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QUIVIRA NATIONAL WILDLIFE REFUGE  
Stafford, Kansas

ANNUAL NARRATIVE REPORT  
Calendar Year 1977

NATIONAL WILDLIFE REFUGE SYSTEM  
Fish and Wildlife Service  
U.S. DEPARTMENT OF THE INTERIOR

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Personnel

1. Louis F. Wilson, Maintenceman, WG-7, PFT
2. Carl D. Marks, Maintenceman, WG-7, PFT
3. Wayne E. Dale, Refuge Clerk, GS-4, PFT
4. Charles R. Darling, Refuge Manager, GS-11, PFT

Review and Approvals

Charles R. Darling 2/27/78  
Submitted by Date

Quivira National Wildlife Refuge

James W. Salzer AAM-PW  
Area Office Date  
3/28/78

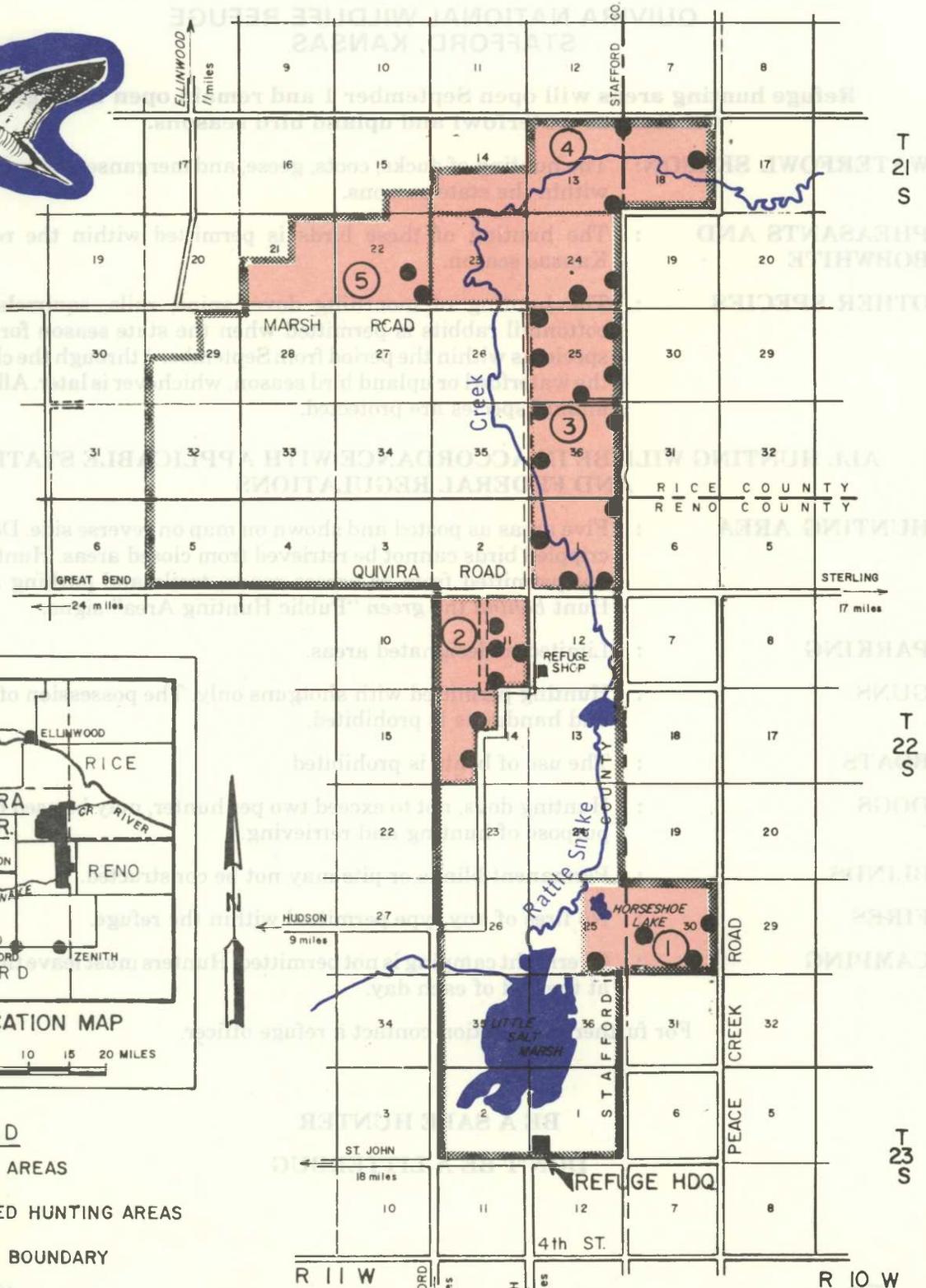
James S. Wilson 6/9/78  
Regional Office Date

# QUIVIRA NATIONAL WILDLIFE REFUGE

STAFFORD, RICE, AND RENO COUNTIES, KANSAS

R 11 W

R 10 W



## LEGEND

- PARKING AREAS
- ② NUMBERED HUNTING AREAS
- ▨ REFUGE BOUNDARY



**HUNTING REGULATIONS**  
**QUIVIRA NATIONAL WILDLIFE REFUGE**  
**STAFFORD, KANSAS**

**Refuge hunting areas will open September 1 and remain open through  
the Kansas waterfowl and upland bird seasons.**

- WATERFOWL SEASON:** The hunting of ducks, coots, geese, and mergansers is permitted within the state seasons.
- PHEASANTS AND BOBWHITE :** The hunting of these birds is permitted within the regular Kansas season.
- OTHER SPECIES :** The hunting of mourning dove, snipe, rails, squirrels, and cottontail rabbits is permitted when the state season for these species is within the period from September 1 through the close of the waterfowl or upland bird season, whichever is later. All other animal species are protected.

**ALL HUNTING WILL BE IN ACCORDANCE WITH APPLICABLE STATE  
AND FEDERAL REGULATIONS**

- HUNTING AREA :** Five areas as posted and shown on map on reverse side. Dead or crippled birds cannot be retrieved from closed areas. Hunting is not permitted from or across roads, trails and parking areas. Hunt *behind the green* "Public Hunting Area" signs.
- PARKING :** Limited to designated areas.
- GUNS :** Hunting permitted with shotguns only. The possession of rifles and handguns is prohibited.
- BOATS :** The use of boats is prohibited.
- DOGS :** Hunting dogs, not to exceed two per hunter, may be used for the purpose of hunting and retrieving.
- BLINDS :** Permanent blinds or pits may not be constructed.
- FIRES :** No fires of any type permitted within the refuge.
- CAMPING :** Overnight camping is not permitted. Hunters must leave the area at the end of each day.

For further information contact a refuge officer.

**BE A SAFE HUNTER**  
**DON'T BE A LITTERBUG**



**FISH AND WILDLIFE SERVICE**  
**UNITED STATES DEPARTMENT OF THE INTERIOR**



## I. GENERAL

### A. Introduction

The Quivira Refuge is located in south central Kansas in the transitional zone of eastern and western flora and fauna. Sandy soils are characteristic to the refuge and for variable distances to the north, east and west. Heavier soils are predominant south of the refuge.

The Little Salt Marsh and the Big Salt Marsh are ancient basins with historical waterfowl use. They were utilized for commercial hunting after the turn of the century and private gun clubs monopolized waterfowl hunting when acquisition began in 1957. Rattlesnake Creek enters the refuge west of the Little Marsh. It did not flow directly into the Little Marsh until the gun clubs dug a permanent channel in the early 1930's. A canal was constructed in 1968 to divert water into the Big Marsh from the creek and other water units.

Acquisition was completed early in 1969 for 21,820 acres.

### B. Climatic and Habitat Conditions

The year started with all water units ice covered. The first week of January produced nine inches of snow fall. This snow cover combined with below normal temperatures caused nearly all of the waterfowl to leave the area in search of adequate food supplies. Temperatures moderated the middle of February. Refuge water units opened up in time to accomodate the spring migrants.

Drought conditions combined with high winds caused some damage to wheat fields in March. Weather conditions were much more favorable during the remainder of the year. The last frost in the spring was April 4. Precipitation totals for the year recorded at Hudson, Kansas, the official weather station for this area, amounted to 30.68 inches. Totals recorded unofficially at refuge headquarters amounted to 34.72 inches. The thirty year average for this area is 23.74 inches.

Rattlesnake Creek, the refuge's main source of water, delivered adequate amounts of water throughout the year. The creek flow increased to bank full the latter part of May for a few days and caused some damage to Unit 5 and Unit 11 spillways.

The year ended on a cold note with water units ice covered the last two weeks of December. The very light amounts of snow received did not prevent the wintering flocks of ducks and geese from utilizing the abundant supply of food produced during the summer.

C. Land Acquisition

Not Applicable.

D. System Status

1. Objectives

The refuge objectives which were initiated several years ago need revision. Constraints coupled with optimism at the time of preparation produced inappropriate values and objectives.

The primary objective of the refuge is management for providing food, water, resting area and protection for Central Flyway migratory waterfowl on their semi-annual migrations. Duck use-days have exceeded the objective level based on the 1965-69 average and goose use-days have exceeded the objective level in every year except 1976.

The Bicentennial Land Heritage Program replaced the No Funds Increase Objective concept and required extensive replanning efforts.

2. Funding

The refuge staff has consisted of five permanent personnel almost as long as the refuge has been in existence. BLHP funds provided for the addition of a maintenanceman but the position was not filled by the end of the year, after going through the processes of the green sheet, Civil Service regulations, and eventually the declination of the first selection.

Funds have improved as follows:

<u>Activity</u>	<u>FY 1975</u>	<u>FY 1976 w/TQ</u>	<u>FY 1977</u>
1210	90,200	111,214	88,000
Rehab.	7,000	10,000 (water control Struc)	14,000 (fence)
1220		1,602	10,000
1230		1,000	1,000
1400	700	1,000	1,000
1500	3,000	5,100	6,000
6810	3,000	3,000	3,000
	<u>103,000</u>	<u>132,916</u>	<u>123,000</u>

Construction (flood damage repair)	307,822
---------------------------------------	---------

BLHP

Headquarters Rehab.	12,800
Flood damage + roller gate and dike gravel	97,000

## II. CONSTRUCTION AND MAINTENANCE

### A. Construction

BLHP provided funds for the replacement of the roller gates and downstream apron and wingwalls in the primary control structure of Unit 5 (Little Salt Marsh). One of the gates looked like it was ready to collapse and a coffer dam was constructed in front of the structure in August. Westhoff Brothers Construction was awarded the contract in late September to make the repairs and work started in mid-November. The three roller gates and the downstream apron and wingwalls were removed and forms set for a new apron before cold weather terminated additional work. Only a small part of the gravel was hauled for dike repair. Bids were solicited to replace the windows in the office and two residences, replace a septic tank system, and do some bathroom remodeling at the end of FY 77. The only bid received was considered unsatisfactory and rejected. A second bid for only the window replacement was not awarded in time to perform the work in favorable weather.

### B. Maintenance

Flood conditions in May seriously eroded the soil cement spillways constructed in 1976 on Units 5, 11, and 10C. After the flood subsided, dirt fill was placed on the spillways to prevent additional damage. Concrete rubble was placed along 2500 feet of the Unit 11 dike for rip rap. YCC enrollees later moved many of the chunks by hand for more effectiveness. Several loads of rubble were also placed along the eroded Rattlesnake Creek channel below the Unit 5 control structure.

YCC crews removed 11.25 miles of old fencing and constructed 1.5 mile of new fence. It appeared that we might have a YACC program before the end of the year and all of the fencing rehabilitation funds were utilized to purchase fencing materials. Materials are now available for fence construction in 1978 to replace old fence and provide management of the grasslands.

Two parking areas and about one-half mile of hunter access trails received 664 cu. yds. of gravel mix hauled from commercial pits by informal contract and spread by refuge personnel and equipment.

YCC enrollees repainted the interior shop walls which were smoke damaged by a furnace fire in 1975. Plaster cracks were repaired and a sealer applied before painting. YCC also repainted the outside woodwork trim on buildings in the headquarters area and constructed concrete flower bed curbing. The interior of the residences were repainted by contract.



0003.079 4/24/77 LRV  
Deterioration of roller gates. A-2 structure, Unit 5  
(Little Salt Marsh)



0003.080 4/24/77 LRV



0003.086  
Destruction of soil cement spillway, Unit 5. 6/1/77 LRV



0003.087 6/1/77 LRV

### C. Wildfire

Sixty-two acres of grassland were burned when fire jumped a canal while burning cattail from Unit 29. Most of the fire was in rank switchgrass on loose, sandy ground. There was some wind erosion on this area until new growth was established. One-quarter mile of barbed wire fence was severely damaged from the fire. The county fire department was called for assistance because of increasing winds and the potential threat to the shop building.

## III. HABITAT MANAGEMENT

### A. Croplands

All farming operations are conducted under cooperative agreements. Six permittees planted 540.6 acres of wheat, 575.2 acres of milo, and 20 acres of barley. Two permittees returned 25% of the harvested wheat or 430 bu. to refuge bins. The other permittees plowed under twenty-five per cent of the wheat in spring for green manure since there is no longer a demand for the harvested grain. One permittee returned 700 bushels of milo to refuge bins and the remaining permittees left one-third, or about 160 acres, of the milo in the fields. Three acres of oats planted the previous year were also left in the field for wildlife use because of weather and weed growth.

Agricultural fields in closed areas north of the Little Salt Marsh and east of the Big Salt Marsh are intensively used by waterfowl during the hunting season. Fields within the hunting areas are utilized to a lesser extent after the hunting season closes and the birds are not harassed outside the refuge.

### B. Grasslands

Twelve grazing permittees utilized 6,588 acres for 3,675 AUMs and returned \$11,025. A permittee declined privileges and was replaced by a former permittee that lost privileges ten years ago because of construction activities in the pasture he was using. All grazing permits were extended two weeks after the above normal summer rainfall and additional vegetative growth.

The YCC fencing project replaced the east fence of pasture R-15 which was in rest rotation this year. Another one-half mile of fence construction will permit grazing management of dense switchgrass on the east side of the Little Marsh.

Eight haying permittees harvested 759.82 tons of native hay from approximately 750 acres and returned \$3,764.13 at the rate of \$5/ton. A record number of sandhill cranes utilized the hay field areas west of the Big Salt Marsh during the fall.

YCC crews were utilized to conduct waterfowl nesting and other wildlife use of the refuge grasslands. Pastures which had been grazed early during the previous year, but not in grazing use at the time of the survey, had the most nesting activity. The only other grassland type which produced duck nesting was ungrazed salt grass areas. Table I lists the habitat types and nests found.

C. Wetlands

All of the small water units were in use during the year. Early summer rains prevented complete planting operations in Unit 28 and only three or four acres were planted to Japanese millet. Cattail was burned in Unit 30 but additional control was prevented by wet conditions. One hundred acres of salt cedar, Tamarix gallica, on the creek delta of the Little Salt Marsh were aerial sprayed with Silvex. The initial results appeared favorable but continued treatment will be required because of the seed source upstream from the refuge.

D. Forestlands

None.

E. Other Habitat

None.

F. Wilderness and Special Areas

The Santana Natural Area of 362 acres was established to be representative of native prairie. The area is being invaded by cottonwood, willow and Russian olive and YCC crews spent several days removing some of the invading trees.

G. Easements for Waterfowl Management

None.

#### IV. WILDLIFE

Weekly bird counts on the refuge furnish data for the population figures used for all output bird species. All censusing this past year was done from the ground. Numbers of all species encountered are recorded each week on work sheets and the data transferred later to more permanent record sheets.

Most of the brood count data is a result of observations made during the regular weekly census. Several limited

brood count transects were run using YCC enrollees for the necessary manpower.

A. Endangered Species

For the first time in the past ten years, whooping cranes were observed on the refuge during both the spring and fall migrations. Five cranes were observed on April 8, two cranes were present on October 27, and three on October 31. None of the birds stayed more than one day before continuing their migration. All observations are reported directly to the Pierre Reporting Center. The public hunting areas of the refuge are closed to hunting when whooping cranes are known to be on the area.

B. Migratory Birds

1. Waterfowl.

One lone whistling swan was observed using one of the refuge water units in December. This single sighting was the only one of the year.

The total number of goose use days fell below the one million mark for the second year in a row although it was still 32% above last year's figure. Use days during the spring migration were the lowest since 1959.

Total duck use days for 1977 was the third largest of record, being surpassed only by 1962 and 1973. This was due to the large numbers of mallard ducks present during November and December with a record number of almost 190,000.

No waterfowl banding was conducted during the year.

2. Marsh and Water Birds

The spring migration of sandhill cranes through the refuge area was below normal. There was a concentration of nearly 10,000 sandhill cranes in the Big Salt Marsh area for several weeks during the fall. These birds and the geese were taking advantage of the harvested irrigated corn fields several miles west of the refuge. The populations and occurrence of other marsh birds were considered normal during the year.

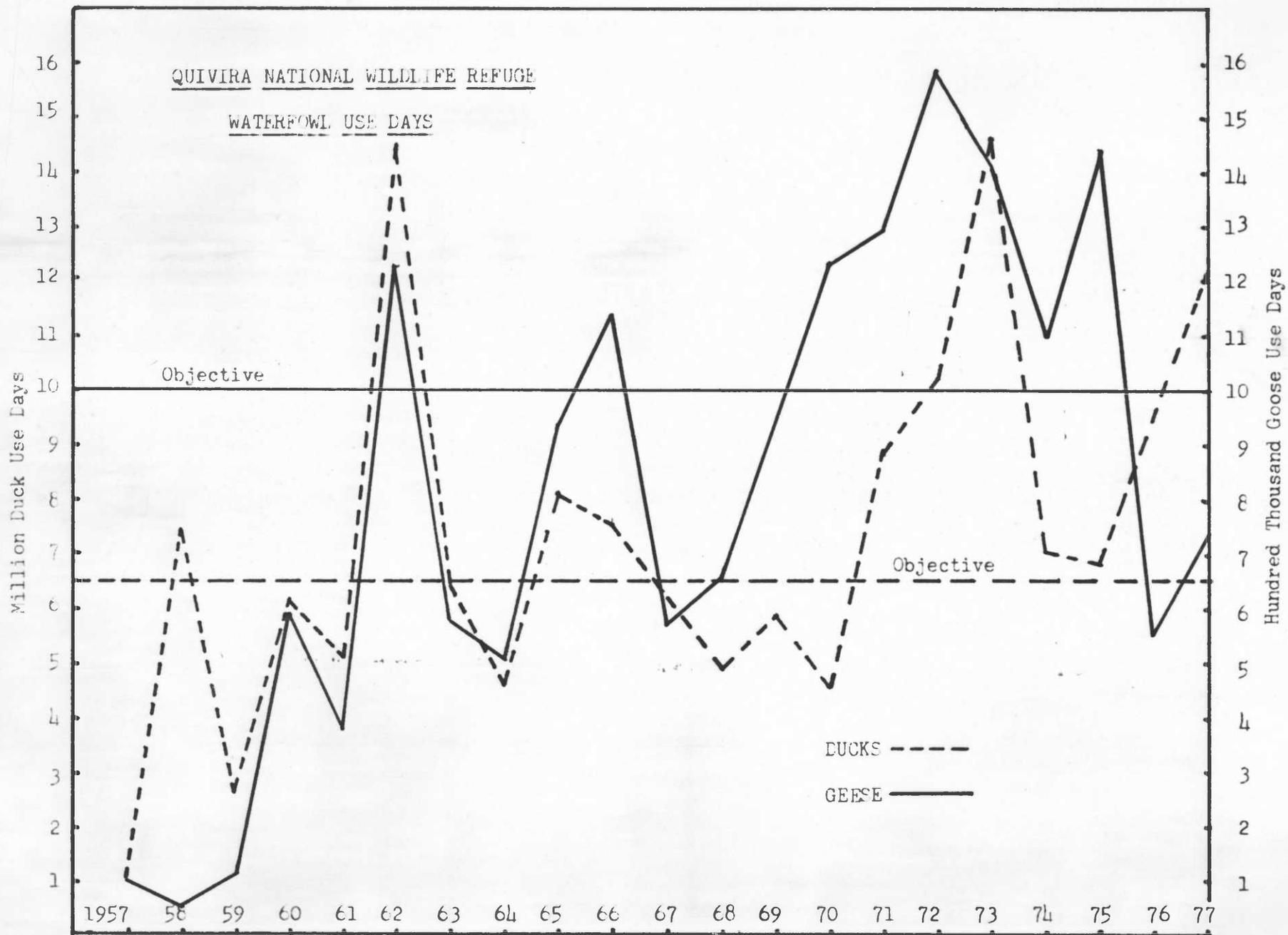
3. Shorebirds, Gulls, Terns and Allied Species

Least tern nesting activities were checked with YCC crews during July. Thirty-two nests with sixty-three eggs were located. Fifteen nests with thirty-one eggs were determined to have been successful. Twenty-three chicks were banded. Two snowy plovers were observed on the Christmas bird count.

Table I  
NESTING HABITATS - 1977

Habitat Type	Acres Searched	Number of Nests Found *			
		Waterfowl	Other Species		
Hayfields	39.1	None	Am. Bittern	1	
			R/w Blackbird	1	
			W. Phalarope	1	
		Total	0	<u>3</u>	
Native Grass (Tall, rank)	17.6	None	Am. Bittern	1	
		Total	0	<u>1</u>	
Native Grass (Short grasses)	69.9	B/w Teal	1	M. Dove	1
		Mallard	1	W. Phalarope	2
				Meadowlark	1
		Total	<u>2</u>	<u>4</u>	
Pastures (Grazed previous spring-Not grazed during survey)	54.8	B/w Teal	7	Meadowlark	3
		Mallard	1		
		Total	<u>8</u>	<u>3</u>	
Pastures (Grazed previous spring, and during survey)	17.8	None	Meadowlark	3	
		Total	0	<u>3</u>	
Controlled Burn	22.0	None	None	0	
		Total	0	0	
Flooded Marsh	10.0	None	Am. Coot	2	
			P/B Grebe	8	
			Y/H Blackbird	5	
		Total	0	<u>15</u>	
TOTALS	231.2		10	29	

\* Only Active Nests Are Noted On This Table



#### 4. Raptors

Eagle use was about normal with twenty-two bald and twelve golden eagles present in December during the peak of the waterfowl concentration and hunting season. The eagles remain concentrated around the Little Salt Marsh until cripples are no longer available after the hunting season.

YCC crews erected six perching roosts from old power line poles with attached cross arms on the east side of the Little Marsh. These were all utilized by eagles.

#### 5. Other Migratory Birds

Nothing to report.

### C. Mammals and Non-Migratory Birds

#### 1. Game Mammals

Whitetail deer are frequently seen about the refuge with a constant population. There was only one known road kill along the blacktop north of the shop and no poaching incidents were discovered. The deer move freely across the refuge boundary but there was only one report of a successful hunt during the bow and gun seasons adjacent to the refuge.

#### 2. Other Mammals

Coyotes are pursued with dogs outside the refuge during the winter months and there is undoubtedly an increase in the refuge population until the activity ceases.

Beaver continue to cause problems in water control structures. There appeared to be a decline in the muskrat population after the units were refilled in the fall.

The transplanted blacktail prairie dogs north of the Little Salt Marsh produced about two dozen young in the spring and appear to be well established.

#### 3. Resident Birds

Bobwhite and ring-necked pheasants responded well to a favorable year. There were no severe thunder storms in the spring and early summer.

#### 4. Other Animal Life

Cedar Bluff National Fish Hatchery stocked over

10,000 channel catfish and 350 seven inch northern pike in the Little Salt Marsh in October. There was no evidence of northern pike or large mouth bass survival from previous stockings.

## V. INTERPRETATION AND RECREATION

### A. Information and Interpretation

#### 1. On-Refuge

Twelve guided tours were given to 250 people. This was less than half of the objective level.

#### 2. Off-Refuge

Forty programs were given to 1,457 participants. This was twice the objective level and a slight increase over the previous year. There were 150 inquiries concerning hunting and fishing use and four news releases were issued.

### B. Recreation

#### 1. Wildlife Oriented

Warmwater fishing continued to be poor with very little activity until near the end of the fishing season in September.

Waterfowl hunting conditions were improved by better water conditions and increased populations. An estimated 3,193 waterfowl hunters retrieved 4,413 ducks, 212 geese and eight coots. This was nearly twice the number of hunters and three times the number of kill over last year. The success rate increased from .82 to 1.45 bird per hunter.

Upland game hunting also improved over last year. An estimated 1,740 hunters bagged 1,005 ring-necked pheasants and 1,500 bobwhite for an average of 1.44 bird/hunter compared to .56 bird/hunter last year. A special use permit was issued to the Jayhawk Retriever Club for their 12th annual field trial.

#### 2. Non-Wildlife Oriented

The Duggan-Hamilton annual trail ride was held October 23 with 200 riders. There was a change in the route this year which presented some new territory. This activity should be correlated with wildlife observation and some benefits.

### C. Enforcement

Refuge personnel apprehended thirty-three violations

during the hunting season. Several others were made by Special Agents. Ten of the violations were for hunting in closed areas and four were for hunters not completing hunter safety courses.

## VI. OTHER ITEMS

### A. Field Investigations

A special use permit was issued to Dr. Zuleyma T. Halpin, University of Missouri - St. Louis, to conduct a study of social behavior and dispersal of blacktail prairie dogs. The study is to continue for two or three more years. Although there are still a few prairie dog towns in the surrounding area, Dr. Halpin was concerned that they might disappear before she could complete her study.

### B. Cooperative Programs

Quivira Refuge had its second non-resident YCC camp in June and July. Enrollment was increased from sixteen to twenty youths. There was a complete turnover in staff members from last year. Dr. George C. Stone, Education Department Sterling College, was Camp Director. Marvin Stoss, biology teacher and coach, Nickerson high school, was Environmental Specialist. Group Leaders included Rita Allen, a former home economics teacher, Dr. John Vogt, Sterling College, and Ben Linville, biology teacher. One girl resigned about two weeks before the camp ended for another job. The enrollees did an excellent job in all of their activities.

### C. Items of Interest

The fourth producing oil well near the south end of the Big Salt Marsh was completed in late summer. Another producer was drilled near the north end of the refuge and a former well in that area was plugged. There are twenty producing wells and two salt water disposal wells within the Refuge. There was a minor pipeline break north of the Big Marsh and a seismic survey of fifteen shot holes was conducted.

Laurence Veikley transferred to Benton Lake Refuge in September and the assistant manager position remained vacant for the rest of the year.

Mr. Dale prepared sections IB and IV of the report.

### D. Safety

Monthly staff and safety meetings were conducted. Medical



0004.005

YCC crew build fence and construct concrete curbing.  
F:11 1/250 CRD



0002.029 F:16 1/250  
CRD 7/77

attention was required to remove a wood splinter from an employee's finger. One YCC enrollee required medical attention for a bruised foot. The year ended with 4,473 days without a lost time accident.

The YCC staff and enrollees received eight hours of first aid training.



Updated entrance sign with new emblem.  
0005.008



Maintenanceman Marks widens flow from new U-11  
spillway. 0003.091 CRD 7/77

## CHRISTMAS BIRD COUNT

By: Charles R. Darling, Refuge Manager  
Wayne E. Dale, Refuge Clerk  
Carl D. Marks, Maintenanceman  
Dan Zehr, Stafford, KS

Quivira National Wildlife Refuge, Stafford, Kansas, 38°09'N, 98°29'W, elevation 1725', (all points within a 15 mile diameter circle with the center at Refuge sub-headquarters), as described in 1972. Pastureland 50%, Farmland 30%, Water 20%.

December 20, 1977; 7:30 AM to 4:30 PM. Temp. 22° to 38° F.; wind NW 20 mph, clear in AM, cloudy in PM, Four observers in two parties, total party hours 17, 2 on foot, 15 by car. Total party miles 169, 2 on foot, 167 by car.

Pied-billed Grebe	1	Killdeer	1
Great Blue Heron	2	Snowy Plover	2
Canada Goose	12125	Ring-billed Gull	699
White-fronted Goose	475	Mourning Dove	6
Snow Goose (white)	4	Great Horned Owl	4
Mallard	197456	Belted Kingfisher	1
Gadwall	1	Y-S Flicker	32
Pintail	395	R-S Flicker	8
G-W Teal	1600	Red-bellied	
Am. Wigeon	12	Woodpecker	1
Shoveler	12	Hairy Woodpecker	1
Redhead	2	Downy Woodpecker	3
Ring-necked duck	5	Blue Jay	23
Canvasback	2	Common Crow	63
Lesser Scaup	2	B-C Chickadee	13
Common Goldeneye	3	Robin	5
Bufflehead	3	Loggerhead Shrike	5
Ruddy Duck	3	Starling	160
Common Merganser	5	House Sparrow	2
Cooper's Hawk	1	East. Meadowlark	200
Red-tailed Hawk	15	West. Meadowlark	80
Rough-legged Hawk	20	Red-wing B-Bird	45632
Golden Eagle (3a,5i)	8	Brewer's B-Bird	130
Bald Eagle (5a,9i)	14	Cardinal	1
Marsh Hawk	56	Am. Goldfinch	53
Prairie Falcon	2	Slate-colored Jun.	13
Sparrow Hawk	22	Tree Sparrow	654
Bobwhite	95	Harris' Sparrow	91
Ring-necked Pheasant	18		
American Coot	3		

Seen in area during count period but not on count day:  
Herring Gull. 56 species, 1 additional race.  
260,245 individuals.