Kleberg County line and the remaining 21 covered portions of that area. Overall, 780.8 km of beach were patrolled north of the imprinting site and 11,859.2 km south of the imprinting site this year (Fig. 1).

All members of the Resources Management Branch were trained to conduct nesting sea turtle patrols and to detect and respond to turtle sightings. This year, resources managers performed the majority of patrols and spent a total of 677 hours on the beach patrolling for nesting turtles and tracks (Fig. 2). A number of members of the Visitor Protection Branch (rangers) were trained to conduct patrols. Unfortunately, due to staff shortages, they were only able to participate in 43 hours of patrolling to the Mansfield Channel. However, rangers were alert for nesting turtles while conducting their normal activities and were available to serve as back-up personnel to handle nesting if it occurred when resources managers were unavailable. Additionally, Maintenance Division employees logged a total of 42 patrol hours and Interpretation Branch employees 24 hours.

Volunteers participated heavily in patrols to the Mansfield Channel this year. Thirty-six volunteers donated a total of 428 hours while accompanying resources managers on 34 of the 64 patrols. Each was shown an introductory slide presentation to instruct them on procedures to be used to search for, and deal with, nesting turtles and tracks.

The U.S. Marine Corps assisted with beach patrols during the 1990 patrol season by providing use of a "hummer" (a military all-terrain vehicle) and an operator for 2-3 days per week. Twenty-two of the patrols to the Mansfield Channel were conducted using

SEA TURTLE PATROLS KM NORTH & SOUTH

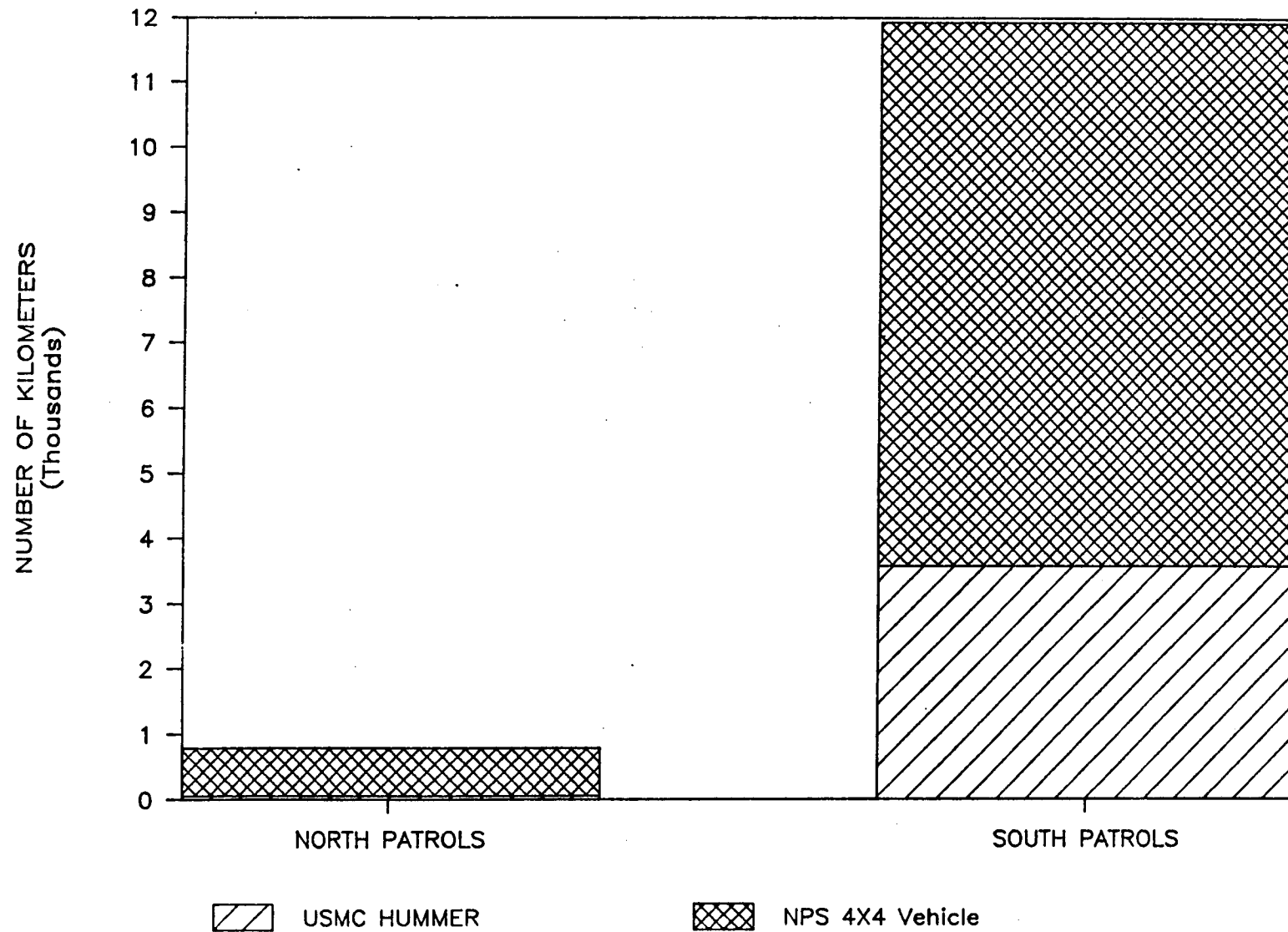


Figure 1. Number of kilometers patrolled north and south from mid-April through July, 1990.

KILOMETERS PATROLLED BY VARIOUS GROUPS

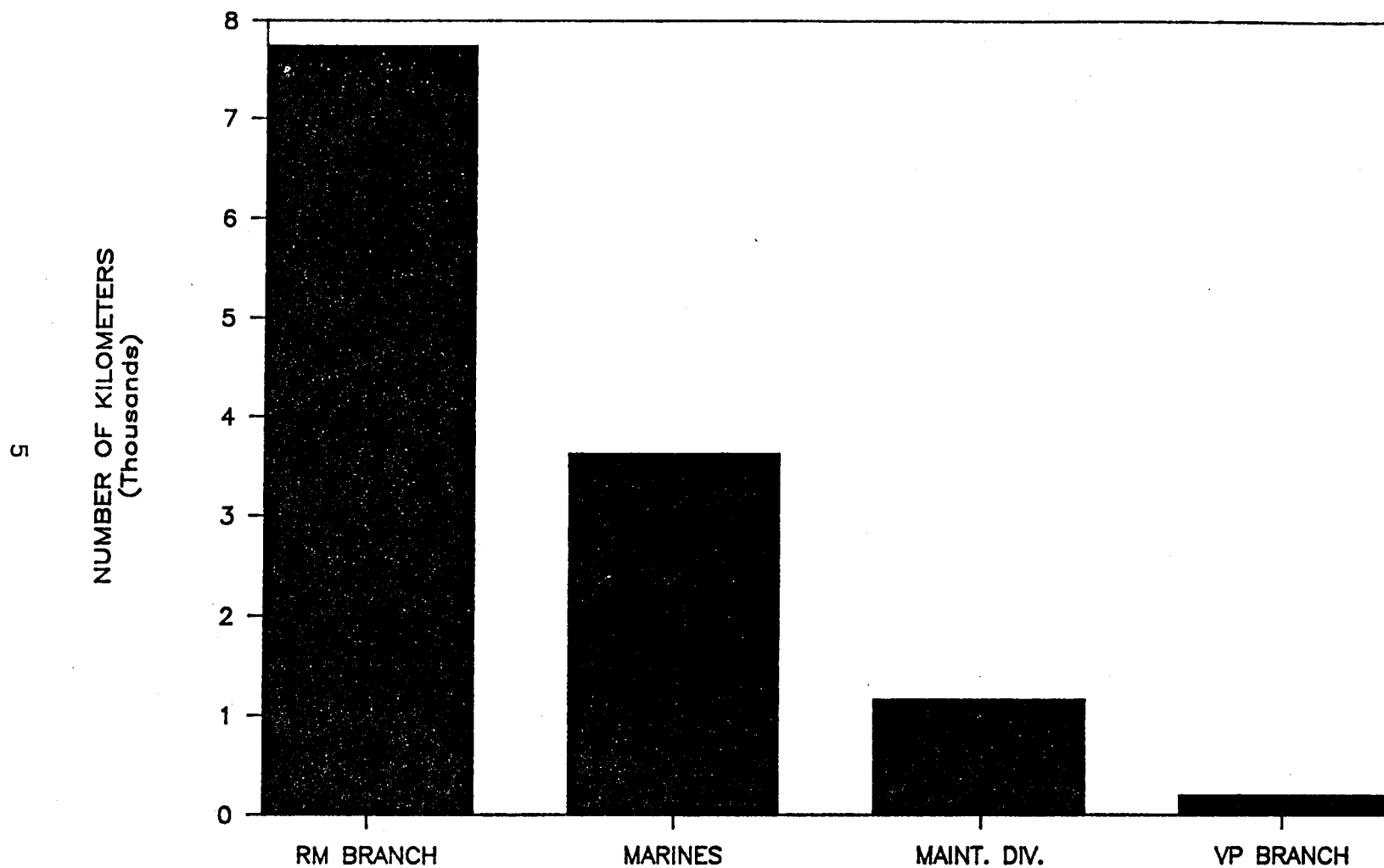


Figure 2. Number of hours that various groups spent conducting patrols from mid-April through July, 1990.

a hummer and the other 42 using PAIS 4-wheel drive vehicles. Of the 12,640 beach km (591 hours) traversed during all patrols, 3,603.2 (165 hours) were by hummer (Fig. 3). One marine accompanied a varying number of park employees and volunteers during each hummer patrol. Patrols utilizing 4-wheel drive vehicles were typically conducted by two park employees or one park employee and a volunteer. Park resources managers were responsible for conducting 7,692.8 km of patrolling using a 4-wheel drive vehicle, maintenance employees 1,152 km, and rangers 192 km.

STAFF AND VISITOR EDUCATION

Efforts to educate the park staff and public about the Kemp's ridley project continued this year. Since PAIS is 105 km long and extensive areas are often devoid of park personnel, it is imperative that park employees and visitors assist with detection and reporting of turtle sightings. Therefore, great emphasis was placed on alerting them of the potential for nesting Kemp's ridleys and urging them to look for nesting turtles and tracks.

All park employees were shown photographs of nesting sea turtles and tracks and instructed to report all sightings. All were trained to collect pertinent information from visitors so that their sightings could be located and investigated further if necessary.

A variety of methods were used to educate park visitors about the possibility of nesting turtles. Posters detailing the need to report sea turtle nestings were displayed at PAIS and other local parks and establishments. Beach signs, alerting visitors to report live sea turtle sightings immediately, were posted at the park. A handout, display, and continuous playing video tape about the Kemp's ridley project were available at the PAIS Visitor Center. Magnetic signs, stating that vehicles were conducting turtle patrols and that all live sea turtle sightings should be reported, were affixed to patrol vehicles.

KILOMETERS PATROLLED BY VARIOUS GROUPS

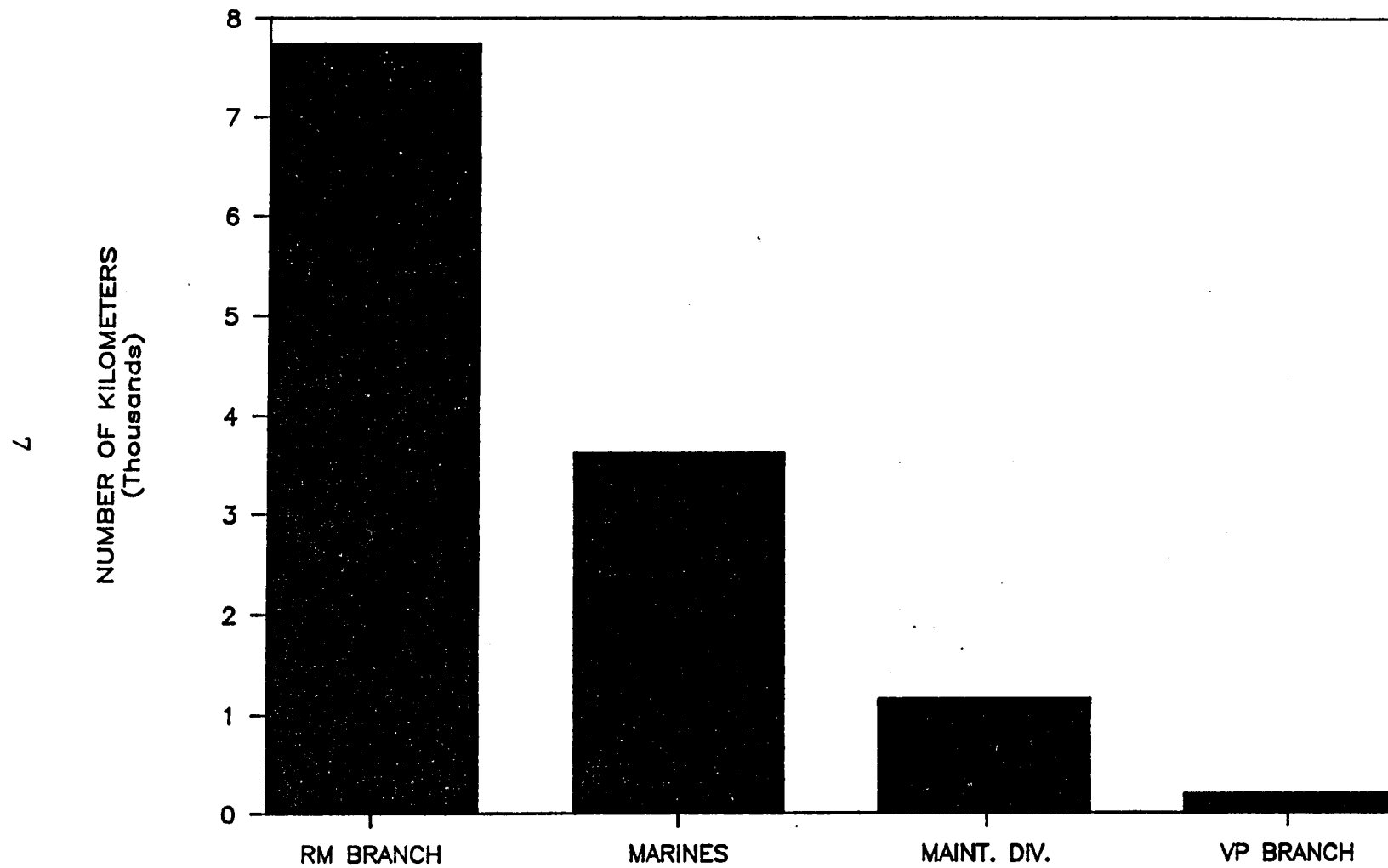


Figure 3. Number of kilometers that various groups patrolled from mid-April through July, 1990.

NESTING SIGHTINGS

Three sets of sea turtle tracks were investigated during beach patrols at PAIS in 1990 and one hatched sea turtle nest was located. No other confirmed sea turtle tracks, nests, or nesting females were reported or found at the park (or elsewhere along the Texas coast) this year.

The first set of sea turtle tracks was investigated at 1130 h on 10 June 1990 and was located at the 53.1 km marker on PAIS. The tracks were reported to park employees by a visitor who stated that they were probably made between 0300 and 0800 h that morning. They were probably from a loggerhead sea turtle since they were 80 cm wide and relatively deep and the flipper impressions were alternating. The 21.8 m long tracks intersected and terminated at an uncovered nest cavity which was 25 cm deep and contained no eggs or egg shells. Another possible nest cavity was located along the tracks but it also contained no eggs and the tracks were considered a false crawl.

The second set of tracks was investigated at 0730 h on 11 June 1990 and was located at the 7.1 km marker on PAIS. Visitors reported seeing a large turtle with algae on its carapace emerge from the surf at this location at 2100 h on 10 July. They stated that the turtle reentered the water after being frightened by a passing vehicle and that it never laid eggs. The turtle was probably a loggerhead and possibly the same individual that had emerged at the 53.1 km earlier that day. The tracks were 80 cm wide, 80 m long, and relatively deep and the flipper impressions were alternating. No nest cavities or eggs were found and hence the emergence was probably a false crawl.

The third set of sea turtle tracks was detected and investigated at 0930 h on 11 July 1990 and was located at the 41.8 km marker on PAIS. The tracks were probably from a green sea turtle since they were 125 cm wide and relatively deep and the flipper

impressions were opposite. The 17.8 m long tracks intersected and terminated at a large depression which may have been a body pit. Sand was excavated to a depth of approximately 30 cm beneath the bottom of the depression but no nest cavities, eggs, or egg shells were found. No other possible nest locations were found and the tracks were considered a false crawl.

A hatched loggerhead sea turtle nest was discovered by park visitors at the 3.1 km marker on 29 August. The visitors promptly reported the nest and park staff immediately investigated the area. The nest was located approximately 45.7 m from the surf, at the base of a fore-dune, about 5 cm below the sand surface. It contained 83 pipped egg shells and 10 dried hatchling carcasses. The hatchlings were severely decomposed and appeared to have been dead for at least two weeks. Although 9 of the 10 possibly possessed shell deformities, it was impossible to determine this conclusively because they were extremely decomposed. No embryos were found within any of the egg shells and no other hatchlings were found in the dunes or between the nest site and the surf.

It is quite possible that this loggerhead sea turtle nest was laid by the same loggerhead turtle that emerged on 10 and 11 June but failed to lay eggs at those times. The nest would have been constructed that same week if it had incubated for about 60 days and hatched during the week of 15 August. The nest, and the tracks produced by the nesting female, were not initially detected by park personnel even though patrols passed by the site daily during the week of 10 June. It is most likely that the turtle tracks were obscured by vehicle tracks since the nest was located in one of the most heavily visited areas in the park.

EGG INCUBATION

Six clutches of Kemp's ridley sea turtle eggs were transferred to PAIS for incubation during 1990 (Table 1). All clutches were laid by females held in captivity that had not been observed

Table 1. Kemp's ridley eggs laid in captivity and transferred to Padre Island National Seashore for incubation during 1990.

Clutch number	Number of eggs	Origin	Lay date	Hatch percent	Date discarded
1	91	Texas A&M	11 May	0.0	11 July
2	40	Texas A&M	13 May	0.0	6 July
3	107	Sea World	7 June	0.0	26 July
4	25	Sea World	6 June	0.0	26 July
5	44	Sea World	7 June	0.0	26 July
6	96	Sea World	13 July	0.0	26 Aug.

mating prior to egg deposition. Two of the females were held at Texas A&M University, College Station, Texas and the other 4 at Sea World, San Antonio, Texas. The 6 clutches contained 403 eggs and were laid between 11 May and 13 July. After deposition, each clutch was packed into a styrofoam incubation box and promptly transported to PAIS. Incubation techniques were the same as those employed during the Kemp's ridley project (Shaver et al., 1986, 1987, 1988). No eggs hatched and all were examined after from 45 to 62 days of incubation. Upon examination, all were orange in color, appeared to be infertile (Shaver and Chaney, 1989), and were subsequently discarded.

HATCHLING STRANDINGS

Fifty-three hatchling and post-hatchling sea turtles were found stranded along Mustang and North Padre Islands from 30 June 1990 through 26 August 1990. Stranding locations and dates were noted for each hatchling and most were measured for straight line carapace length (SLCL), straight line carapace width (SLCW), curved carapace length (CCL), curved carapace width (CCW), and weight (Table 2). Included in the 53 were 31 Kemp's ridley, 18 hawksbill, and 4 loggerhead sea turtles. Forty of the turtles were found alive and transported to Tony Amos, University of Texas at Austin, Marine Sciences Institute (UTMSI), Port Aransas, Texas, for rehabilitation. Nine of the dead hatchlings were necropsied to examine yolk reserves, retrieve gut contents, and remove gonads for histological sex determination.

More hatchlings stranded during the summer of 1990 than during any summer from 1980-1989 (Texas Sea Turtle Stranding and Salvage Network data). This led to concern for the safety of the stranded hatchlings and speculation about the origins of these turtles. Most of the hatchlings were located by pedestrians in heavily visited beach areas. However, it is quite possible that others stranded in less heavily visited areas and went undetected. PAIS and UTMSI employees walked various local beaches on several occasions during July in an attempt to locate

and save stranded hatchlings. The only other hatchlings that were found stranded in Texas this year were 1 hawksbill on South Padre Island and 1 Kemp's ridley on Galveston Island.

Strandings of hawksbill hatchlings and post-hatchlings along Padre and Mustang Islands are not particularly unusual (Shaver and Amos 1988). Hawksbill sea turtles stranded in 1990 were relatively large and varied in size. Their straight line carapace lengths ranged from 6.1 to 9.1 cm (mean=7.2, S.D.=0.7 cm, N=17) and weights from 36 to 103 g (mean=50.3, S.D.=15.8 g, N=18) (Table 2). Due to their relatively large size, it is likely that they did not emerge from nests laid along the Texas coast but rather emerged from nests laid in Mexico or on beach areas within the Caribbean (Woody, U.S. Fish and Wildlife Service, pers. comm.).

It is likely that the four stranded loggerhead sea turtles had recently emerged from a nest laid on Mustang Island, near the city of Port Aransas. The four hatchlings were small, similar in size, and nearly the same size as a clutch of newly hatched loggerheads measured at PAIS (Shaver et al., 1988). The mean SLCL of the 4 individuals (mean=4.5, S.D.=4.1, range=4.3-4.6 cm, N=4) was not significantly different from the mean SLCL of the 1988 clutch of loggerheads (mean=4.4, S.D.=0.1, range=4.1-4.7 cm, N=78) (95% Confidence Interval Test, $P>0.05$). However, the mean weight of the 4 individuals (mean=17.3, S.D.=1.3, range=16.0-19.0 g, N=4) was significantly less than the mean weight of the 1988 clutch (mean=22.5, S.D.=1.2, range=19.6-24.7 g, N=78) (95% Confidence Interval Test, $P<0.05$). It is likely that the hatchlings were very young when they stranded since none had epizoans but each possessed an egg tooth and umbilical scar. Additionally, the dead individual examined contained a relatively large amount of internal yolk. The hatchlings probably emerged from one nest since they were found in fairly close proximity and within a few days of each other.

Table 2. Hatchling and post-hatchling sea turtles stranded on Padre and Mustang Islands from 30 June - 16 August 1990.

I.D. #	Species	SLCL (cm)	SLCW (cm)	CCL (cm)	CCW (cm)	Weight (g)	Stranding location	Stranding date	Comments ¹
LK-01	Lk	4.5	3.6	4.7	4.4		PI, Padre Balli Pk.	30 June	dead, y. et, us
LK-02	Lk	4.6	3.3	4.9	5.1	21	PAIS, 4.8 km marker	3 July	live
LK-03	Lk	5.0	4.6	5.0	5.2	21	MI, Pt. Aransas Co. Pk.	7 July	live, ep
LK-04	Lk	4.8	4.2	5.0	4.5	18	PAIS, Malaquite Beach	9 July	dead, y. et, us, F, ep
LK-05	Lk	4.7	4.4	5.0	4.8	15	PAIS, 12.8 km marker	11 July	dead, y. et, us, F
LK-06	Lk	4.5	3.8	5.2	4.9	10	MI, Mustang Island State Pk.	11 July	live, died, y. et, us, F, ep
LK-07	Lk	4.8	4.3	5.0	5.0	21	PI, 1.6 km N. of Bob Hall Pier	12 July	live
LK-08	Lk	5.2	4.6	5.4	5.5		MI, Pt. Aransas Co. Pk.	12 July	live, us
LK-09	Lk	5.0	4.7	5.1	5.3	18	MI, 27.2 km marker	16 July	live, died, ep, M
LK-10	Lk	5.0	4.6	5.2	5.2	21	PI, 1.6 km N. of Bob Hall Pier	17 July	live, ep
LK-11	Lk	6.1	5.6	6.5	6.7	40	PAIS, Closed Beach	18 July	dead, U
LK-12	Lk	5.5	5.1	5.8	5.9		PAIS, Closed Beach	19 July	live, ep
LK-13	Lk	5.0	4.6	5.2	5.2	18	MI, Pt. Aransas Co. Pk.	19 July	live,
LK-14	Lk	5.3	5.0	5.4	5.6	26	PAIS, Closed Beach	20 July	live, ep
LK-15	Lk	5.2	4.9	5.3	5.5	21	PAIS, 16 km marker	20 July	live
LK-16	Lk	5.1	4.6	5.7	5.1	21	PAIS, North Beach	21 July	live, ep
LK-17	Lk	4.5	4.6	4.7	5.2	19	PI, access rd. 4	22 July	live, died, F
EI-01	Ei	9.1	7.2	9.5	8.9	103	MI, Mustang Island State Pk.	22 July	live, ep
LK-18	Lk	4.6	4.3	4.9	4.9	15	MI, access rd. 2	22 July	dead, y. us, U, blind
LK-19	Lk	4.8	4.3	5.2	5.1	19	PI, Padre Balli Pk.	22 July	live
LK-20	Lk	5.0	4.7	5.2	5.2	19	MI, access rd. 2	23 July	live, died, F
LK-21	Lk	5.1	4.8	5.3	5.5	22	PI, access rd. 6	23 July	live, ep
LK-22	Lk	5.3	5.1	5.5	5.8	28	MI, Pt. Aransas Co. Pk.	24 July	live, ep
CC-01	Cc	4.3	3.5	4.6	4.2	16	MI, Horace Caldwell Pier	24 July	live, died, y. us, et, F
LK-23	Lk	5.1	4.7	5.2	5.6	24	MI, Horace Caldwell Pier	25 July	live
CC-02	Cc	4.5	3.8	5.0	4.8	17	MI, Executive Keys Condo	25 July	dead
LK-24	Lk	5.1	4.2	5.5	5.0		MI, Fish Pass	26 July	dead, ep
LK-25	Lk	4.7	4.6	4.9	5.1	19	PAIS, 3.2 km marker	27 July	live
LK-26	Lk	6.0	5.4	6.2	6.3	30	MI, Mustang Island State Pk.	27 July	live
CC-03	Cc	4.6	3.9	4.8	5.0	17	MI, access rd. 2	28 July	live
CC-04	Cc	4.6	4.1	5.1	4.9	19	MI, Executive Keys Condo	29 July	live

Table 2. cont.

I.D. #	Species	SLCL (cm)	SLCW (cm)	CCL (cm)	CCW (cm)	Weight (g)	Stranding location	Stranding date	Comments ¹
LK-27	Lk	4.6	4.1	5.0	5.0	17	PAIS, 25.6 km marker	5 Aug.	dead, us, ep
LK-28	Lk	4.2	3.6	4.4	4.4	13	PI, Padre Balli Pk.	6 Aug.	live, died
EI-02	Ei	6.6	5.6	7.0	6.7	42	PAIS, 5.6 km marker	9 Aug.	live
EI-03	Ei	6.6	5.6	7.1	6.8	43	MI, Mustang Island County Pk.	11 Aug.	live
EI-04	Ei	6.3	5.2	6.9	6.6	38	PAIS, Malaquite Beach	11 Aug.	dead
EI-05	Ei	7.2	5.7	7.5	7.0	46	PAIS, South Beach	16 Aug.	live, ep
EI-06	Ei	7.7	6.2	8.2	8.0	68	MI, Mustang Island State Pk.	16 Aug.	live
LK-29	Lk	5.0	4.7	5.3	5.5	22	MI, Mayan Princess Condo	17 Aug.	live
LK-30	Lk	5.0	4.9	5.2	5.5	21	PI, Padre Balli Pk.	17 Aug.	live
EI-07	Ei	7.1	5.6	7.5	7.0	49	MI, Mustang Island State Pk.	18 Aug.	live
EI-08	Ei	7.0	5.7	7.7	7.0	43	PI, 3.2 km S. Bob Hall Pier	18 Aug.	live
EI-09	Ei	7.1	5.7	7.5	7.1	42	PI, Padre Balli Pk.	19 Aug.	live
EI-10	Ei	6.3	5.1	6.6	6.4	36	PI, Padre Balli Pk.	20 Aug.	live
EI-11	Ei	7.1	5.7	7.4	6.9	43	MI, Avenue G.	21 Aug.	dead, ep
EI-12	Ei	7.4	5.9	7.1	6.7	50	MI, Mustang Island State Pk.	22 Aug.	live, died
EI-13	Ei	7.9	6.4	8.4	7.8	65	MI, Mustang Island County Pk.	23 Aug.	live
EI-14	Ei			7.4	7.0	45	MI, Sandpiper Condo	23 Aug.	dead, ep
EI-15	Ei	7.6	5.9	8.0	7.5	50	PI, 1.6 km N. Bob Hall Pier	24 Aug.	live, ep
EI-16	Ei	6.1	5.5	7.2	6.8	37	PI, Luby Surf Pk.	24 Aug.	dead
LK-31	Lk	4.8	4.3	5.1	5.3	14	PAIS, 12.8 km marker	25 Aug.	dead
EI-17	Ei	7.4	6.3	7.9	7.7	58	PI, 1.6 km N. Luby surf pier	26 Aug.	live, ep
EI-18	Ei	7.1	5.5	7.5	7.1	48	MI, access rd. 1A	26 Aug.	live

¹ y = internal yolk, et = egg tooth, us = umbilical scar, F = female, M = male, U = unknown sex,
ep = epizoan

The origin of stranded Kemp's ridley hatchlings is more difficult to ascertain since these turtles were of varying sizes, stranded over a protracted period of time, and stranded along a distance of over 78.4 km (Table 2). Straight line carapace lengths of the stranded *L. kemp*i ranged from 4.2 to 6.1 cm (mean=5.0, S.D.=0.4 cm, N=31) (Fig. 4) and weights from 10 to 40 g (mean=20.5, S.D.=5.9 g, N=27) (Fig. 5). Although many were missing portions of their flippers, it is impossible to determine whether these wounds occurred while the turtles were in the water or on the beach. Many of the stranded Kemp's ridleys had obviously been in the water for several days since they possessed epizoans and were larger than newly hatched Kemp's ridleys measured at PAIS (Shaver et al., 1986, 1987, 1988). Overall, the mean SLCL and weight of the stranded Kemp's ridleys were significantly greater than the mean SLCL (mean=4.2, S.D.=0.1, range=3.9-4.9 cm, N=925) and mean weight (mean=15.3, S.D.=0.1, range=11.7-19.1 g, N=925) of the 1988 year class of Kemp's ridleys hatched at PAIS (95% Confidence Interval Test, $P < 0.05$). However, a few of the stranded *L. kemp*i were the size of newly emerged hatchlings, contained internal yolk, possessed an obvious umbilical scar, and/or still had an egg tooth. It is possible that at least some of these stranded Kemp's ridley turtles emerged from nests laid on Texas shores (Amos, pers. comm.).

FUTURE PLANS

Public education programs, beach patrols, and protection and monitoring of nesting sea turtles and nests will be continued at the park during 1991. Attempts will be made to continue hummer patrols and volunteer participation in this project.

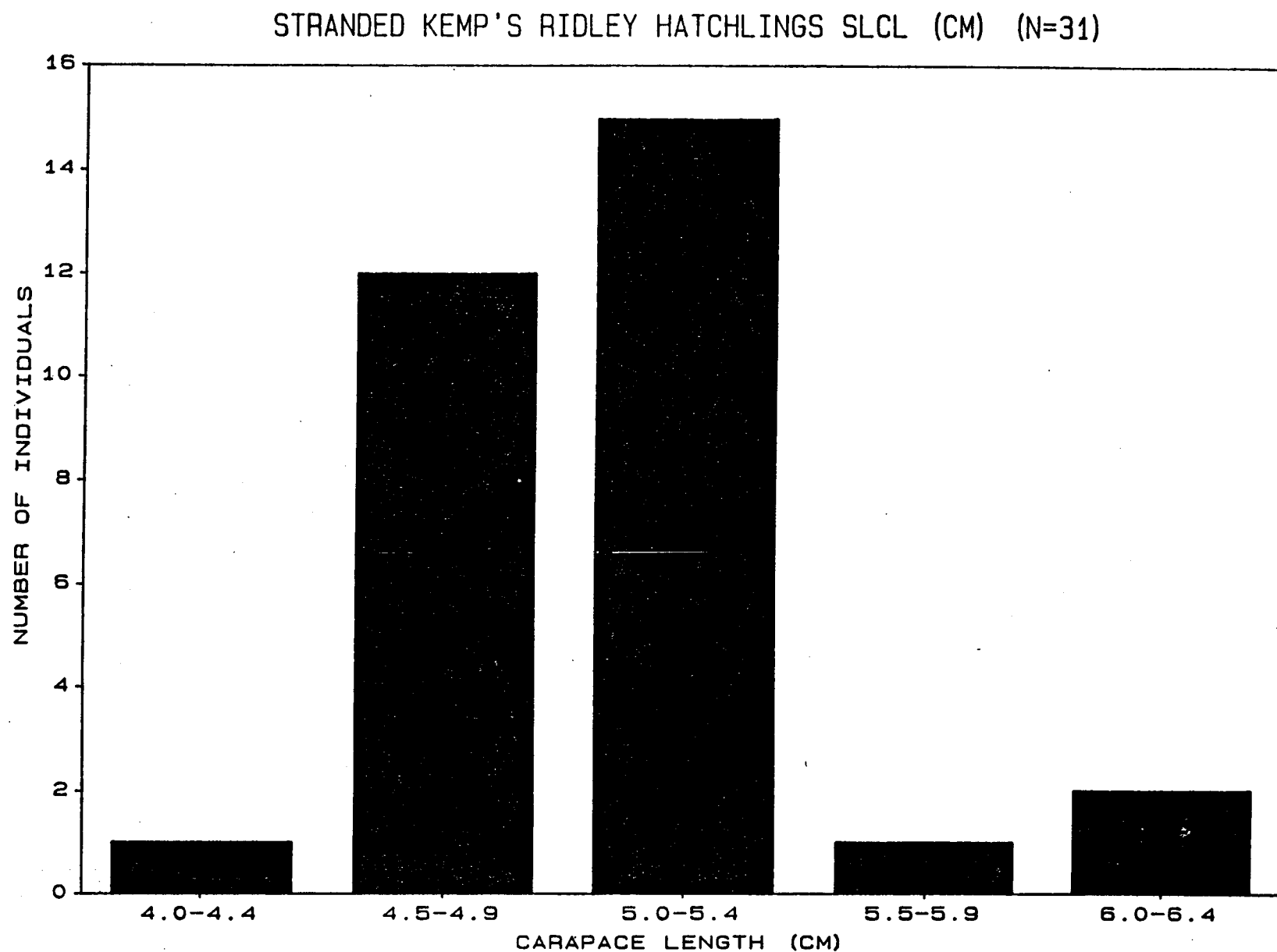


Figure 4. Straight line carapace lengths of Kemp's ridley sea turtle hatchlings that stranded during June, July, and August, 1990.

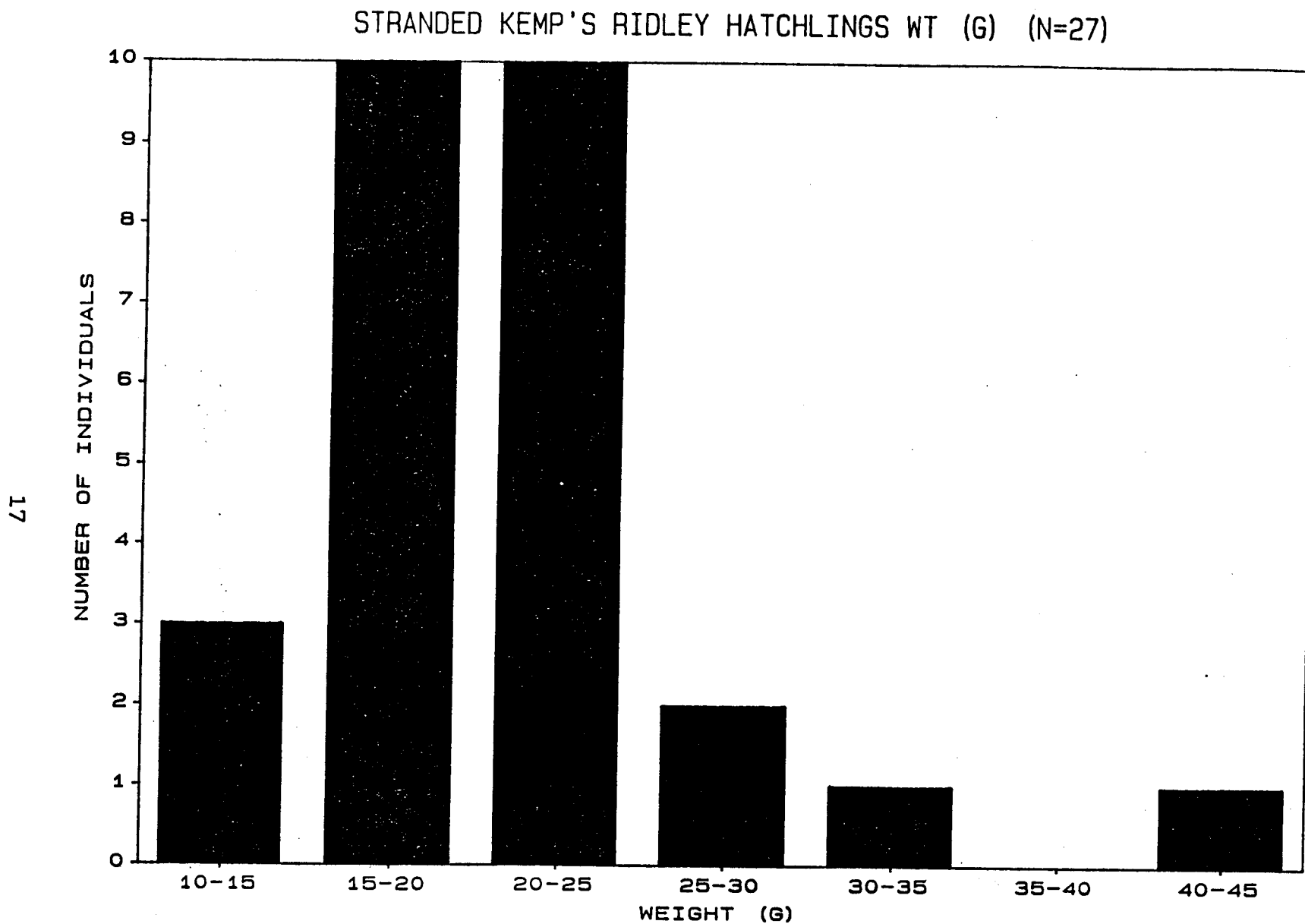


Figure 5. Weights of Kemp's ridley sea turtle hatchlings that stranded during June, July, and August, 1990.

ACKNOWLEDGEMENTS

Gratitude must be extended to Dr. Milford Fletcher (Chief Scientist, National Park Service, Southwest Regional Office) for continued support of the Kemp's Ridley Sea Turtle Restoration and Enhancement Project at Padre Island National Seashore. Without the assistance and support of PAIS managers John Hunter (Superintendent), Steve Adams (Chief Ranger), and John Miller (Chief, Resources Management), continued involvement in this project could not have occurred. David Bieniek, David Espinoza, Paul Eubank, Peter Morrell, Sonia Najarra, Rudy Villarreal, and other PAIS staff members who conducted patrols must be recognized for their efforts. The numerous volunteers who assisted with patrols are gratefully acknowledged as their efforts directly contributed to the success of the project this year. The efforts of the U.S. Marine Corps, and specifically Major Deissler, Sergeant Stafford, and Sergeant McBride, must be acknowledged for without their assistance approximately one-third of the patrols would not have occurred. Gratitude must be extended to Tony Amos (UTMSI) and to numerous other volunteers participating in the Sea Turtle Salvage and Stranding Network who detected, protected, and documented the stranded hatchlings.

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