

REVIEW AND APPROVALS

MAXWELL NATIONAL WILDLIFE REFUGE

Maxwell, New Mexico

ANNUAL NARRATIVE REPORT

Calendar Year 1993

  
Refuge Manager

03/14/93  
Date

  
Associate Manager

3/16/94  
Date

  
Regional Office Approval

3/31/94  
Date

## INTRODUCTION

The Maxwell National Wildlife Refuge was established by the Migratory Bird Conservation Commission on August 24, 1965, however, the purchase of land did not begin until 1966. The primary objective of the refuge is to provide a feeding and resting area for migratory waterfowl. Prior to refuge establishment local grain farmers had suffered increasing damage from waterfowl depredations. This problem was decreased with the establishment of a refuge farm and almost eliminated when the farmers changed their programs to a predominantly alfalfa based production. Secondary management objectives are to provide habitat for other migratory birds and non-migratory wildlife, and allow for wildlife oriented recreation.

The refuge is located in northeastern New Mexico in the Canadian River Basin. This open basin is created by the Sangre de Cristo Mountains to the west, the Raton Range to the north, and a series of mesas and hills of volcanic origin to the east. The terrain within the basin is gently rolling prairie with several playa lakes. The refuge lies at an altitude of 6,050 feet.

The climate of the area is semi-arid with generally moderate summer temperatures and cold winters. The frost free period is limited to late May through early October. The annual precipitation averages 16 inches.

Rangeland and reclaimed farmland on the refuge have a variety of vegetative covers including blue grama, galleta, sand dropseed, threeawn and buffalo grass, as well as fourwing saltbush and cactus. The only trees are the introduced elms, locusts, and cottonwoods located near the old homesites.

The refuge is comprised of 2,792 acres of fee title land and 907 acres which are under management agreement with the Bureau of Reclamation and lease with the Vermejo Conservancy District. The 907 acres include the three major impoundments on the refuge, Lakes 12, 13, and 14 which have a combined storage capacity of 8,000 acre feet. The refuge owns 946.75 shares of water for cropland irrigation.

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(inside back cover)



A frosty February morning transforms the refuge into a winter wonderland. JF

#### A. HIGHLIGHTS

President Bush signs the Reclamation Projects Authorization and Adjustment Act into Public Law 102-575 (C.1)

The refuge mammal list gains an addition when a bear takes up residence (G.8)

#### B. CLIMATIC CONDITIONS

The refuge has operated a weather station in cooperation with the U.S. Weather Service since April 1976. Aside from the usual maximum/minimum thermometers, the station also operates a seven day/twenty-four hour thermograph which tracks temperature fluctuations on weekends or other periods when refuge personnel are not available to take readings.

According to the thermometer, 1993 was about average with all temperatures within their seasonal range. The rain gauge, however, was another matter. Under normal conditions our monthly rainfall totals fall neatly into a bell curve with maximum amounts in mid summer. The precipitation was received in such a haphazard pattern that only one month (April) matched the bell curve with four months rising above the curve and seven falling below. August provided 40% of the annual total while neither October nor December developed any moisture at all.

TABLE 1

MONTHLY WEATHER DATA

MONTH	1993 TEMPERATURES		PRECIP.	SNOW	15 YEAR AVERAGE
	HIGH	LOW			
January	62	5	.17	2.0	.37
February	61	5	.22	7.0	.47
March	74	9	1.17		.48
April	80	20	.65	2.5	.66
May	81	25	1.67		2.34
June	90	39	3.28		2.49
July	94	47	1.23		2.49
August	89	48	6.78		3.82
September	83	31	.75		1.71
October	81	- 3	.00		.75
November	70	- 1	.87	3.0	.54
December	66	- 5	.00		.28
TOTAL			16.79	14.5	16.40

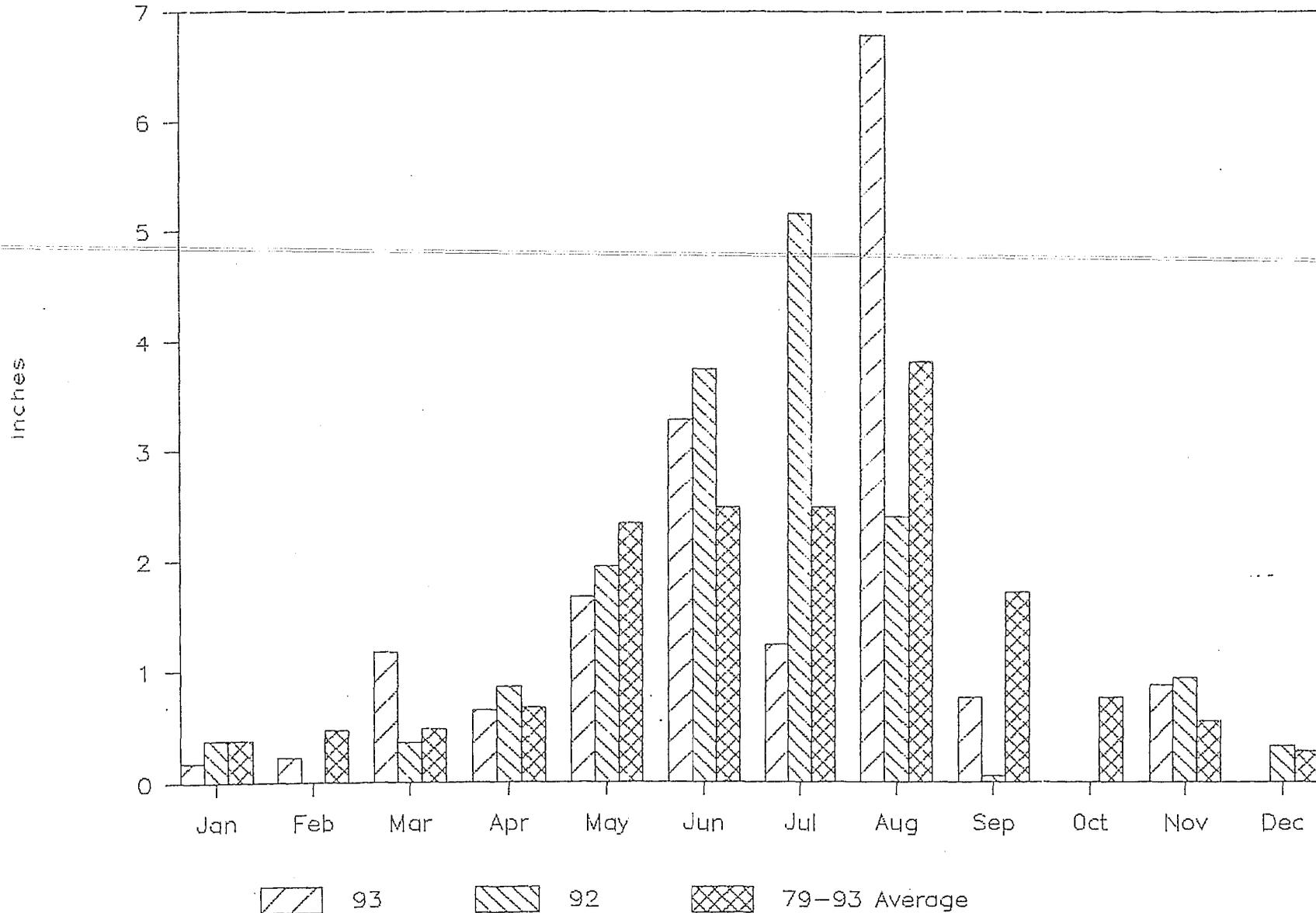
TABLE 2

OTHER WEATHER PHENOMENA IN 1993

Hottest Day	July 7	94°
Coldest Day	December 24	-5°
Last Frost	May 11	
First Frost	September 14	
Total Days of 90° or Above	11	
Total Days of 32° or Below	194	
Total Growing Season Days	126	

# TOTAL PRECIPITATION BY MONTH

93, 92, and 15 Year Average



C. LAND ACQUISITION

1. FEE TITLE

Although there was mention of the signing of the Omnibus Water Bill in the 1992 Annual Narrative Report, we did not have the complete citation so it is repeated here for documentation... On October 30, 1992, President Bush signed H.R. 429, the Reclamation Projects Authorization and Adjustment Act of 1991, as Public Law 102-575. Title XIV of the Law serves to clarify a vague portion of P.L. 96-550 which remained in dispute by the Department of Interior and the Vermejo Conservancy District since 1980. The new law makes it quite plain that Lake 13 (located in the middle of Maxwell NWR) is the property of the Conservancy District. The law also defined the Service's right to use the lake for "...conservation, maintenance, and development of the area as a component of the Maxwell National Wildlife Refuge..."

3. OTHER

The refuge has maintained a lease agreement with the Vermejo Conservancy District for Lakes 12 and 14 for many years. The leases have ranged from two to five years in length. The Service has been encouraging the District to enter into a long term lease for many years to no avail. The current lease will expire on January 17, 1995 and a new effort will be made to develop a longer term agreement.

#### D. PLANNING

##### 5. RESEARCH AND INVESTIGATIONS

Since the summer of 1989, personnel from the Albuquerque Ecological Services field office have been conducting an environmental contaminants study at Maxwell NWR. The most recent report of the study indicates that both lead and mercury concentrations are present but are below the level of concern. The study does point out, however, that selenium levels are high enough to warrant the nomination of the refuge and the Vermejo Conservancy District for inclusion in the Department of Interior's irrigation drainwater program.

The selenium on the refuge appears to be concentrated in two "hot spots" directly below Lake 13 where ground water tends to accumulate. While the presence of selenium in these areas is cause for concern, the biological impact has yet to be determined. Invertebrates show selenium concentrations of as much as 20 ug/g (PPM), but avocet eggs collected in the same area showed concentrations of less than 5.75 ug/g. Concentrations below 10 ug/g are considered to be a low biological risk.

Selenium concentrations found in the livers of fledged birds ranged from 4.5 ug/g in a cinnamon teal to 20 ug/g in a killdeer. No teratoid birds have been found at either of the hot spots or elsewhere on the refuge. We suspect nest predation by coyotes, raccoons, and skunks severely limits successful nesting in either of the hot spot areas and will also prevent the location and documentation of any teratoid embryos or birds.

Selenium found in game fish taken from the public fishing waters is low enough that the fish are unlikely to present a human health hazard.

Concurrent with the Ecological Services investigation is a complete water chemistry analysis of the upper Canadian River watershed by the U.S. Geological Survey. To date the U.S.G.S. study has found high levels of selenium only in refuge waters. The highest concentration, 35 ug/l (PPB), is from one of the previously identified "hot spots."

## E. ADMINISTRATION

### 1. PERSONNEL



Jerry  
French

Bill  
Mobley

Kay  
Plotner

1. Jerry French - Refuge Manager GS-11 PFT
2. William Mobley - Biological Technician GS-7 PFT
3. Kay Plotner - Office Assistant GS-5 PFT

There were no personnel changes during the year, but this was not from a lack of trying.

FEBRUARY: We submit a new position description and associated paperwork to recruit and fill a temporary WG-7 Maintenance Worker position. This individual will fill in as our "extra summer help" and will be an understudy to Biological Technician Mobley who intends to retire in mid 1994.

MARCH: Regional Office decides we could save time and effort if we fill the position with a permanent employee.

APRIL: We are informed that all paperwork associated with the position has been lost at the R.O. We begin again to recruit and fill.

MAY: Because we wish to conduct a local recruitment rather than by "green sheet" this opens the door for Office of Personnel Management (OPM) who announces the job nationwide.

JULY: OPM has a list of candidates but is unsure how to classify because the primary duty required of the position is farming, a job they are not used to dealing with.

AUGUST: We finally receive a list of eligible candidates but find that OPM thinks operating a forklift is somewhat akin to driving a farm tractor. Using this criteria the top candidates are all 10 point vets with no farming experience.

SEPTEMBER: We reject the certificate of eligibles and re-write the position description with stronger emphasis on farming. This position is classified as a WG-5002 Farmer. We begin again to recruit and fill.

DECEMBER: A list of eligible applicants is received, and a tentative selection is made.

### 3. OTHER MANPOWER PROGRAMS

The New Mexico State Employment Office requested the assistance of the refuge to accept two Summer Youth Employment Program (SYEP) enrollees. Karrie Archuleta and Carlos Gallegos spent two weeks in late July assisting with litter control, cutting weeds, and painting.

### 4. VOLUNTEER PROGRAM

A New Mexico State University undergraduate, Greg Paglia, joined the refuge staff on May 24. Unfortunately, Greg had to resign his position after one week when a Defense Department cutback in Albuquerque put a strain on his family's income.

Two other potential volunteers declined the offer of summer work when they learned we do not have a full-time biologist.

TABLE 4

YEAR	PERMANENT		TEMPORARY	TOTAL FTE
	Full time	Part time		
1993	3			3.0
1992	3		1	3.5
1991	3		1	3.5
1990	3		1	3.5
1889	3		1	3.5

5. FUNDING

The FY93 funding included \$150,000 for refuge O&M; \$40,000 in MMS funds; \$1,900 in Fire Funds; \$1,200 for emergency fire pre-suppression; \$20,000 for water rights, and \$2,919 in carryover quarters money.

Sixty-eight percent of all allocated funds were spent within the Colfax County area.

Major expenses during the year included:

Permanent employee wages	109,100
Temporary employee wages	1,100
Performance Awards	1,600
Travel	2,226
Medical Examinations	450
Irrigation water assessment	10,900
Lease of Lakes 12 and 14	2,342
Utilities and fuel	4,243
Publications	1,506
Signs	636
Building maintenance	818
Vehicle and equipment maintenance	3,051
Office equipment replacement	1,760
Seed and other associated farming costs	3,976
Fire pre-suppression supplies	457
Irrigation system - flumes	7,685
Lawnmower and accessories	16,534
Replace irrigation ditch	39,600
Dump Truck	800
<b>TOTAL</b>	<b>208,784</b>

TABLE 5

## FIVE YEAR FUNDING

YEAR	1260	MMS	9120	WATER RIGHTS	8160	1130	TOTAL
93	151,900	40,000	1,200	20,000	2,919		216,019
92	160,500	33,000	800		3,878	9,000	207,178
91	164,600	31,000	200		4,900		200,700
			<u>1240</u>				
90	127,600	7,200	200		4,900		139,900
89	124,100		300		4,900		129,300

6. SAFETY

Refuge personnel suffered no accidents in 1993. Refuge personnel did respond to a boating accident on July 8 when gusting winds caused a small boat to overturn on Lake 13. The boat and its three occupants were towed ashore by the refuge boat. There were no injuries or property loss in this incident.

8. OTHER ITEMS

The Refuge Revenue Sharing check totaling \$3327.00 was delivered to the Colfax County Treasurer on April 15.

## F. HABITAT MANAGEMENT



John Winship's "eye in the sky" shows how dry and brown the habitat conditions were in July. The mowed grasslands around the refuge equipment yard look the same as the plowed ground of field C5 in the upper right quadrant.

JW

### 1. GENERAL

The weather of the 1992-93 winter was relatively mild with the coldest temperatures occurring in December. Some open water remained on the three impoundments which provided good dispersion of wintering waterfowl. Precipitation was light and in line with seasonal averages until late March when rain, hail, sleet, and snow delivered 1.17 inches of moisture, about three times the normal amount.

The spring and summer temperatures and rainfall amounts were average until July, when the monthly precipitation fell to less than half of normal, and the crops were subjected to eleven days of 90° weather. Our pleas for mercy were heard, and August provided us with almost 7 inches of rain. This was the greatest single month's accumulation of rainfall since 8 1/2 inches were received in August 1981. Throughout the remainder of the year the temperatures stayed within their seasonal ranges. However, the precipitation was way off schedule. Neither October nor December provided any moisture,

and there was only one meaningful snowfall which occurred in mid November. The year closed with dry, warm, dusty conditions, and some open water remained in each of the impoundments.

2. WETLANDS

The Vermejo River, which originates in Colorado, is the primary source of irrigation water for the Maxwell area. This water is stored in Stubblefield and Laguna Reservoirs as well as Lakes 11, 12, 13, and 14. (The last three are located within the refuge boundary.) Other irrigation waters have been developed to the northeast and enter the irrigation district via the Eagle Tail Canal. Because of elevation differences these waters can be stored only in Lakes 11 through 14.

Lakes 12, 13, and 14 comprise the majority of wetlands on the refuge. Because the lakes are managed by the Vermejo Conservancy District for storage of irrigation water, the refuge does not play a role in water management on these units. The lakes do benefit the refuge by providing approximately 700 acres of roosting and feeding habitat. During wet years when drawdowns are minimal, the shoreline vegetation is dense enough to aid waterfowl nesting. During dry years the constantly changing shoreline is beneficial to shorebirds. The refuge does not have any water rights but does own 946.75 shares of irrigation water. A water share is based upon the volume of stored irrigation water and normally equals an acre foot of water per share. This water must be used for cropland irrigation which precludes secondary storage or wetland development.

The year began with all impoundments at near capacity levels. Periodic irrigation by area alfalfa farmers slowly drew the reservoirs down, especially during the hot dry days of July. The August rainfalls halted the drawdowns and allowed the reservoirs to recover to their early summer levels. The flooded vegetation along the shoreline was excellent cover for waterfowl broods but precluded shorebirds from most areas.

4. CROPLANDS

During 1993 the refuge maintained 384 acres of irrigated cropland. 226 acres were farmed by refuge force account, and 158 acres were co-op farmed.

The co-op farmer is Bob Hronich, who, with his family, has been farming on the refuge since its establishment. The crop rotation is based on a twelve year cycle with six years of alfalfa followed by six years of a corn-wheat-barley rotation. The cooperative agreement allows the farmer a two-thirds share of the land base to grow crops for his own use and one-third for refuge use. The 1993 co-op farm was managed as follows:

<u>CROP</u>	<u>ACREAGE</u>	<u>SHARE</u>
Alfalfa	91	Farmer
Barley/Alfalfa	6	Refuge
Corn	17	Refuge
Oats	12	Farmer
Wheat, green	<u>32</u>	Refuge
TOTAL	158	

The refuge force account farm is managed on a three year rotation using crops of barley/clover, wheat, and corn. In 1993 the refuge farm was managed as follows:

<u>CROP</u>	<u>ACREAGE</u>
Alfalfa	16
Barley/Clover	70
Corn	43
Wheat, browse	76
Wheat, grain	16
Fallow	<u>61</u>
TOTAL	282

(The alfalfa grown by the refuge force account is not harvested. It is maintained as a cover crop on marginal farmland. The fallow acreage included fields J9 through J14 which were rested from cultivation to prevent interference with the construction of the new irrigation pipeline.)

The barley/clover crop is plowed under in its second year to provide a green manure on which to plant the wheat. The year following the wheat planting, half of it is plowed under and planted to corn, and the other half is allowed to mature for a grain crop. During the following year the corn and grain land is rotated back to barley/clover.

All crops are produced by irrigation because the local rainfall pattern does not provide sufficient water to sustain them. No fertilizer is used other than that provided through crop rotation. Only minimal treatments of 2,4-D for field bindweed are used.

The 1993 farm season began on February 22 when the land which had been in corn and wheat grain the previous year was plowed under. Land preparation progressed nicely until late March when we were temporarily delayed by rain, snow, and sleet. The barley planting began on April 20 and was completed by the 29th. Corn planting was started on May 3 and was completed by the 4th.

The corn in field F15 sprouted but appeared to be a poor stand. This field was plowed under and replanted with corn on June 9. Because of the short growing season, this is the latest we have ever attempted to plant this crop.



- Alfalfa
- Barley
- Barley/Clover
- Corn
- Oats
- Grain Wheat
- Green Wheat
- Fallow

Fortunately, we did produce a good corn crop in this field because a hail storm on August 4 swept across the southeast portion of the refuge destroying the corn in field J2.

The rainfall, which hampered our work in late March and early April, did assist us by promoting early and rapid growth of the yellow clover. This green manure crop was advanced enough by early June to allow us to begin mowing and plowing it under. Normally we do not begin these manipulations until early July, so the extra month allowed for a better decomposition prior to the fall wheat planting.

The August rains delayed the ground preparation and fall wheat planting so these tasks were not completed until September 20, and the final irrigation was completed on October 6.

A 9 inch Parshall flume was installed to measure the irrigation water used in field A1. A 12 inch flume and clock recorder were installed for field G1.

An MMS project to replace some defective irrigation ditches was begun during the year. (See Section I.1) The new irrigation pipeline is connected to the end of an existing pipeline and carries the water to the Lacy tract (J fields) in the southeastern portion of the refuge. When completed the line will take advantage of the forty foot head developed in the main trunk and will deliver water through alfalfa valves spaced along the three branch lines. The new system will eliminate the refuge's dependence on the Conservancy District's ill-maintained ditches and reduce the waiting time from six hours to instantaneous delivery.

During the winter months (December, January, and February) the refuge mows the standing crops to encourage and control the use of the grains by wintering waterfowl. Approximately ten acres are mowed each week. The mowing allows the refuge to prevent concentrations, provide a variety of grains, and control feeding patterns. During severe weather we can encourage the waterfowl to use more protected areas. We can also discourage boundary hunting by saving boundary crops until after the close of the hunting season.

#### 5. GRASSLANDS

There are approximately 2200 acres of grassland within the refuge. The dominant species include buffalo grass Buchloe dactyloides, blue grama Bouteloua gracilis, western wheatgrass Agropyron smithii, alkali sacaton Sporobolus airoides, and red threeawn Aristida longiseta. In disturbed areas the species are primarily foxtail barley Hordeum jubatum, field bindweed Convolvulus arvensis, and kochia Kochia scoparis.

There are scattered groups of Chinese elm, cottonwood, silver poplar, and locust on the refuge. Historically these trees were all introduced. The tallest native species on the grasslands is fourwing saltbrush Atriplex canescens which is also known as chamiza. Other common grassland species are prickly pear cactus Opuntia spp., pincushion cactus Mamillaria spp., soapweed yucca Yucca glauca, and winterfat Eurotia lanata. Locoweed, Astragalus spp., is also fairly common and is supposedly a fair indicator of selenium soils.

Several areas of the refuge developed strong stands of Canadian and bull thistle which were mowed in July in hopes of stopping or at least slowing the infestation. A total of thirty-seven acres were mowed while the thistles were still in the flower stage.

For the second consecutive year the range transects failed to provide good data on species diversity. As in 1992, the September weather caused many forbs to be in poor condition and, for the most part, unidentifiable. Similarly, many grasses lacked seed heads and could not be recognized.

9. FIRE MANAGEMENT

The refuge suffered two wildfires during the year. The Shattuck fire of March 3 burned about 100 acres of grassland adjacent to Highway 505. This is the same area which was burned by the Ten To Go fire of March 1988. There was no property damage, and the fire was controlled in two hours. A second fire, the Lake 14 Fire, burned about ten acres of grassland adjacent to Lake 14 on March 5 and was controlled in less than an hour.

Both fires appeared to be the work of a local pyromaniac who set a number of fires in the Maxwell area during the late winter and early spring.

10. PEST CONTROL

The only pesticide use by the refuge during the year was the application of 928 ounces of 2,4-D to 95 acres of cropland to control field bindweed. Other pest control was the mowing of thistles mentioned in Section F.5 (Grasslands).

Following several days of IPM training in Phoenix in mid June, an IPM Plan was prepared and submitted.

G. WILDLIFE

This secretive saw whet visited the refuge headquarters early one February morning. WM

1. WILDLIFE DIVERSITY

No activities were conducted to specifically enhance wildlife diversity. The species which occur on the refuge are either a direct result of the waterfowl program or a by-product of that effort. Four species deserve mention in this section: little blue heron, saw-whet owl, black bear, and swift fox.

A little blue heron, a new species for the refuge, was first observed and, after a long chase, identified on April 20. Presumably, the same bird was observed again on May 14.

There was a faint rumor a saw-whet had been observed on the refuge years ago, but we could find no definite record of the observation. This shortfall was cured on February 22 when one sat calmly in a headquarters tree, allowing all staff to take a good look at it.

Black bears are occasionally observed in the Maxwell vicinity, but none were known to have ever visited the refuge until this year. Although the bear was not observed, we did locate its den and a feeding area where it had torn up the vegetative litter while searching for grubs. On several occasions throughout the summer, bear tracks were noted along the shorelines of Lakes 13 and 14.

The carcass of a swift fox was found just off the refuge where it had become victim to an automobile. This is the first evidence we've had of this species in the refuge vicinity. Due to the secretive habits of the species and the vegetative cover provided by the refuge, the fox might well be considered a resident.

2. ENDANGERED AND/OR THREATENED SPECIES

Five species listed as endangered and/or threatened were recorded during the year.

The bald eagle is the most notable and numerous species of both the endangered species category and the refuge raptor population. The year began with sixteen eagles using the refuge, and this number remained steady until late February when it increased to twenty-one following an increase in waterfowl. The population decreased rapidly until the last regularly observed birds departed in late March. Curt Carley of the Albuquerque Ecological Services office discovered an active nest near Springer Lake in early June. The nest, which contained three fledged eaglets, is about ten miles south of the refuge. The first eagles of autumn returned to the refuge in late September and slowly increased in number until a peak of thirty one was attained in early December. Over 2100 use days are attributed to this species for the year.

Peregrine falcons were observed only infrequently during the year, and no more than a single bird was ever noted at a time. Thirty five use days were attributed to this species.

Prairie falcons, like the peregrines, were usually observed as single birds. Most observations were during the late winter and fall periods. Total use days for the species was 105, a sharp decline from the 196 recorded in 1992.

As usual, the osprey was observed only infrequently during the year. It was observed only once in mid April and did not return until late September. Three individuals were noted on the refuge in early October. A total of 49 use days were attributed to the osprey in 1993.

The first burrowing owls were observed in late March. Their numbers increased slowly until a peak of twelve was recorded in late July. The last owls were observed in early September. Total use days for this species was 707, a sharp decline from the 2000 use days recorded in 1992. Production is estimated to have been ten birds.

3. WATERFOWL

The year began with a duck population of 4900 which was predominately mallards (80%). The total duck count and species representation increased steadily until a spring peak

of 25,000 was reached in late March. A decrease in mallards and an increase in most other species gave this peak population a composition of 28% gadwall, 21% wigeon, 14% shoveler, 11% redhead, 9% lesser scaup, and 17% all others. The refuge held a population exceeding 20,000 ducks for four consecutive weeks before it began to decline.

In early April the population began a steady drop until the annual low of 400 was noted in late June. The summer population was comprised mostly of gadwall and mallard with only small numbers of the other summering species. High water levels in the reservoirs contributed to good production with the first brood noted in late June and the last in late September. Production is estimated to be 130 gadwall and 150 mallard. Although some teal were observed during the summer no production was noted.

Following the summer low, duck numbers increased steadily through August and September until a fall peak of 72,000 ducks converged on the refuge in early October. This peak was comprised of 42% wigeon, 27% gadwall, 12% redhead, and 19% all others. Simultaneous with the record duck numbers, the refuge was also hosting more than 34,000 coots, as well as a good assortment of grebes, pelicans, and cormorants. The "hundred thousand plus" birds crowded onto three reservoirs created a sight to behold.

Duck numbers remained strong until two good snow storms in November pushed out many of the wigeon and gadwall. Although day time temperatures were warm, the nightly temperatures dropped well below freezing and caused the lakes to slowly develop their ice cover. By early December the species composition had shifted making ruddy ducks and common mergansers the most common ducks on the lakes. The year closed with 5700 ducks using the refuge, and mallards had regained the lead position with a 70% representation. Duck use for 1993 tallied up to over 5.5 million use days.

After reaching a peak of 8200 geese (98% Canada) in early December, 1992, the population dropped by 50% leaving the refuge with a beginning population of 4100 in January, 1993. The numbers remained steady until mid February when they rose briefly to over 6000 for a two week span. By early March more than 3000 of the population had departed, followed by another 2000 within the next few weeks. The first of April found only a half dozen geese still on the refuge.

One brood of four goslings was observed in late spring, but we were unable to determine if they ever reached maturity.

The first fall migrants began arriving in late October and increased slowly until the snow storms of mid November. The

total goose numbers (98% Canada) dropped from 5800 to 1100 then rebounded to over 15,000 in early December. Contacts with Colorado Game and Fish personnel indicated more Canadas were in both Colorado and Wyoming just waiting for that certain urge which would drive them south. By late December the population had declined to 4800. Total goose use days for the year exceeded 700,000 which, when added to the duck use days, gave the refuge 6.2 million waterfowl use days, a nice increase over the 4.3 million of 1992.

TABLE 6

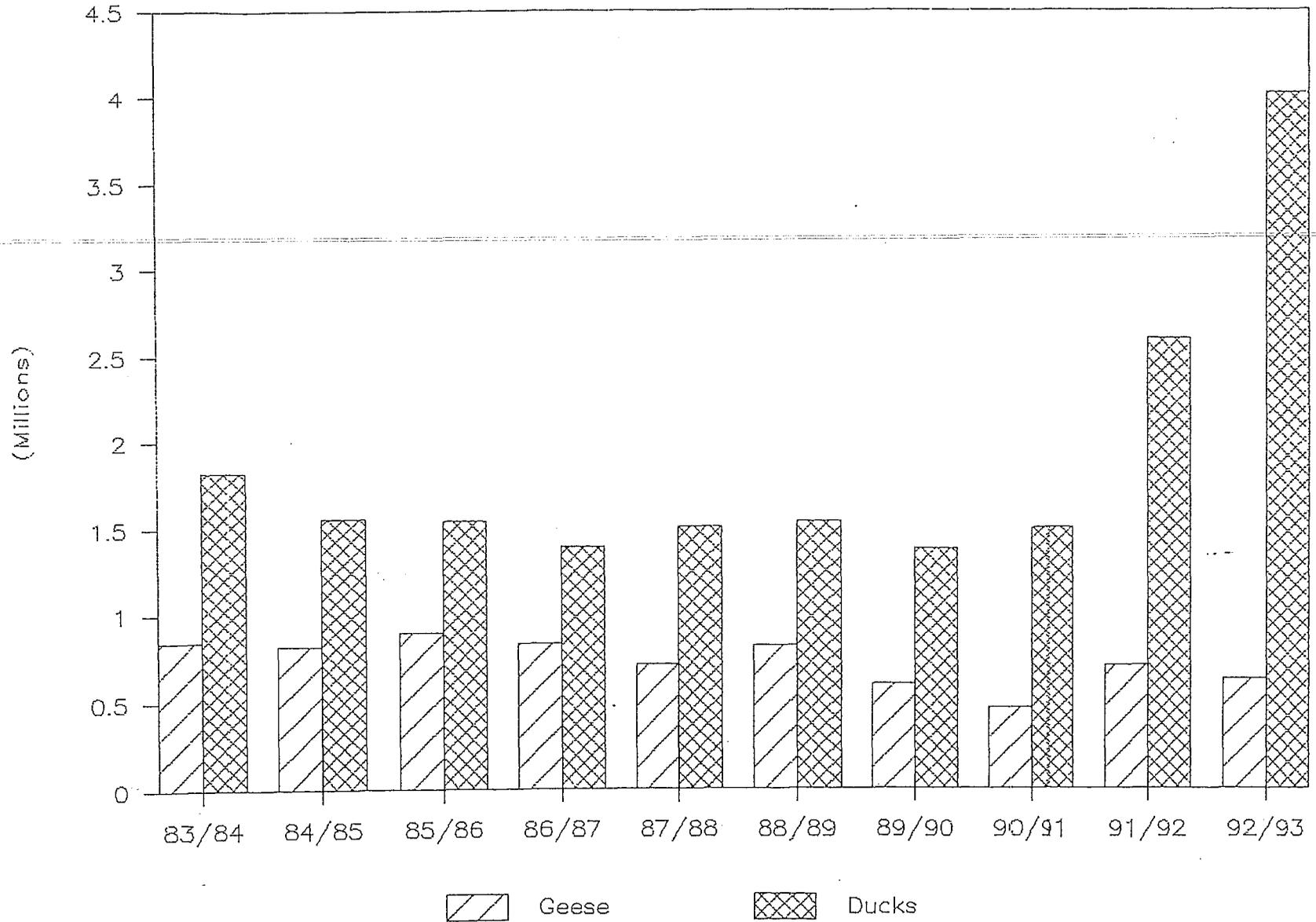
WATERFOWL POPULATION DYNAMICS AT MAXWELL NWR 1993

<u>SPECIES</u>	<u>PEAK</u>	<u>DATE</u>
Hooded Merganser	8	January 6
Red-breasted Merganser	16	January 13
Canvasback	865	March 10
Green-winged Teal	1195	March 10
Northern Pintail	2330	March 17
Northern Shoveler	3732	March 17
Blue-winged Teal	462	April 21
Cinnamon Teal	561	April 21
Gadwall	26015	September 29
Ruddy Duck	6600	September 29
American Wigeon	36500	October 7
Redhead	8743	October 7
Bufflehead	1700	October 21
Lesser Scaup	2910	October 21
Mallard	7928	November 10
Ring-necked Duck	704	November 10
White-fronted Goose	23	November 24
Canada Goose	15500	December 1
Common Merganser	2700	December 8
Snow Goose	350	December 8
Common Goldeneye	145	December 15

The only recorded species of waterfowl not observed during the year were the tundra swan and wood duck.

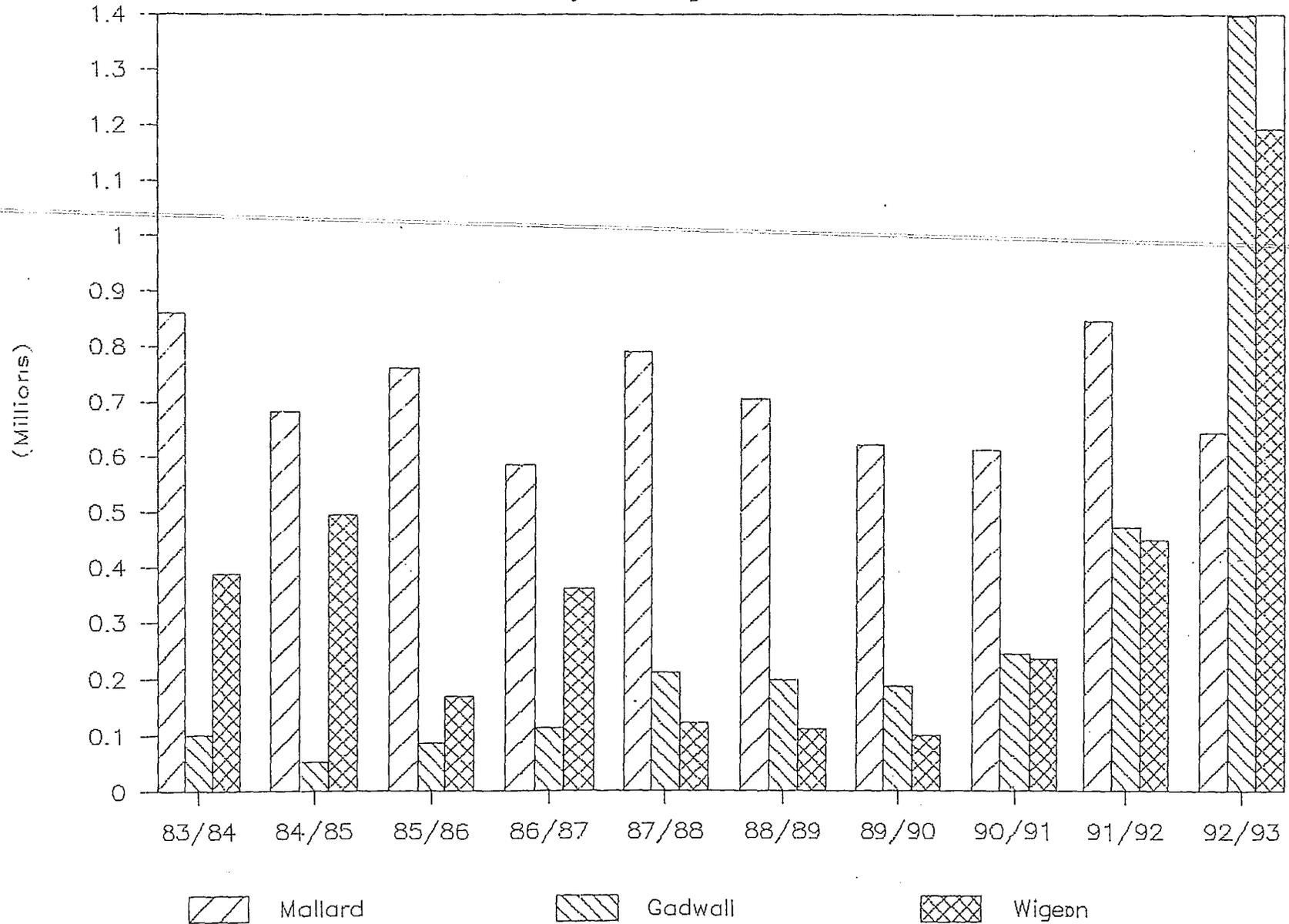
# WATERFOWL USE DAYS

July 1 through June 30



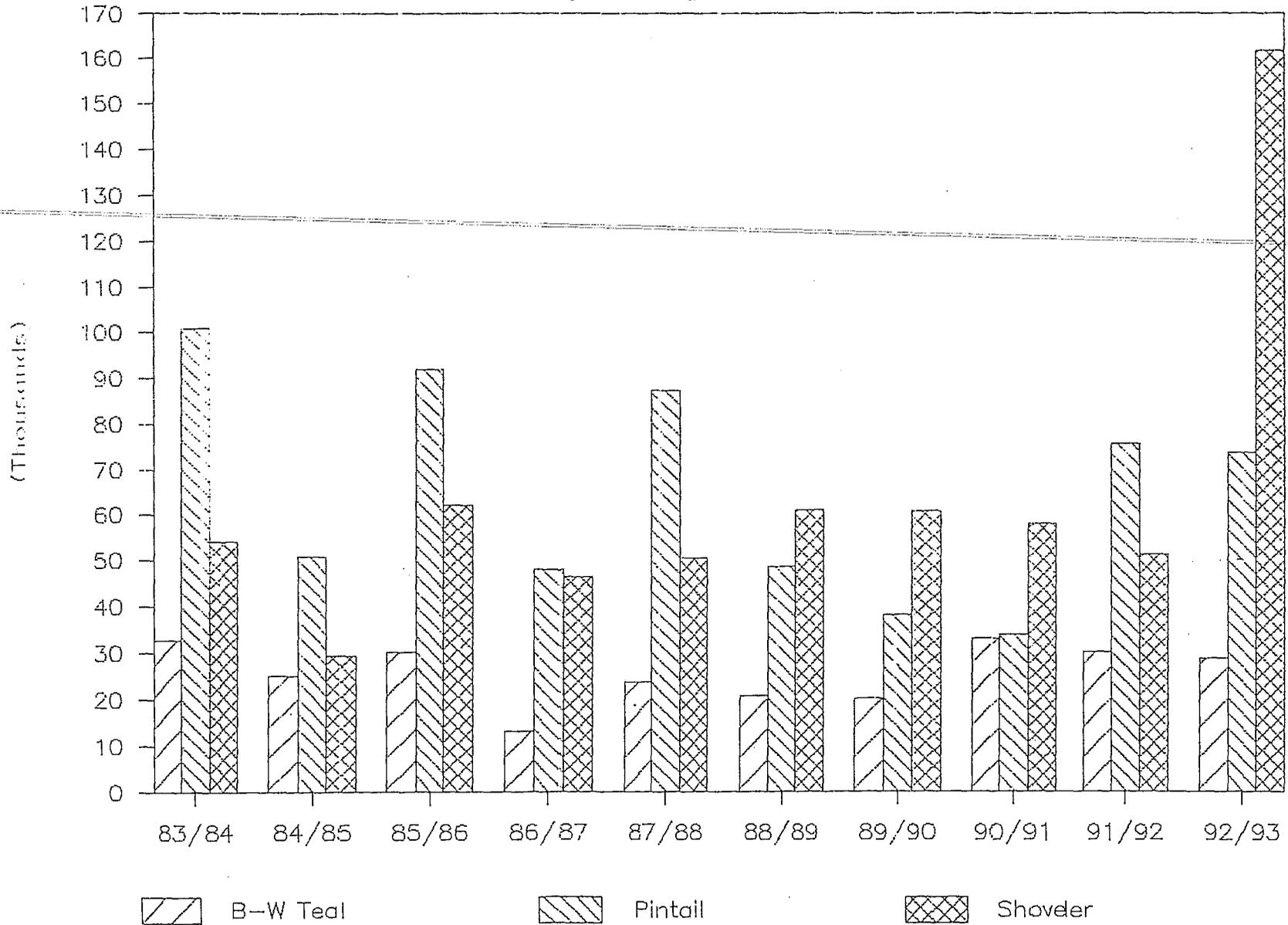
# DUCK USE DAYS

July 1 through June 30



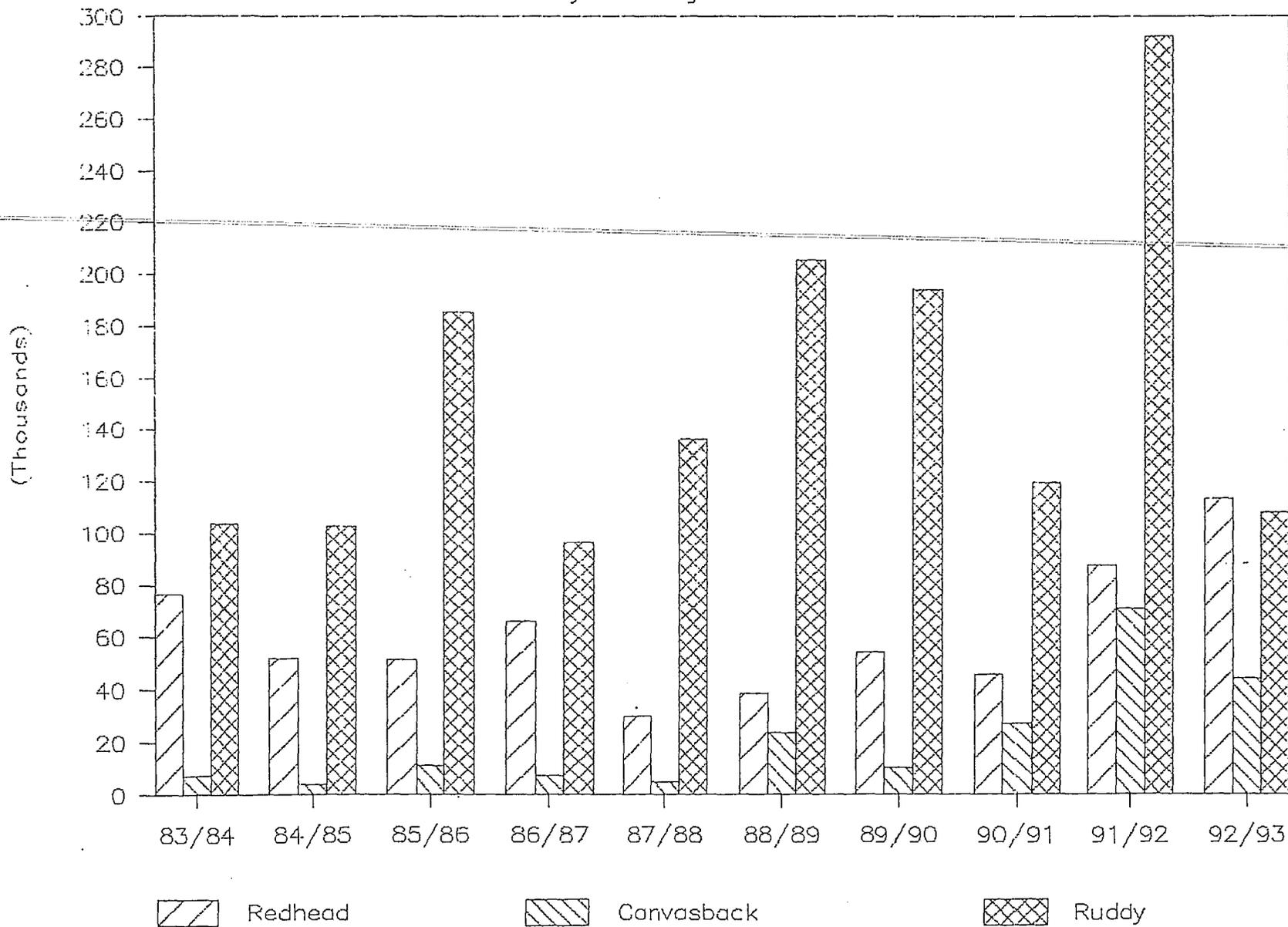
# DUCK USE DAYS

July 1 through June 30



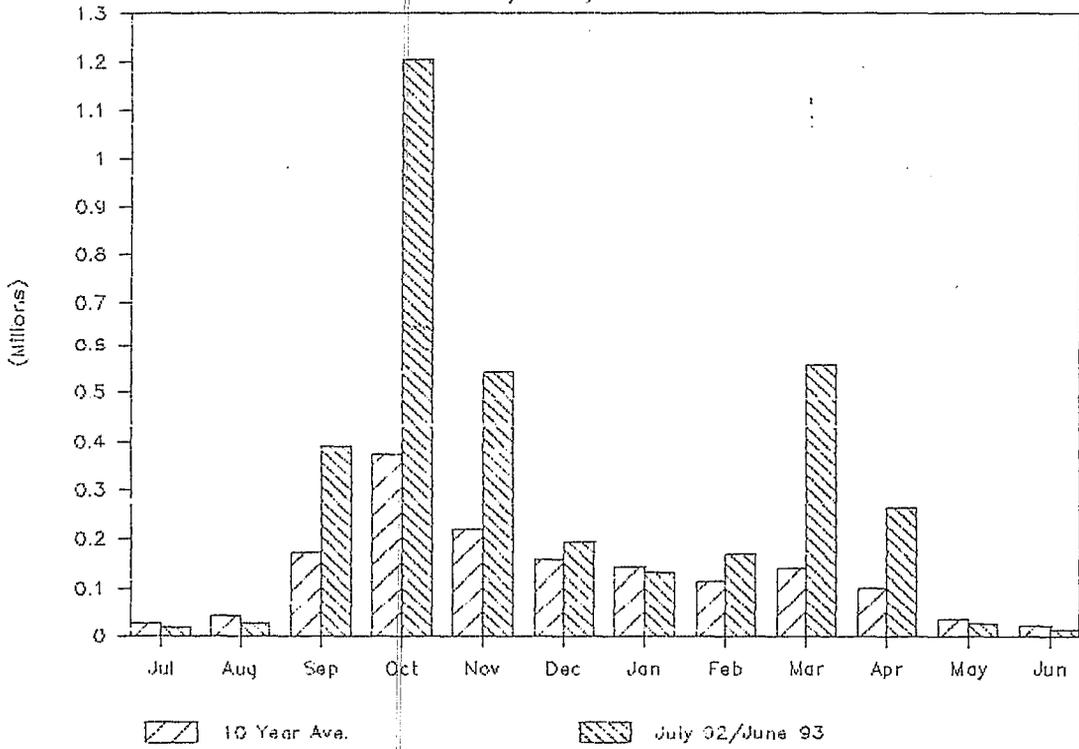
# DUCK USE DAYS

July 1 through June 30



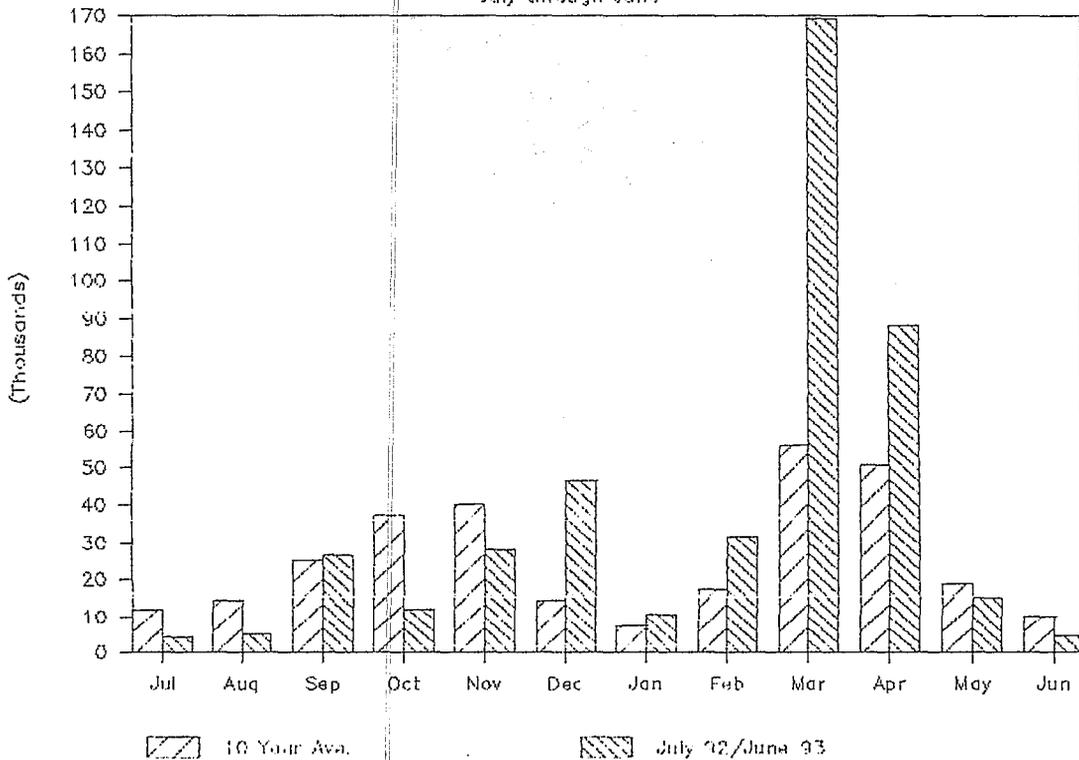
### DABBLER USE DAYS

July through June



### DIVER USE DAYS

July through June



#### 4. Marsh and Water Birds

Of the many birds categorized as "Marsh and Water Birds" the refuge has only one species hardy enough to stick with us year around. The American coot began the year with little more than 700 crowded into the open water of Lake 13. As the ice receded, the coots began to increase until more than 26,000 were counted in late March. As the heat of summer settled on us, the birds departed until we reached an annual low of 15 in early June. By September at least a thousand had returned, and they just kept returning until we attained a fall peak of 34,000 in mid October. As winter moved into the area and ice began to crowd them, the coots again left the refuge until the numbers had declined to 1200 in late December. Total use days for this species was 2.7 million in 1993.

Although the refuge hosts five species of grebes during all but the winter months, only the western, eared, and pied-billed are regularly observed. The eared grebe is the most numerous with over 250 individuals counted on several occasions. They typically nest on Lake 14 where a hundred nests were counted in mid July. Unfortunately, a severe hail storm struck the refuge on August 4 destroying all the nests. Although most, if not all, of the adults escaped the storm, it was several weeks before they returned to the lake. No re-nesting efforts were noted. Use days for the major species included: western grebe, 2758; eared grebe, 19,033; and pied-billed grebe, 2,513.

Although thousands of sandhill cranes are observed each fall as they pass over the refuge, only a small percentage ever stop to sample our hospitality. The few birds that do stop normally are here only to wait out a storm or some other weather pattern and are soon on their way. 1993 gave us a peak population of 76 in early November. Total use days for the cranes was 4711, a slight increase over the 2700 use days noted in 1992.

White pelicans seem to be trying to discover the refuge but have yet to develop a standard use pattern. Our first pelican of the year arrived in late April and was followed by others until we reached an average population of about forty during the summer months. The fall migration increased the number until a peak of 114 was reached in early September. The last bird left the refuge in late October. Total use days for the species was 5824.

Other birds from this category and their use days include: common loon, 14; double-crested cormorant, 9758; white-faced ibis, 2135; great blue heron, 3115, black-crowned night heron, 133; and snowy egret, 42.



Most of our migrant birds arrive under their own power. This common loon came to us by way of a local veterinarian. KP

5. Shorebirds, Gulls, Terns, and Allied Species

This group of birds was represented by eighteen species in 1993. The habitat conditions which were good for waterfowl, high water and good shoreline vegetation, had the opposite effect on the shorebirds. Only small numbers of shorebirds could be found on the refuge at any one time. Even the species, such as Wilson's phalarope, which usually attain high numbers during migration largely avoided the refuge. Only three species attained a population level which exceeded a hundred individuals; ring-billed gull, 109; Franklin's gull, 150; and Wilson's phalarope, 178. All species combined logged in for only 23,450 use days, and 43% of this total is attributed to the ring-billed gull.

6. Raptors

Aside from the five species listed in Section G.2, the refuge also hosted various numbers of fourteen other species. The following list shows the species, their peak numbers, total use days and estimated production.

TABLE 7

<u>SPECIES</u>	<u>PEAK NUMBER</u>	<u>TOTAL USE DAYS</u>	<u>ESTIMATED PRODUCTION</u>
Turkey vulture	8	280	
Northern harrier	12	1316	6
Sharp-shinned hawk	1	7	
Cooper's hawk	2	28	
Red-tailed hawk	5	658	6
Swainson's hawk	11	539	10
Rough-legged hawk	4	350	
Ferruginous hawk	1	49	
Golden eagle	1	70	
Bald eagle	31	1974	
Prairie falcon	2	98	
Peregrine falcon	1	28	
Merlin	1	14	
American kestrel	6	602	10
Osprey	3	49	
Barn owl	3	280	8
Great-horned owl	7	847	12
Burrowing owl	12	637	10
Saw-whet Owl	1	7	
TOTAL USE DAYS		7833	62

8. Game Mammals

Only two species of game mammals are normally found on the refuge. Mule and white-tailed deer are regularly observed during the spring and summer months when the does and their fawns take advantage of cover and seclusion provided by the crop fields. Mule deer production included two sets of twins and a single fawn. One set of white-tailed twins was produced on the refuge during the year.

Other game mammals, such as the black bear this year and an elk in 1991, have been observed on the refuge, but their presence is not a regular event.

11. Fishery Resources

The New Mexico Department of Game and Fish maintains a "put and take" fishery program in Lake 13.

Fish stocking by the N.M. Department of Game and Fish during 1993 included:

<u>DATE</u>	<u>NUMBER</u>	<u>SPECIES</u>	<u>SIZE</u>	<u>WEIGHT</u>
03/19/93	3,200	Rainbow trout	10 1/4"	1,373
03/23/93	3,200	Rainbow trout	11"	1,662
05/13/93	14,196	Rainbow trout	6"	1,200
05/20/93	6,400	Rainbow trout	9"	1,850
06/03/93	12,684	Rainbow trout	6 1/2"	1,400
06/04/93	11,778	Rainbow trout	6 1/2"	1,300
06/07/93	8,244	Rainbow trout	6 3/4"	1,066
09/23/93	623	Rainbow trout	10 1/4"	274
10/26/92	<u>47,407</u>	Rainbow trout	7"	<u>6,800</u>
TOTAL	107,732			16,925

This level of stocking is somewhat above normal. Springer Lake, located ten miles south of the refuge, was drawn down to accomplish some repairs on the outlet structure. With Springer removed from the stocking schedule, Lake 13 received not only its own share but also Springer's share of fish.

#### 16. Marking and Banding

From 1984 through 1989 the refuge participated in a Canada goose banding project. Although we are no longer banding, the birds are still being encountered.

Some of the geese banded at Maxwell were taken at the following locations during 1993:

Great Falls, Montana	12/10/91*
Pierre, South Dakota	11/25/92*
Good Rich, Colorado	12/07/92*
Manning, Alberta, Canada	09/24/93

\*Not reported until 1993

For the second consecutive year the refuge has cooperated with Richard Kerbes of the Canadian Wildlife Service in searching for and reporting neck collared geese. In 1992 we were able to identify twenty-one collars of which seventeen (81%) originated in the western Arctic; three (14%) from the central Arctic (east); and one (5%) from the central Arctic (west). In 1993 we identified twenty-three collars which determine the origins of the flock as being 96% from the western Arctic; and 4% from the central Arctic (east).

## H. PUBLIC USE

### 1. General

The demand for public use on the Maxwell National Wildlife Refuge is primarily for fishing. In an attempt to shift some visitation toward non-consumptive uses refuge personnel have increased their efforts to "sell the refuge". Non-consumptive uses are emphasized in every contact.

During the year the following off refuge contacts were made:

- a) Refuge programs were presented to one hundred eighteen members of civic organizations.
- b) Five hours of classroom lecture/discussion was presented to eighty-five students and nine adults in Maxwell and Raton schools.
- c) One campfire program was presented to thirty visitors in Sugarite Canyon State Park.
- d) Twenty-six newspaper columns were printed in the local newspaper, the Raton Range.
- e) Three newspaper articles were prepared for special editions of the Raton Range; one each for the summer and winter editions and one for the Progress edition.
- f) Weekly census reports of waterfowl, cranes, and eagles were provided to the Albuquerque Journal for use in their outdoor column.
- g) One special program dealing with migratory birds was prepared and broadcast from radio station KRTN. The refuge manager was also a guest on the station's morning talk show on five occasions to discuss bird populations, boating safety, National Fishing Week, etc.
- h) The refuge assisted the Sugarite Canyon State Park by loaning a boat and operator to assist in a special event.

### 6. Interpretive Exhibits/Demonstrations

A joint display by the refuge, Capulin Volcano National Monument, and Sugarite Canyon State Park was set up and manned during the Raton Chamber of Commerce annual dinner where U.S. Senator Jeff Bingaman was the guest speaker.

A joint effort display at the Colfax County Fair in August attracted two hundred people. The display was assembled and staffed by personnel from the refuge, the Capulin Volcano National Monument, and the Sugarite Canyon State Park.

9. Fishing

Public fishing in Lakes 13 and 14 accounted for 9600 visits or 43% of all refuge visitation. Nearly 400 campers used the facilities adjacent to Lake 13 to spend their holidays and weekends. Almost all camping was by fishermen and their families.

The fishing season (March 1 through October 31) is established by the New Mexico Department of Game and Fish.

11. Wildlife Observation

Approximately 22,000 visitors from 28 states and 2 foreign countries came to the refuge for wildlife observation. A few get out and hike and a few try their hand at taking pictures, but most are content to watch the birds from their cars. One of our visitors, a Hollander, made the refuge a part of his round the world bicycle tour.

12. Other Wildlife Oriented Recreation

The refuge was contacted several times throughout February and March by the Albuquerque Retriever Club with the prospect of holding a dog trial on the refuge. Three representatives from the club visited the refuge on April 6 to inspect the facilities. After discussing compatibility and observing the closed areas, they departed and have not been heard from since.

17. Law Enforcement

Extra patrols during dove and goose season were not required during the year. The Memorial Day weekend drew over 100 bank fishermen, 20 boaters, and 100 campers to Lake 13. Extra patrolling was required, primarily to ensure boater safety.

## I. EQUIPMENT AND FACILITIES

### 1. New Construction

Irrigation water delivery to the Lacy Tract (J farm) is a slow, arduous process which includes over a mile of ill maintained Conservancy District ditch and another mile and a half of refuge concrete lined ditch. The concrete lining was accomplished in 1978 and the intervening years have taken their toll, causing the lining to shift, break, and leak. A plan was started in 1993 to correct these deficiencies through a series of annual phases. By tying onto an existing 12" irrigation pipeline and extending it to the Lacy Tract we could eliminate the need of the Conservancy ditch and also take advantage of 40 vertical feet of head. New pipeline with alfalfa valves would replace the old concrete lined ditch.

Phase I included the installation of:

- a) 3565 feet of new 12" pipeline (main trunk line),
- b) 1600 feet of new 12" pipeline (lower branch),
- c) 8 alfalfa valves, and
- d) removal of 1519 feet of concrete lined ditch.

Waterdog Irrigation Company of Littlefield, Texas, was awarded Contract No. 1448-00002-93-0016 in the amount of \$38,898.20 (MMS funds) to complete Phase I of the irrigation water delivery system. The contractor began work on September 27 and was completed October 12.

### 2. Rehabilitation

A new pump was installed in the headquarters well in early April. This well does not provide water of sufficient quantity or quality for domestic use and is used solely for lawn irrigation.

### 4. Equipment Utilization and Replacement

A "new" 1972 GMC dump truck was acquired through federal excess property sources. The truck, while not new, was happily accepted as a replacement for the 1960 Chevrolet dump truck the refuge has used since 1972 when it was acquired from National Elk Refuge.

A new 4X4 John Deere tractor, Model 755 with detachable lawn mower and snow blower, was purchased through contract. This unit will be used for the maintenance of headquarters and recreational area yards. Most of these areas are too big for a push mower and too small for a bush hog.

### 5. Communication Systems

A new Panasonic fax machine was purchased to replace the used Ricoh fax given to us in 1992 by Wichita Mountains.



The old concrete ditch liner is removed in preparation for... JF



... the installation of buried pipeline with alfalfa valve risers. JF



Through the cooperation of Cibola and Bosque del Apache NWRs we acquired this 1972 GMC which will replace the old 1960 Chevrolet dump truck. JF



Snow blowing and grass mowing will be easier with this Model 755 John Deere tractor. JF

8. Other

Upgrades in the censusing equipment included the purchase of:

- a) A Bushnell spotting scope with 15-45 variable power objective,
- b) A 25 power objective, and
- c) 2 pairs of 10X50 wide angle Bushnell binoculars.

Upgrades to the irrigation equipment included the purchase of two Leupold & Stevens Model 61R water recorders.

J. OTHER ITEMS3. Items of Interest

The following meetings were attended during the year:

- March 22 - 27 French attended L.E. refresher at Marana, Az.
- April 26 - 30 Plotner attended Administrative Conference in Albuquerque, NM
- May 10 - 12 French attended Project Leaders meeting in Albuquerque, NM
- June 15 - 18 French attended IPM workshop in Phoenix, AZ
- October 27 French attended firearms requalification in Raton, NM

4. Credits

This report was written by Jerry French. Typing and graph preparation was by Kay Plotner. The report was made possible by a full effort from the entire staff, the contributions of the American taxpayers, and the presence of the creatures which grace the flyways.