McFADDIN NATIONAL WILDLIFE REFUGE

Sabine Pass, Texas

ANNUAL NARRATIVE REPORT
Calendar Year 1984

U. S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

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REVIEW AND APPROVALS

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Richard Munoz 5/24/85 Billy J Hawthorne 6-13-85
Refuge Manager Date Refuge Supervisor Review Date
Actg.

W. Ellis Klett 6/18/85
Regional Office Approval Date

McFADDIN NATIONAL WILDLIFE REFUGE

INTRODUCTION

McFaddin National Wildlife Refuge is a 41,682-acre tract of marshland located along the upper Texas Gulf coast. The refuge lies twelve miles west of Sabine Pass, Texas, and sixteen miles southwest of Port Arthur, Texas. It is bordered on the east by Sea Rim State Park, on the south by the Gulf of Mexico and on the north and west by private ranches. The Intracoastal Waterway cuts through the refuge and divides what was once an interconnected water system into two distinct units, lying north and south of the canal respectively. The 35,768-acre south unit is predominantly an intermediate-brackish marsh complex consisting of a series of shallow lakes and ponds that drain to the east through Sea Rim State Park and eventually into the Intracoastal Canal and the Sabine River. Generally, only the eastern portions of the south unit are subject to daily tidal flows and as a result, represent the most brackish marsh on the property. High storm tides and hurricanes will flood large areas creating saline conditions however, these conditions are usually short-lived.

Most all of the vegetation south of the Intracoastal is salt-tolerant. Dominant species include marshhay cordgrass, seashore saltgrass, seashore paspalum, saltmarsh and Olney bulrush, and spikerushes. The 5914-acre north unit includes Willow Slough and consists entirely of fresh marsh with numerous grasses, sedges, rushes, and other plants. The dominant aquatic plant in Willow Slough is American lotus.

The topography of the refuge is flat and ranges from below sea level to approximately six feet in elevation. The spoil levees of the Intracoastal bank reach as high as fifteen feet and are the highest points on the area.

The climate along the upper Texas Gulf coast is generally mild and humid. The area is cooled by prevailing southerly offshore winds in the summer and warmed by the Gulf influence during the winter. Temperatures rarely reach above 100 degrees or below 32 degrees. High temperatures (mid-90's) and high relative humidity (75% and up) during the summer months can make for uncomfortable working conditions.

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I. EQUIPMENT AND FACILITIES

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L. INFORMATION PACKET

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A. HIGHLIGHTS

New permit system was implemented on the east side of the refuge for waterfowl hunting (Section G.3.).

State starts construction of Highway 87.

The start of cooperative agreement #14-16-0009-1515 Research Work Order No. 7. (Section D.5.).

B. CLIMATIC CONDITIONS

The winter of 1983 ended with bitter cold weather for the refuge. The refuge experienced temperatures that did not rise above freezing from December 22 through December 27. The temperatures dropped to 16 degrees on December 24 and completely froze the marsh for three days. With the thawing of the marsh around the first of the year, the weather did a complete turnaround. Instead of bitter cold weather, we had weather that felt more like early spring rather than mid-winter. The temperatures were in the mid-50's through the high 60's; in fact high enough for the refuge alligator population to enjoy this warm weather for a change. The winter of 1984 proved to be a repeat of the winter of 1983 with numerous Arctic cold fronts. During the period of December 20 through December 25, the refuge experienced freezing rain, snow, and sleet.

During the beginning of the year, the marsh experienced good natural draw down due to the lack of rainfall early in the year. The refuge received sufficient rainfall throughout the year to maintain good water levels for emergent and submergent vegetation (See Rainfall Chart). October proved to be the wettest month of the year with 9.76 inches of rain being recorded. April was the driest month of the year with no rain being recorded. Sufficient rainfall in October and November kept the marsh in good condition for the wintering waterfowl population.

RAINFALL

Jan	5.82	May	9.25	Sep	2.86
Feb	2.65	Jun	1.71	Oct	9.76
Mar	1.53	Jul	5.28	Nov	5.71
Apr	.00	Aug	2.49	Dec	4.39

TOTAL ANNUAL RAINFALL 51.36

D. PLANNING

2. Management Plan

The Fire Management Plan was completed on January 12. Major revisions were added to the refuge's Waterfowl Hunting Plan to include the new permit hunt on the east side.

5. Research and Investigations

McFaddin NR 84 - "Shot Ingestion Study" (21525-4)
As part of the statewide study, waterfowl gizzards were collected and analyzed for shot ingestion during the 1984-85 waterfowl season. A total of 244 duck gizzards were collected. All gizzards were noted as to where they were collected (non-permit or permit area) and the species. The gizzards were donated by hunters on a voluntary basis throughout the season. The accompanying chart shows a detailed analysis of the shot ingestion.

One pintail gizzard contained 21 lead and 1 steel pellets. Three scaup gizzards contained small pellets of brass and aluminum. One scaup also had a small ball of monofilament fishing line in his gizzard.

This is the first year we have divided the refuge into two distinct collecting areas which correspond to the permit and non-permit hunting areas. It is recommended that the gizzard data be recorded separately from these two areas in the future. It is possible that there is enough difference in soil types, sedimentation, and vegetative types between the two areas which will attribute to more shot being picked up within the permit area.

McFaddin NR 84 (Cooperative Agreement #14-16-0009-1515)
(Research Work Order No. 7)
"The community structure and dynamics of aquatic resources in relation to the hydrology and selected physio-chemical conditions of a south-east Texas estuary"

Due to the delay in funding, Louisiana Cooperative Fishery Research Unit and U. S. Geological Survey did not start routine sampling until September 1984. Bimonthly samples were taken at two proposed weir construction sites within the McFaddin Refuge, Murphree Wildlife Management Area, and Sea Rim State Park complex. Samples were taken to monitor movement of commercially and recreationally important organisms in and out of the estuaries. The first quarterly report has been done and is included in this narrative. The next quarterly report will be forthcoming in April 1985.

E. ADMINISTRATION

1. Personnel

The lack of personnel for a full twelve month calendar year was once again the single most administrative problem experienced this year. We started the year with a full crew of three fulltime employees. The reassignment of Dave Stanbrough to Brazoria/San Bernard Complex (3/4/84) left Texas Point unmanned. Jim Shelton (biologial technician McFaddin) was reassigned to Texas Point (4/15/84) leaving McFaddin with just two fulltime employees. Gary W. Juenger was hired to work as a temporary maintenance person (3/26 - 7/21) on McFaddin. Gerald (Jerry) M. Lewis transferred from Imperial NWR to McFaddin (7/8). Both Gary and Jerry helped the refuge through those hectic summer months with YCC employees.

Anahuac maintenance workers provided much needed assistance during peak work activities. Anahuac provided heavy equipment operators to help in the relocation of the Intracoastal Levee Road (westbound). Russel W. Clapper (complex project leader), William E. (Ed) Jackson (assistant project leader), and Ilene W. Manuel (office assistant) once again provided invaluable assistance to the refuge.

	PERMANENT		TEMPORARY
	Fulltime	Parttime	
FY 84	3	0	1
FY 83	3	0	2
FY 82	3 (1 STF)	1 (STF)	1
FY 81	2 (1 STF)	1 (STF)	0
FY 80	2 (1 STF)	0	0

2. Youth Programs

YCC activities began early in the year with contacts being made to area high schools. The Sabine Pass high school students were the only students who showed an interest in applying for the four enrollee positions at the refuge. There were eleven applications accepted. The four positions were filled by randomly drawing numbers with the first four selectees accepting the available slots. Most of the YCC-related work activities centered around facilities maintenance. Other valuable assistance by enrollees were in the area of fence construction, minor mechanical work on vehicles, boat ramp construction, and carpentry projects. There was a slight problem in having four enrollees in that it took two refuge pickups to move them to work sites.

5 4 3

PERSONNEL

1. Russel W. Clapper, Project Leader, GS-485-12 (PFT)
2. Wayne J. King, Refuge Manager, GS-485-9 (PFT)
3. James N. Shelton, Biological Technician, GS-404-5 (PFT)
5. Gerald M. Lewis, Maintenance Worker, WG-4749-8 (PFT)
4. Wayne A. Morvent, Maintenance Worker, WG-4749 (PFT)

4. Volunteer Program

We had two volunteers, Dr. John Delimonta (assistant professor of Geoscience at Texas A&I at Kingsville) and Aggie Shelton (Jim Shelton's wife). John helped out with the refuge herpetological list and alligator tagging and Aggie helped out with the bird list, office typing, and drove the airboat during the alligator tagging expeditions.

5. Funding

Refuge funding was sufficient to carry out the minimum objectives outlined in the Annual Work Plan for the year. The final AWP budget for McFaddin was $149,400.

	FY 84	FY 83	FY 82	FY 81	FY 80
1210	-	94,900	130,000	165,000	169,000
1220	-	6,000	5,000	10,000	-
1240	-	19,000	18,000	-	-
1260	136,000	-	-	-	-
1994	4,000	2,000	2,000	4,000	-
6810 & 6860	4,000	4,000	3,000	-	-
6820	-	-	1,000	-	-
1510 & 1520	4,900	343	-	-	-
TOTAL	149,400	126,243	159,000	179,000	169,000

6. Safety

The Anahuac Complex safety meetings were conducted at the Anahuac office with McFaddin and Texas Point personnel usually attending. On several occasions, McFaddin and Texas Point personnel held their own safety meeting due to scheduling problems that prevented them from going to Anahuac. Each of the safety meetings throughout the year were well planned with a wide range of topics. The staff at McFaddin and Texas Point have taken the following courses at the refuge: American Red Cross Multimedia Standard First Aid, American Red Cross Cardiopulmonary Resuscitation (CPR), and the Smith System Space Cushion--No Accident Driving Course. Also, Wayne Morvent (maintenance worker) is also a trained Red Cross first aid instructor. Refuge personnel were able to work through the year with only one serious accident. One of the refuge employees broke one of his ribs at FLETC during his arrest technique class.

F. HABITAT MANAGEMENT

1. General

The overall habitat conditions on the refuge were probably the best we have seen in the short five year history of the refuge. The water levels and vegetative production for 1984 can be directly related to the three major habitat management techniques employed on the refuge: water manipulation, grazing, and prescribed burning, which are discussed in the following sections.

2. Wetland

As mentioned in past years, the most successful waterfowl management at McFaddin Refuge requires the capability of manipulating water levels. Steps were taken toward this goal in 1984 with the help of nature and the installation of the water control structure in Perkin's Levee (Star Lake) during 1982. With the Perkin's Levee structure in place, a concentrated effort was given to wetland habitat management within the 16,000-acre Star Lake area. The water levels were lowered throughout the winter and spring months of 1984 with the hopes of stimulating seed production of desirable plant species in the upper, as well as the lower, prairies of Star Lake. The ability of a greater control of the water levels in Star Lake proved successful with tremendous production of saltmarsh bulrush (Scirpus robustus) being produced.

The water quantity and especially the water quality was enhanced throughout the year by working closely with Gulf Oil Corporation personnel. Gulf oil leases the land where the deteriorated water control structure is located along the Intracoastal Canal and Star Lake. The Intracoastal Canal structure was ninety percent closed off in 1982 allowing for almost exclusive control of the water at Perkin's Levee. The water quality in Star Lake increased as fresh water from rainfall was being trapped and the less desirable Intracoastal water was being held out. A direct result of the fresh water supply in Star Lake was obvious as more fresh water-tolerant vegetative species were seen. For the first time, white water lilies appeared along with many different species of pond weeds. The Star Lake area is beginning to show signs of the pre-Intracoastal Canal fresh water marsh that it once was.

An easement agreement with the state of Texas was granted to the Service to construct two low-level water control structures on Sea Rim State Park. These structures will enable the refuge to control the water management in 4600 acres of the Old Standard Brass Camp area.

7. Grazing

Cool season grazing was once again allowed on the refuge as a management tool to help reduce climax stands of marshhay cordgrass and to maintain the short grasses much preferred by geese. Cattle owned by Sabine Production Company entered the north refuge unit and grazed during the early winter before swimming the Intracoastal Waterway for winter and early spring grazing. On the south side, only the Star Lake pasture was grazed this year. A summary of past year's grazing fees are as follows:

CY	COST PER AUM	NO. OF HEAD	TOTAL RECEIPTS
1984	$2.50*	2076	$30,143.52
1983	2.50**	2076	31,801.76
1981-82	2.00	2500	27,600.00
1980-81	1.25	2500	18,210.00

* (Jan 1 to Apr 30 AUM = $2.38)
(Nov 1 to Dec 31 AUM = 2.50)

** (Jan 1 to Apr 30 AUM = $2.50)
(Nov 1 to Dec 31 AUM = 2.38)

THE CLAM LAKE GRAZING PROGRAM PROPOSAL

The McFaddin NWR has a long history of grazing use. It was especially valued by the prior owners as winter range for livestock, duck and goose hunting, alligator and furbearer trapping, etc.

The ranchers used fire and grazing to improve forage production and accessibility in the marshes.

Since acquisition, burning and grazing have continued on portions of the refuge but at a reduced rate.

Due to problems smoke creates when burning marsh vegetation and in view of continuing trends for more restrictions on planned burning by the Texas Air Control Board, refuge personnel especially in this area (which is adjacent to a state highway, state beaches, the Gulf Intracoastal Waterway, nearness to the Port Arthur ship channel, industrial complexes, Beaumont airport and Beaumont's outlying metropolitan areas) was searching for practical grazing alternatives to offset the amount of marsh area to be burned annually.

New developments in the field of range management using short duration type grazing (SDG) concepts show promise of accomplishing many refuge objectives in a more effective manner than any other alternatives we know about. As a result, a SDG program has been approved for implementation in the 5270-acre Clam Lake Grazing Unit.

The following guidelines and comments have been outlined to describe some of the planning detail to acquaint others about the proposal.

1) Cattle must be grouped to achieve the desired animal impact on the land.

2) The area will be fenced so livestock can be controlled to obtain correct grazing periods consistent with sufficient periods of rest throughout the grazing period. A unique fence arrangement will be installed to achieve the SDG time dimension of graze and recovery. This involves subdivision of the pasture into a multiple of pastures of near equal proportions for the purposes of obtaining management flexibility in times of drought, high water, fire, or other disasters besides facilitating management efficiency. Most of these pastures will begin at a common point where water, salt, and other management facilities will be located.

   All interior fences will be constructed of 1, 2, or 3 slick wires utilizing 1" fiberglass sucker rod posts. New developments in the field of electric fencing lowers costs of improvement over conventional type fence without sacrificing control over stock. The smooth 12-gage wire will be stretched tight (no sag) at approximately 175 pounds of tension.

   This type of fencing is very durable, cheaper, easier, and faster to construct. New energizers utilizing low impedence type circuitry will be used to prevent accidental setting of fires in dry periods.

   Since this operation utilizes cows with calves during part of the grazing season, most upland area fences will be two-strand with single strand fences in wetland situations. The top wire will be grounded in multiple wire fences to prevent cattle loss from lightning storms.

   Post spacing is strictly dependent on surface relief as the power fencing principle depends on containing stock by gaining absolute animal respect. This is accomplished by imprinting stock about electricity then controlling them by fear of being shocked again.

   The fencing arrangement to be used here was designed to reduce livestock stress primarily due to frequent movement from pasture to pasture. Much emphasis has been placed on facilitating fast,

smooth stock flow from pasture to pasture. Ill arrangements of water, salt, gates, and other required management facilities in the central hub result in negative stock reactions.

The use of these management centers may also strengthen livestock in regard to improved stock performance. This area seems to serve as a sort of homebase--an area livestock appear to "relate to" in locating pasture to pasture entry gates. Cattle are creatures of habit, therefore are easily imprinted or patterned to positive actions. Allowing stock to pattern themselves on simple acts of herd rotation becomes a natural reaction.

3) Plant growth rates must be monitored and stock density rates should be favorable in order to achieve optimum livestock distribution in concert with correct graze (this period must be short enough to prevent the most palatable plants from being over-grazed) and rest (a sufficient rest period allows the most productive plants, which are the heavily grazed ones, to recover before the next grazing) cycles. Correct (heavy) grazing pressure stimulates grass growth (if a high proportion of all grazable plants are grazed to some degree) fostering vegetative cycling, thus production of a high proportion of vegetative plant parts (through increased tillering) preferred by stock, geese, and other wildlife. It is most important to note that plant leaves are produced sequentially, not in bulk. Stockpiled forage supplies are of less forage quality due to top growth accumulation, proportion of flowering culms to leaf surface area, development of awns and other plant parts that act as diversionary grazing mechanisms. Managers and livestock operators must know, recognize in the field how plants grow, what regulates initial plant production and understand plant reactions due to the various states of defoliation that occurs during the growing season and subsequent periods of growth in order to fully design and fully execute this fundamental part of the SDG program. Learning to detect and react to cause/effect management is the cornerstone to successful range management. The better one understands these "states" of plant demography, the greater the grazing program results will be for the benefit of the wildlife component.

4) Stocking rate determination is difficult at best due to trampling losses in the boggy marsh soils and geese interaction. Basically this is simply determined by balancing forage demand with the proposed stocking rate, this in return is linked to forage production, forage quality, and how effectively a manager can use that production.

Initially we plan to stock the area with a base herd of 900 AU and increase those numbers until we reach what we determine as correct stock density through evaluation. Wildlife response in terms of browsing geese is one of our initial objectives.

This grazing evaluation is a pilot effort utilizing SDG techniques for the benefit of wildlife in the upper Gulf coast of Texas.

It is the intention of this endeavor to serve as a viewing model to demonstrate sound resource management thinking and to encourage other land users to employ what we believe is practical alternatives to continuous type grazing programs.

This program proposal has met all regional office requirements and was approved for operation in October 1984. Delays in the special use permit approval process, archeological report, fence construction, and other works of improvement, etc. has resulted in NO action taken in 1984.

9. Fire Management

The primary wildlife management tool presently in use on the refuge is burning. The burning of thick, climax vegetation enhances wildlife value by reducing the rank upper growth, dead material, and high fuel loads. Upper Texas coastal burning and grazing activities work hand in hand to benefit the habitat and the wildlife resource. Burning is generally limited to the fall and early winter months with the exception of some late summer activity. Climax stands of Spartina patens is unsuitable for wintering waterfowl, thus, burning is used to set back this successional stage. When cattle are able to graze the new growth they will maintain it at optimum levels for good goose use. Burning also enhances the growth of Scirpus olenyi and Scirpus robustus which are highly valuable muskrat foods as well as being utilized by waterfowl.

Limited burning activities were accomplished this year which was contributed mainly to less than desirable weather conditions during the months of September and October, when most of the burning is accomplished. The less than desirable conditions were due to the water levels in the marsh behind the office (Permit Area) being higher than normal leaving more surface water in the marsh than required for a good "clean" burn. Also, wind conditions were never from an ideal direction or speed to allow us to burn safely.

The refuge experienced lightning fires, one fire caused by fireworks, one fire of undetermined origin and three prescribed fires. (See Map). The fire caused by fireworks occurred on July 4. The refuge at that time was very dry due to the lack of rain. The fire was allowed

to burn itself out which it did in about 20 hours. The lightning fire which occurred on July 25 burned an area adjacent to the refuge's main road and Shell Oil storage tank. Refuge staff along with Shell employees quickly backburned the area to speed up the fire. The fire of undetermined origin started on September 10 on Sea Rim State Park and crossed over onto the refuge resulting in the burning of approximately 1200 acres of refuge marsh. The location of the fire was in an area where the main refuge road was closed to traffic for about four hours on September 11 until backburning activity could be accomplished.

A REPRESENTATIVE OF THE MOTTLED DUCKS
PRODUCED ON THE REFUGE THIS YEAR - 84

G. WILDLIFE

2. Endangered and/or Threatened Wildlife

The refuge once again supported a sizeable population of alligators. The Service successfully delisted the American alligator from the endangered species list in 1983. This delisting opened the door for the state of Texas to conduct a controlled harvest of these reptiles in Jefferson, Chambers, and Orange Counties during September 1984. No harvest was permitted on McFaddin due to administrative preference. The J. D. Murphree Wildlife Management Area (12,000 acres) which is adjacent to the north unit of the refuge harvested 77 alligators in the 4' to 13' range.

Two alligator surveys were conducted on the refuge in conjunction with the Texas Parks and Wildlife alligator counts. One of the surveys was run in the Willow Slough area, which is a highly productive fresh water marsh. The other survey was in the 10-mile cut area, a brackish water marsh which is not so productive for alligators. A breakdown of the surveys is as follows:

Length	"10-Mile" Cut (6/1/84) (Distance surveyed 10 miles) No. Counted	Willow Slough (6/25/84) (Distance surveyed 5 miles) No. Counted
Less than 1'	0	6
1-2	0	23
2-3	0	11
3-4	1	13
4-5	1	7
5-6	2	7
6-7	4	8
7-8	1	2
8-9	0	0
9-10	0	2
10 & over	0	1
Unknown (<6)	1	15
Unknown (>6)	2	26
Unknown Size	25	78
TOTAL OBSERVED	37	199

During the 1984 calendar year, a total of 27 sea turtles washed ashore on McFaddin's beaches. One turtle washed ashore alive (Atlantic Ridley) and was tagged and released, the remaining 26 were dead. The following sea turtles were washed ashore: 22 Atlantic Ridley

(Lepidochelys kemp), 4 loggerheads (Caretta caretta) and 1 leatherback (Dermochelys coriace). The leatherback might possibly be the first stranding since the 1950's. Seventy-five percent of the loggerheads were adults according to their size. Eighty-six percent of the Ridley's were sub-adult according to their size.

Jim Shelton is coordinator for reporting all sea turtle strandings on the upper Texas coast.

3. Waterfowl

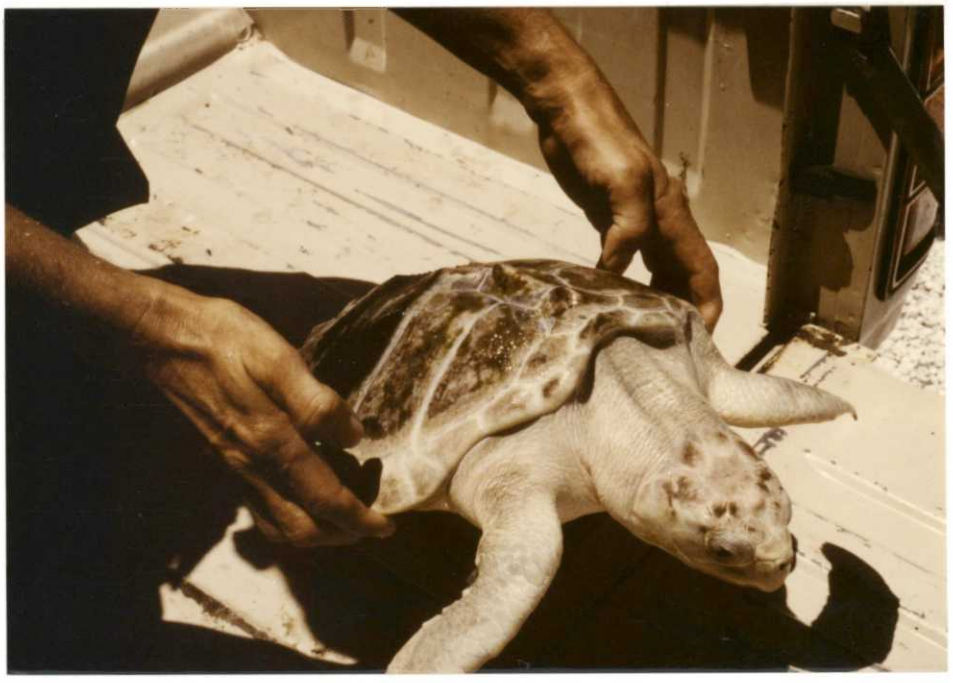
The primary management objective of McFaddin Refuge is to provide and maintain habitat for wintering, migratory, and resident waterfowl. The refuge and surrounding wetlands are of great importance to coastal wintering populations of migratory waterfowl in the Central Flyway. Waterfowl numbers normally are highest on the refuge during January and early February after the close of the waterfowl hunting season. Populations decrease with the onset of the spring migration. During the summer months, only the resident mottled duck utilizes the marsh. Duck populations build up throughout the fall migration and in early winter, starting with the arrival of blue-winged teal in August.

Two aerial census flights were taken this year utilizing refuge personnel and Service aircraft and pilot. The lack of regularly scheduled ground or boat census and lack of personnel combined with scheduling problems during the waterfowl hunting months were the main contributing factors for the lack of good concrete waterfowl data.

Once again peak waterfowl populations were reached in January 1984, totaling an estimated 105,595, followed by February with 75,980. Goose concentrations did not start building up until late January (40,000+). The largest concentration of geese was in the higher marsh prairies that were burned in early September.

By late March, the major portion of the wintering waterfowl population was gone with signs of blue-winged teal migration being apparent. The peak blue-winged teal migration came through the refuge the second week of April. The spring and summer mottled duck prouction was below average this year with less broods of ducks being observed by refuge personnel. An interesting observation was made late one evening in June by Jim Shelton along the Intracoastal Levee Road. Jim was traveling west on the Levee Road when he observed a brood of mottled ducks along the southern shore of the Intracoastal Canal swimming north. A short distance ahead of the truck Jim observed another brood crossing the road in front of him heading for the Intracoastal Canal. When Jim was able to stop the truck, the ducklings were sliding down the Intracoastal bank and into the water (a drop of ten feet). The broods had approximately 12 to 13 young.

TRI-COLORED HERONS WERE ONE OF SEVERAL SPECIES THAT NESTED AGAIN ON THE WILLOW SLOUGH ROOKERY 84



THIS KEMP'S RIDLEY TURTLE WAS TAGGED AND RELEASED BACK INTO THE GULF OF MEXICO AFTER BEING FOUND STRANDED ON THE BEACH ADJACENT TO THE REFUGE 84

Heavy concentration of blue-winged teal were noted in September of this year. Pintail, mallard, and wigeon numbers were lower than usual, however, the wintering population of gadwall, canvasback, and lesser scaup was up considerably from previous years.

The overall waterfowl numbers were up slightly from 1983 with widespread use over the entire refuge. More ducks were observed utilizing the eastern half of the refuge (Standard Brass Camp) than in 1983 which is thought to be directly related to a good quality water supply and the availability of high quality food. The eastern part of the refuge supported a healthy stand of emergent and submergent vegetation. The eastern half of the refuge is where the largest concentration of canvasback, gadwall, and lesser scaup were seen.

4. Marsh and Water Birds

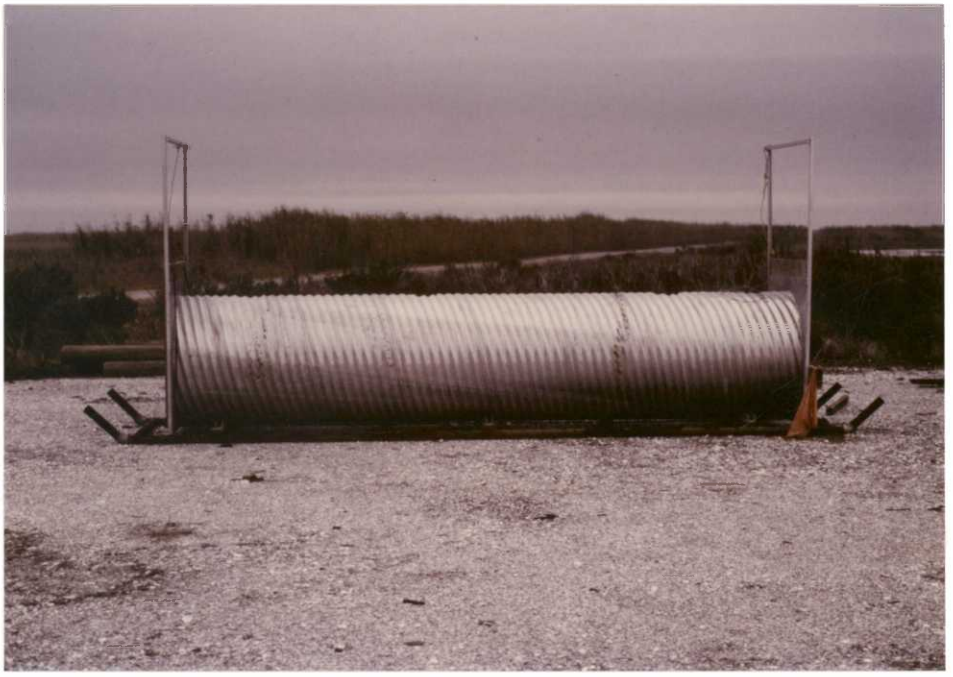
The production of marsh and water birds varied with the different species. It was a excellent year for tri-colored herons, king rails, clapper rails, common gallinules, and purple gallinules. Killdeer and common nighthawk production was down this year again. A higher than normal rainfall throughout the spring and summer could have been a contributing factor for the decline in nesting activities of these two ground-nesting species. Green heron nesting was also lower than normal this year due to a wildfire in Willow/Barnett Ditch area burning a large portion of their nesting habitat in that area. Green heron were noted nesting in other parts of marsh where they have never been seen nesting before. Increased nesting activity of great egrets and tri-colored heron on the north unit of the refuge was noted this year. We plan on exploring this area further for other nesting activity. Pied-billed grebe nesting activity was discovered for the first time this year on the north unit.

Wading bird activity was down throughout the spring and summer due to the lower water tables. However, with the advent of the fall rains and fall prescribed burns the wading bird activity inreased dramatically. Several common loons were sighted again in Clam Lake. Yellow and black rails were sighted in September during a few of the prescribed burns. A sighting of a very young pied-billed grebe brood near the office was made in October.

6. Raptors

The most common raptorial birds seen on the refuge during the year were the norther harrier (marsh hawk), American kestrel, and the red-tailed hawk. Red-tailed hawk sightings increased with the coming of cooler weather. Black-shouldered kites, which are commonly seen here were lacking in numbers this year. Also there were fewer sightings of

THIS PALLID SOFT-SHELLED TURTLE FOUND ON THE REFUGE TURNED OUT TO BE WORLD RECORD SIZE 84



AN ALLIGATOR TRAP CONSTRUCTED OUT OF A CULVERT PROVED VERY SUCCESSFUL IN DEALING WITH PROBLEM ALLIGATORS 84

osprey on the refuge this year. Barn owls were also common residents of the refuge. One abandoned duck hunter's camp was found to be home for eight barn owls as one refuge employee found out. As the door of the old camp was being opened to enter, all eight owls decided to exit out the same door. Needless to say, there were more than owl pellets left at the camp door before it was all over with. It appears that the favorite avian prey species on the refuge for marsh hawks and red-tailed hawks is red-winged blackbirds. Numerous sightings were made of these raptors flying off with the blackbirds in their talons. A Cooper's hawk was sighted taking a red-winged blackbird from the refuge resident bird feeder one afternoon.

An Arctic peregrine falcon survey was conducted by Jim Shelton on his own time along McFaddin and Texas Point beaches. A total of five dawn surveys (October 1-5) were conducted to monitor the use of the beach by migratory raptors. Three surveys (October 1,3,5) were run on McFaddin while October 2 and 4 were dates chosen to run the Texas Point Surveys. Two immature males were sighted on McFaddin an none on Texas Point. A longer survey is planned for next year.

7. Other Migratory Birds

The refuge is an important nesting place for migrating passerines that cross the Gulf of Mexico. The peak passerine migration was observed in late April. Blue jays, catbirds, and robins were sighted early this fall on the refuge. Normally these birds are not commonly seen in the marsh. A groove-billed ani was observed in the garage area of the refuge residence in October. Large numbers of mourning doves were sighted migrating through the refuge in early October. A few white-winged doves were noted. Increasing numbers of red-winged blackbirds and starlings are being seen on the refuge. Increased nesting by red-winged blackbirds in the marsh was also noted. A few yellow-throat warblers were seen in the marsh all winter long.

8. Mammals

Muskrat activity has increased considerably over the past years. Muskrat "beds" have been discovered in areas that had no activity when the refuge was acquired. Increased sightings of otter and mink were noted on the refuge this year. The once abundant nutria is seldom

ONE OF SEVERAL ALLIGATORS TAGGED ON THE REFUGE AS PART OF A STUDY DESIGNED TO ANALYZE THE STATUS OF THE REFUGE ALLIGATOR POPULATION 84

ALLIGATORS BECOME PROBLEM ANIMALS WHEN VISITORS FEED THEM SCRAPS. THIS TYPE OF ACTIVITY IS DISCOURAGED. 84

seen in the marsh now. The increasing alligator population may be contributing to lower the nutria numbers. Increased sightings of bobcats were noted this year. This sly creature is rarely seen in the marsh. No white-tailed deer sightings were reported this year on the refuge. A few large tracks were found on the Intracoastal Canal bank this summer. The north unit of the refuge usually supports a small herd of 14 to 18 animals. Increased sightings of armadillo are being made on the refuge. Normally armadillo are rare in the marsh.

Large numbers of feral cats and dogs were reported on the refuge this year. People continue to dump unwanted animals on the refuge.

9. Marine Mammals

Thirteen Atlantic bottle-nosed dolphins (Tursops turncatus) and one beaked whale were discovered stranded dead along McFaddin beaches during the year. The dolphins ranged in size from 44 inches to 101 inches. They ranged in age from newborns to 14 years of age. Majority of the stranding occurred in March (54%). The identity of the beaked whale is still being questioned. The whale is either a goosebeak whale (Ziphius cavirostris) or a True's beaked whale (Mesoplodon mirus), both of which are extremely rare for the Texas Gulf coast. Texas A&M University and the Smithsonian Institute are conferring over the identity and possession of the skeletal remains. This must be the only complete skeleton in the U.S.A. Biological technician Shelton with two volunteers from the American Cetacean Society spent eight hours doing a complete necropsy and deboning of the 18 foot, 3000 pound whale. Shelton is in charge of the Texas marine mammal stranding network for the upper Texas coast from High Island to Sabine Pass.

10. Other Resident Wildlife

Reptiles - With the help of refuge volunteers we have been working toward completing a reptile list for the refuge. We hope to complete this as soon as we have collected enough data. One of the new species we have found is a Pallid spiny softshell (Trionys spiniferus pallidus). This softshell is not only a new species here, this individual that was captured might also be the new record size for this species. The old record was 16 3/4 inches. This individual was measured at 21 inches and weighed approximately 24 1/2 pounds. The refuge might also contain a new record red-eared turtle. A few red-eared turtles have been caught that are within 1/2 inch of the old record of 11 inches.

BIOLOGICAL TECHNICIAN JIM SHELTON FOUND THIS ALLIGATOR DEAD NEAR STAR LAKE WITH ITS TAIL MISSING, A VICTIM OF POACHING 84

NUTRIA ARE FOUND ON THE REFUGE, BUT THIS EXOTIC SPECIES HAS FORTUNATELY REMAINED IN LOW NUMBERS 84

Speckled kingsnakes are being found on the refuge with unusual patterns on their backs. These unusual patterns might indicate a possible hybridization between the speckled and desert kingsnakes.

13. Surplus Animal Disposal

A trap was constructed by refuge personnel to live trap large alligators safely. The trap was made out of 36" diameter aluminum culvert 15' long with sliding doors at each end. The trap was succesful. The first alligator to fall to the trap was "Tom"--an alligator that had been taking handouts for about three years. This "tame" alligator was making the refuge personnel very uneasy. Tom was about 10 1/2 foot long and weighed approximately 375 pounds, a very healthy gator, and was safely moved from McFaddin to Sea Arama in Galveston, Texas. The trap was transferred to Anahuac NWR where it was used to live trap another 10-11 foot gator and transport it to Sea Arama. Sea Arama has all the Federal and state permits needed to receive surplus gators.

16. Marking and Banding

Biological technician Shelton is conducting a "mini" experiment on young alligators. To this date, Jim has aged, sexed, collected food samples, and tagged over 42 alligators. The alligators ranged in size from 20 inches to 6'4" long. With this "mini" study, we hope to determine the potential growth and movement of the gators within their natural habitat. Some of the food samples examined show a large percentage of the alligators in the 3' to 6' range consume mostly blue crabs, crayfish, and giant water beetles. These samples are taken by flushing out the stomach with fresh water and examining the regurgetated food material. This method has proven to be painless and harmless to alligators and is widely used at the Everglades National Park. One gator caught and tagged on March 21 measured 3' in length. The same alligator was recaptured on September 21 and at that time measured 3' 6 3/4". The same alligator grew 6 3/4" in 154 days and was captured 3.5 miles east of where he was originally tagged. The alligators on the refuge are extremely healthy and we feel that this data will prove to be invaluable in future years if and when the number of alligators outgrows the carrying capacity of the land.

LIFE AND DEATH IN THE SALT MARSH--A GULF COAST RIBBON SNAKE EATING A LEOPARD FROG 84

BEACH SURVEYS CONDUCTED BY BIOLOGICAL TECHNICIAN JIM SHELTON GATHERED IMPORTANT DATA ON MARINE MAMMAL STRANDINGS, SUCH AS TRUE'S BEAKED WHALE PICTURED ABOVE 84

H. PUBLIC USE

1. General

Information and interpretive programs continued to develop slowly throughout the year. The Planning Needs Assessment adressed areas having potential growth concerning activities and facilities for public use. At present the most popular, demanding, and time-consuming public use activity on the refuge is waterfowl hunting however, fishing use picked up throughout the year.

2. Outdoor Classroom - Students

A slide presentation and refuge tour for 30 high school students and five adults from Richardson, Texas, was conducted in April.

8. Hunting

Waterfowl hunting is the main public use activity on the refuge.

This year was the first time a partial permit system was implemented on the refuge for waterfowl hunting. The eastern part of the refuge, east of the Entrance Road, was put on a first-call/first-reservation permit system to ease the overcrowding problem we have experienced the last few years.

With the implementation of this new permit system, quite a bit of grounds preparation was needed to get ready for the 1984-85 hunting season. The main activities were new signs dealing with the refuge permit system, new rules and regulations on the permit system, regulation signs and cutting the grass on the parking lots. A great deal of time was spent by both office personnel (McFaddin and Anahuac) answering telephone inquiries and mailing replies to hunters about the new hunting program. Staff time was also spent answering questions by hunters who came by the office wanting information. Once again, hunters visited the refuge on days prior to the hunting season to scout possible huntable areas and become more familiar with the marsh. The refuge held "open house" one Saturday in October to let some of the hunters who work during the week come out on a day normally closed to visitation. The hunters were allowed to scout around in the marsh in the new permit area and the staff was free to answer questions about the new system.

The refuge was open to hunting 34 days during the 1984-85 season, however, no hunting was allowed during the September special teal season and the goose only season.

A PERMIT SYSTEM WAS INITIATED ON PART OF MCFADDIN NWR THIS YEAR WHICH IMPROVED THE QUALITY OF THE HUNT FOR AREA HUNTERS SUCH AS THE TWO GENTLEMEN ABOVE--PHOTOGRAPHED AFTER A MORNING ON THE MARSH 84

FISHING ON REFUGE WATERS PROVIDES THE PUBLIC WITH MANY HOURS OF ENJOYMENT, ESPECIALLY WHEN A FLOUNDER AS BIG AS THIS ONE HITS THE HOOK 84

Again this year, Texas had a three-way split season. The hunting dates were November 3-11, 19-25 and December 8 to January 20. The reason for the November split was to avoid opening both duck season and deer season the same weekend. The three-way split provides a small headache in scheduling personnel.

Waterfowl harvest data was collected at random in the field and at the boat dock as hunters were leaving the marsh. Now with the new permit system all hunter hunting the permit area must check out at the refuge headquarters before leaving the refuge that day. The data was broken down to which of the waterfowl were harvested (See Chart). A total of 1799 hunters used the new permit area and harvested a total of 5763 ducks for a 3.2 ducks/hunter ratio. A total of 43 snows, 2 white-fronts, and 1 Canada goose. An estimated 4184 hunters in the non-permit areas harvested an estimated 9243 ducks for 2.2 ducks/hunter ratio. A total of 1298 snows, 77 white-fronts, and 13 Canada geese were harveted on the non-permit portion of McFaddin. As a whole the refuge had an estimated (both permit and non-permit) 5983 harvest an estimated 15,006 ducks for 2.5 duck/hunter ratio. The refuge this year supported more duck hunters than in the years previous.

There were 22 different duck species bagged during the 1984-85 season. The main species harvested included green-winged teal (30% of total duck harvest), lesser scaup (23%), gadwall (13%), and pintail (8%). Total lesser scaup harvest was 400% greater than that of the 1983-84 season. There were greater number of mergansers harvested this year in the Star Lake Area. Only one greater scaup was noticed in hunters bag checks. More than normal buffleheads were noted in this year's harvest.

There were a few crowding problems this year. Most of the problem were in the Star Lake area as this new permit system did away with crowding problems in the old Standard Brass Camp area. The permit system was very successful and was well accepted by the hunters, however, there were a few minor problems, most of which have a single solution. A total evaluation of the system is being made at the end of the hunting season with recommendation being made to correct the problem area.

9. Fishing

Fishing activities on the refuge are increasing due to the fact the public is just now starting to find out what the refuge offers to the public in the way of excellent fishing and crabbing. During the peak public use months in the spring and summer, the bridge will be "elbow to elbow" filled to capacity with crabbers and fishermen. The overall fishing was fair, with an occasional "saddle blanket" flounder or redfish being taken. A few of the locals like to fish for the huge

alligator gar that are known to inhabit the refuge's main lakes. A few gar in the 125 pound class were taken this year. Still no one has topped the 200 pound record on the refuge yet. This year proved to be an excellent year for the crabbers with some nice large crabs being taken off the bridge.

11. Wildlife Observation

More and more people are starting to use the refuge for non-consumptive use. Bird watcher and wildlife photographers are starting to come out and enjoy what the refuge offers in the way of excellent marsh habitat. Inquiries have risen from people out of state that would like to know more about what the refuge offers to the public.

17. Law Enforcement

Refuge law enforcement efforts were most active during the waterfowl hunting season. On each of the 34 days open to hunting, an effort was made to patrol a certain area of the refuge. On several occasions, stations were set up on refuge roads to check for violations. The check stations worked out well to enable refuge personnel to check a large number of hunters who hunted different parts of the refuge. All the refuge employees at McFaddin now have law enforcement which resulted in widespread coverage during the hunts. A problem of alligator poaching has arisen on the refuge. A summary of the cases were as follows:

Violation	Number	Fines	Total
Possession of lead shot	7	$50	$350
Expired license plate	3	50	150
No Federal duck stamp	3	50	150
Hunting on closed day	3	50	150
Off road use	1	50	50
No trailer lights	1	50	50
Illegal take of alligator*		222.50 Fine Cost	

*Turned over to state for prosecution

All but two violators paid. The two that required court appearances by refuge personnel have not been decided yet. Refuge personnel Shelton and King attended a one-week law enforcement refresher course at Harlingen, Texas. Wayne Morvent returned from Glynco in September with law enforcement authority.

FOUR-YEAR HUNT SUMMARY AND COMPARISON

	81-82	82-83	83-84	84-85
No. of Days Hunted	36	34	36	34
No. of Hunters	5,567	5,300	5,213	5,983
No. of Activity-Hours	34,336	27,112	31,278	40,086
% of Hunters Checked	30%	35%	33%	--
Average Ducks/Hunter	2.6	2.1	3.2	2.5
HARVEST				
Green-winged teal	3276	3544	3443	4562
Blue-winged teal	475	499	401	830
Gadwall	2479	1983	4207	1889
Pintail	1606	1358	1921	1149
Shoveler	1303	713	1404	1279
Mallard	470	499	461	230
Wigeon	1644	790	2433	981
Mottled duck	549	610	547	324
Lesser scaup	1836	1485	845	3480
Ring-neck	86	27	131	21
Canvasback	149	53	491	156
Redhead	23	8	142	23
Hooded merganser	29	18	11	1
Wood duck	15	24	17	15
Ruddy	5	34	88	23
Common goldeneye	5	4	0	1
Bufflehead	5	5	0	28
Cinnamon teal	0	1	0	0
Greater scaup	0	0	10	1
Coots	34	NDG	NDG	NDG
Red-breasted merganser	0	0	0	9
Common merganser	0	0	0	4
TOTALS	13,989	11,655	16,552	15,006

*NDG:No data gathered

I. EQUIPMENT AND FACILITIES

1. New Construction

New construction was somewhat limited on the refuge due mainly to the lack of maintenance help. A new field drain system was laid at the refuge residence with the help of YCC. The construction of Intracoastal Canal Levee Road was finally finished early this year. The old road was literally falling into the Canal due to erosion problems caused by boat traffic.

The state started construction of Highway 87 in December. Completion date is in late April of 1985. Total cost of this project is over three million dollars for a 15-mile section of road.

2. Rehabilitation

Three major rehabilitation projects were started this year, remodeling of the office, residing the refuge residence and now wiring and plumbing in the office. The office is being remodeled with a new bathroom and bunkhouse for refuge employees working during the waterfowl hunt. The old refuge residence was in bad need of residing and construction of new steps as the old stuff was literally falling off. The office is in the process of being rewired and replumbed.

J. OTHER ITEMS

4. Credits

Wayne J. King - Writing.
Ilene W. Manuel - Typing and assembling.

THE REFUGE RESIDENCE WAS IN NEED OF MAJOR REHABILITATION AS IS DEPICTED IN THIS PHOTO TAKEN BEFORE WORK BEGAN 84

REHABILITATION OF THE RESIDENCE RESULTED IN MUCH BETTER LIVING CONDITIONS FOR THE REFUGE BIOLOGICAL TECHNICIAN WHO PROVIDES THE REFUGE VALUABLE ASSISTANCE WITH HIS PRESENCE AFTER HOURS 84

JERRY LEWIS (1) BEING PRESENTED AN INCENTIVE AWARD BY WAYNE KING
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