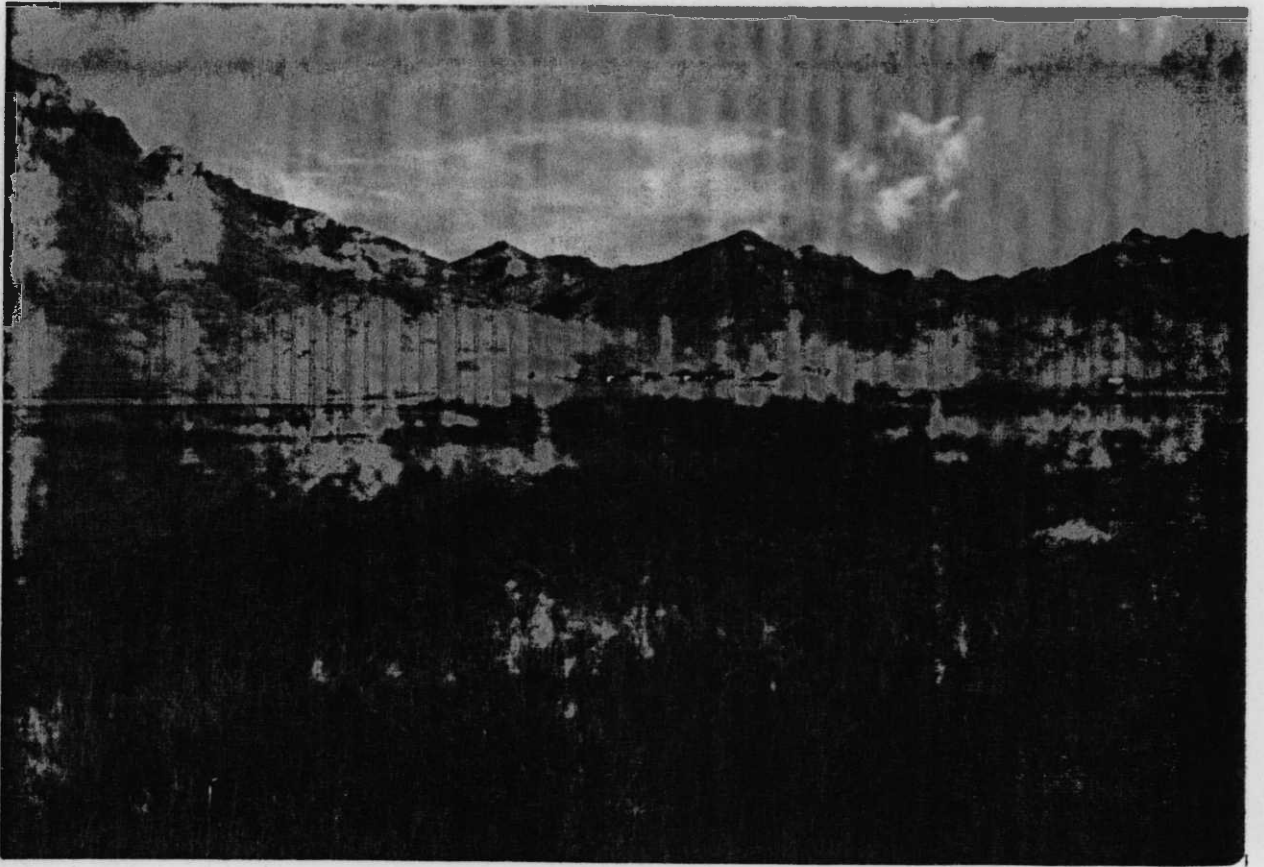


FISH SPRINGS NATIONAL WILDLIFE REFUGE

Dugway, Utah

ANNUAL NARRATIVE REPORT

Calendar Year 1976



" HOME, SWEET HOME "

lovely!

Best possible image.


1976

Fish Springs National Wildlife Refuge
Dugway, Utah

Personnel

<u>Name</u>	<u>Title</u>
Rolf H. Kraft	Refuge Manager GS-9 PFT
Michael W. Perkins	Assistant Refuge Manager, GS-5/7 PFT (transferred 7/31/76)
Irl G. Timm	Maintenance Worker, WG-7, PPT (39 hours)
Russell L. Hoffman	Maintenance Helper, WG-5, Intermittant

Review and Approvals


Submitted By Rolf H. Kraft, Refuge Manager

3/14/77
Date

Area Office

Date

Regional Office

Date

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I. GENERAL

A. Introduction

Fish Springs National Wildlife Refuge is located on the southern edge of the Great Salt Lake Desert 140 miles SW of Salt Lake City. The refuge is a waterfowl production and maintenance area of 18,000 acres of which 10,000 acres is spring-fed saline marsh.

B. Climatic and Habitat Conditions

1976 was a year of good moisture compared to the last five years; however, overall precipitation is on a downward trend. The 12-year average, 1960-75, was only 6.80 inches annually.

Spring output averaged 40.132 cfs in 1976 with a low of 34 cfs in February and a high of 49 cfs in October. This is a significant increase over the 1975 average output of 36.448 cfs and the 1971-74 average of 36 cfs.

Temperatures were average most of the year with ice breaking up in mid-February. Fall freeze-up came in early December with a quick change from a mild fall to clear and cold.

C. Land Acquisition

Land acquisition is complete.

D. System Status

1. Objectives

The marsh rehabilitation project on the Avocet Unit is making a significant contribution in realizing our waterfowl production potential. The rehab project also gave us the opportunity to act on the hunting quality advice. The implementation of both of the above efforts was successful, but maintenance will be difficult as we rapidly approach NF10 in reality.

TABLE I

Precipitation - 1976

Month	Snow (Inches)	Precip (Inches)	Normal*
January	2.9	.15	.30
February	3.8	1.11	.28
March	4.0	.28	.82
April	1.7	.34	.98
May	5.0	1.91	.53
June		.20	.65
July		.02	.66
August		1.25	.29
September		.73	.45
October		1.40	.73
November		.11	.74
December		0	.37
Totals	17.4	7.50	6.80

*16 year average 1960-1975

TABLE II

Temperatures - 1976

Month	High	Low °F (1976)	High	Low °F (1960-75)
January	50	-1	69	-14
February	60	8	74	0
March	68	10	79	6
April	72	18	88	18
May	90	26	97	26
June	91	32	105	36
July	105	46	109	44
August	102	45	108	42
September	96	44	98	29
October	83	37	94	9
November	74	22	84	1
December	64	2	70	-18

Considering the hunting quality advice and the existence of opportunity, the refuge staff expended considerable effort to comply. The new hunt plan, involving boundry changes to distribute hunter density, required regional office approval. The plans were submitted in January and were finally approved by late August. The long delays considerably diminished the lead time for orderly implementation. We had only one month to produce new regulations and post the new boundries. Homemade signs had to be fabricated because of insufficient lead time to use the Service Sign Shop.

5000 POINTS!

The hunting program changes were effective in improving hunter success and eliminating intermittent overcrowding. Improving hunting quality is not enough. The "system" needs to provide the incentive for doing it. One possibility would be a variable RBU value for hunter activity hours based on hunting quality, and a set of national standards so each refuge can determine its RBU value/AH at the end of each season. This will get us away from the concept of "more is best". As it is now, a lot of hunters spending a lot of time getting a few ducks is worth more (RBU-wise) than fewer hunters in a quality situation. We can improve conditions for quality hunting, but the system encourages us to allow a large number of people to use the resource, thereby, diminishing the quality.

The hunting quality improvements we did here increased the hunters bag from 1.9 ducks/hunter last year to 2.9 this year, while the total number of hunter visits increased by 58% (702 to 1112), and activity hours increased by 26% (4908 to 6182). The average hours/visit decreased from 7.0 to 5.6, and the hours/bird decreased from 3.7 to 1.9.

Even though the overall hunting quality was increased for the whole season, in my estimation the quality diminished as the word got out and the marshes up north became frozen. During the last three weeks of the season we had 20-30 hunters on the refuge almost every day. The marsh was shot out and the number of birds/hunter dropped markedly. If that trend

continues, I would recommend closing the refuge three days a week during the last three or four weeks of the season for the birds to recuperate even if we lose AH's and RBU's.

2. Funding

The refuge is fast approaching NF10 levels. Maintenance of facilities is deteriorating due to a lack of funds and manpower. Funding has not even been keeping up with inflation.

As a result we had to cut our intermittent employee to 130 man days during 1976, opposed to the 150 man days planned. The FY77 budget only allows for 46 man days of intermittent labor.

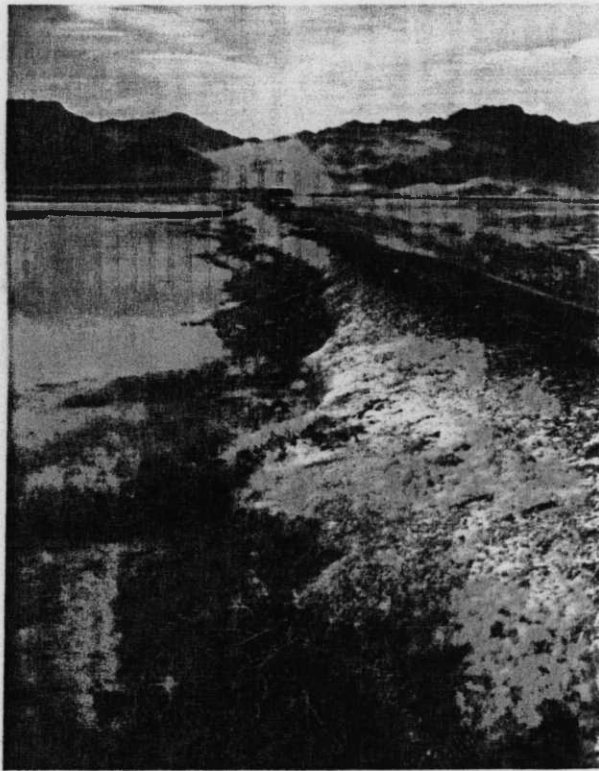
BITE YOUR TONGUE!
The administrative workload now consumes 26% of our manpower. To prevent serious resource deterioration, the refuge professional staff has to spend more time on the maintenance program to offset the loss of our intermittent labor. As a result, low priority routine reports and paperwork could not be accomplished. To allow refuge resource facilities to deteriorate in order to accomplish low priority paperwork is, in my opinion, dereliction of duty.

The following actions were necessary to stay within our budget: The wooden top on a water control structure collapsed-we closed the road as we can not afford the repair. We are out of refuge leaflets-- we cannot afford the cost of replenishment. Training has been eliminated for FY77. Dike riprap and repair is falling behind. Our staff of two PFT, one PPT, and one very "intermittent" intermittent cannot keep up with the workload.

The new monthly Office Transaction Report is the first really useful report to come out of the Denver Finance Center. The Monthly Management Report is okay, but I have to go back to the document control ledger, or now, the Office Transaction Report to figure out where I really am financially. The Monthly Management Report just is not close enough when a few hundred dollars can spell fiscal disaster at the field station level. I would like to see the Office Transaction Report include Labor Cost Transaction totals by employees.



WATER CONTROL STRUCTURE DETERIORATION



DIKE EROSION

II. CONSTRUCTION AND MAINTENANCE

A. Construction

1. New Facilities

Several new parking areas were constructed around the Avocet Unit to complement the new hunting area. Since the parking area would also serve for other future recreational development, and approval for the hunting area boundary changes was late in coming, we went ahead with the construction early in the year to preclude the possibility of not being ready for the opening of the waterfowl season. The steel towers that would mark the south boundary of the Avocet hunting area were placed in January to take advantage of the frozen ground for easier transport. Actual posting and new signs for the new hunt area had to await approval. When the approval was received in mid-August, it was too late to order signs through the Service Sign Shop. We had to make our own signs. All of the small simple signs were routed in wood, and two large informational signs were lettered with vinyl "stick-on" letters purchased from a Salt Lake Sign Shop. The vinyl letters require heat for good adhesion—we used a laundry iron with a cloth scorch pad. The signs weathered the hunting season in excellent shape. There was no peeling of letters as one might expect. The project was our response to the AWP advice on hunting quality.

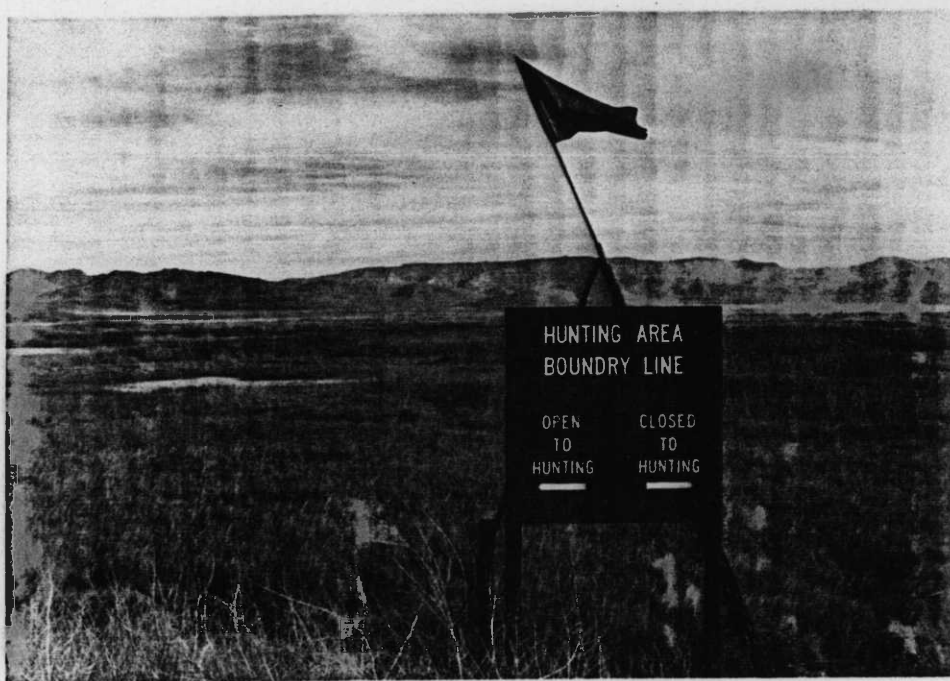
A short haul road was constructed from Middle Spring east to structure #4 on the main ditch. The short-cut will save time and wear and tear on our heavy equipment.

2. Rehabilitation

The Assistant Manager's residence (Qtr. #4) was renovated while the position was vacant. The hardwood floors were refinished and the entire interior repainted. Additional attic insulation was placed in Qtrs. #4 and #5.

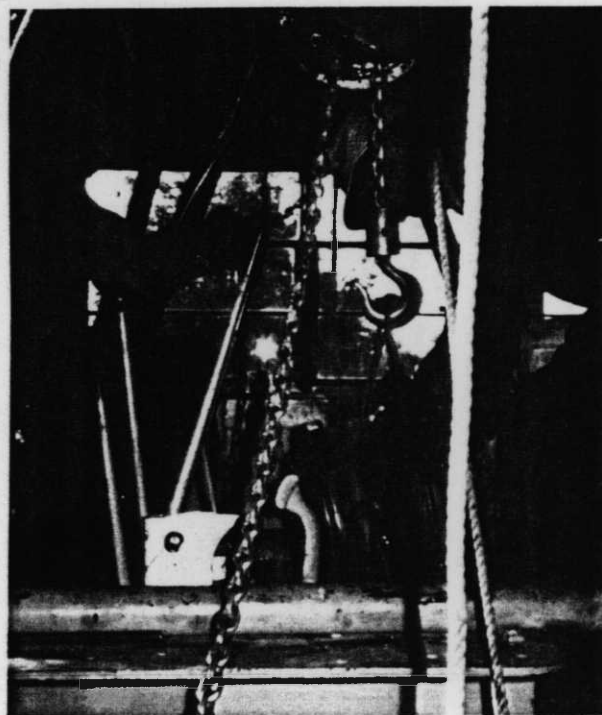
The old wooden weir at South Spring was replaced with a new Parshall Measuring Flume.

The refuge crew replaced the clutch and pilot bearing in the D6 "cat".



HUNT AREA BOUNDARY SIGN

Note steel tower with boundry marker flags in background.



IRL TIMM AND RUSSELL HOFFMAN
Installing new clutch in our D-6. "Cat"

3. Equipment Acquisition

The refuge acquired a military surplus Lorain 12½ ton track-mounted back hoe through Bear River Refuge. The machine was almost new. It had about 18 hours running time on it. The refuge crew refurbished it with FWS green paint and FWS decalcomania, and now it looks like it belongs.

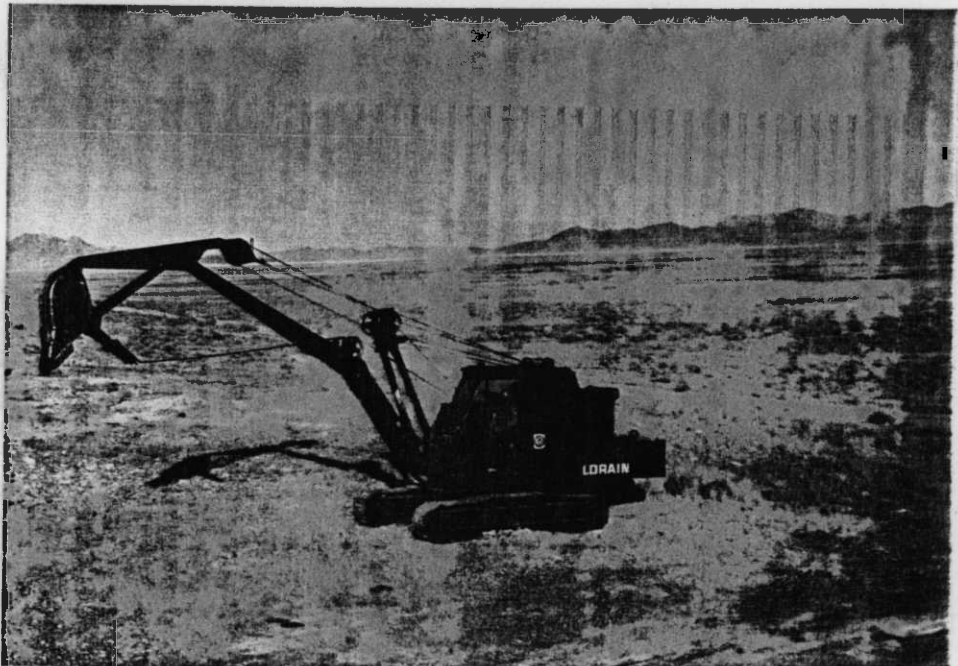
next unit 1/10/68

We replaced our airboat with a new 14 foot 180 HP "Aircat". The boat was purchased with a special Rehab appropriation. The old airboat was under powered and poorly designed. It had very poor maneuverability and very easy to get stuck. It required two men on board at all times, because one man could not free it alone. The new boat handles quickly and easily and the extra man is not needed. That allows us to get more done with less manpower.

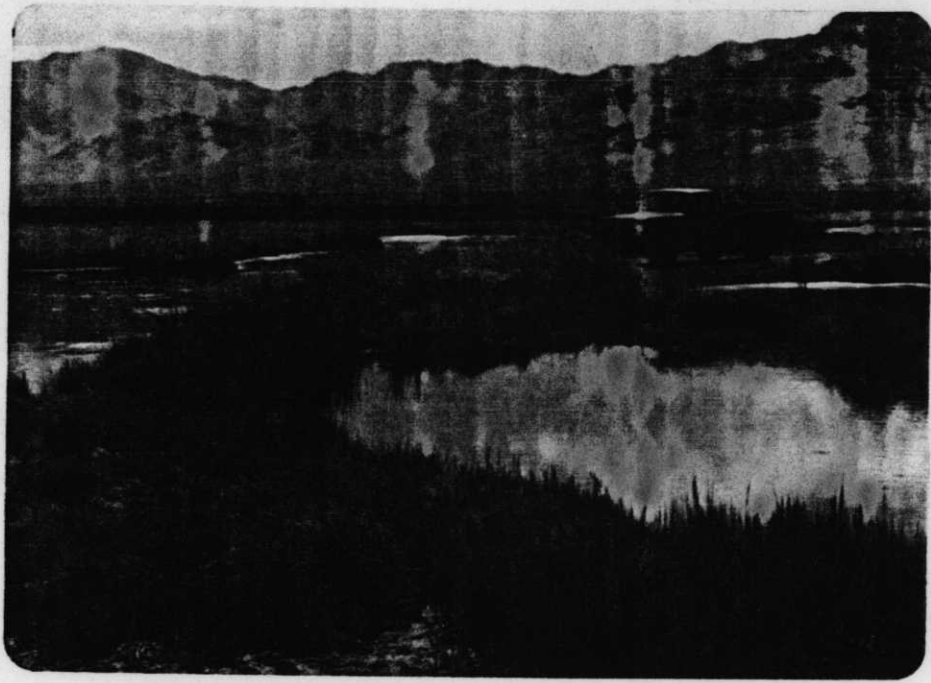
B. Maintenance

1. Habitat

Riprapping of dikes is a continuous project. The heavy coarse gravel sinks through the soft mud and makes a solid dike or check dam that not only holds water better but is also more muskrat resistant.



MANAGER KRAFT DEMONSTRATES
OUR NEW LORAIN BACK HOE



AVOCET UNIT - INTERNAL DIKE
BEFORE GRAVEL RIPRAP



AVOCET UNIT - SAME DIKE
Gravel riprap holds water better and is more
muskrat resistant.



MAINTENANCE HELPER HOFFMAN

Estimating the muskrat population from our new 180 HP "Aircat".

Muskrat damage to dikes is a serious problem. Until the recreational muskrat trapping plan is approved, we must pay an employee to do the trapping. This is a stop-gap measure at the best, and the 1220 funding is inadequate to contain the problem.

Ditch cleaning to remove dense aquatic vegetation, mostly spiny niad, (Najas mariana) has undergone changes from former procedures due to the water requirements of the Avocet Rehab area.

Some of the changes in the water routing necessary to relood the rehab area, preclude the use of the underwater weed-cutter we used in the past. The water control structures now in place prevent us from flushing the cut aquatics from the main distribution ditch. As a result, we are now stabilizing the ditch bank to accommodate the Lorain crawler back hoe. This machine can cut a narrow swath along one side of the ditch by dragging the bucket for 10-20 feet and then lifting out the debris. The narrow channel approach is best anyway, as the water is accelerated in the narrow cut and the increased water movement reduces the rate of re-growth. The new method requires fewer manhours than before, but preparing the ditch banks will require considerable work.

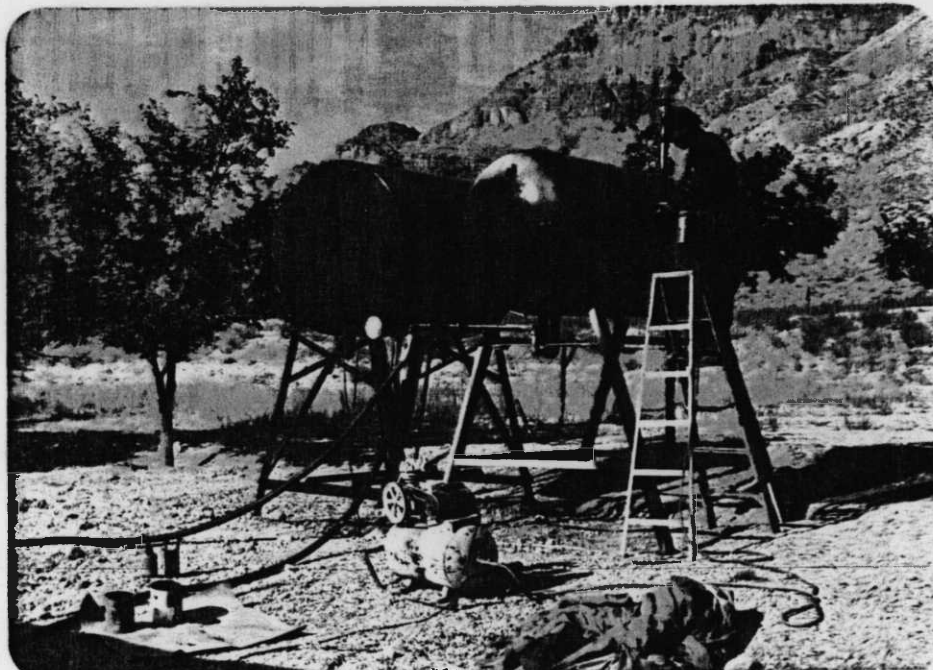
2. Recreation Facilities

The privies in the picnic area were treated with Carbolineum wood preservative. Road grading is necessary twice a year to prevent high centering damage to low slung cars. Road grading depends on proper soil moisture which is difficult to obtain on schedule. We transplanted some silver-leaved poplars from the picnic area out along the projected wildlife trail in the Shoveler Unit to provide some shade and also as roost sites for raptors and herons.

Our sign plan is way behind schedule due to the lack of funds. We replaced some of the really bad signs with routed wood signs we made on the refuge. The signs required by the sign manual are just priced beyond our funding.

3. Physical Plant and Equipment

A new concrete base and weatherproof cover was constructed for the diesel fuel lift pump. Before the pump was subject to sheet water flooding every time it rained. Our steam cleaner was repaired. It was considered beyond repair for a number of years because it would no longer produce wet steam. After some consideration, the manager ^{? D.?} suspected heavy salt scaling in the heat coils may be the problem, and a solution of "Lime-A-Way", a desalinization chemical, was run through the coils and allowed to "cook". After the descaling, the steam cleaner is working again.



IRL TIMM PAINTING FUEL TANKS

11

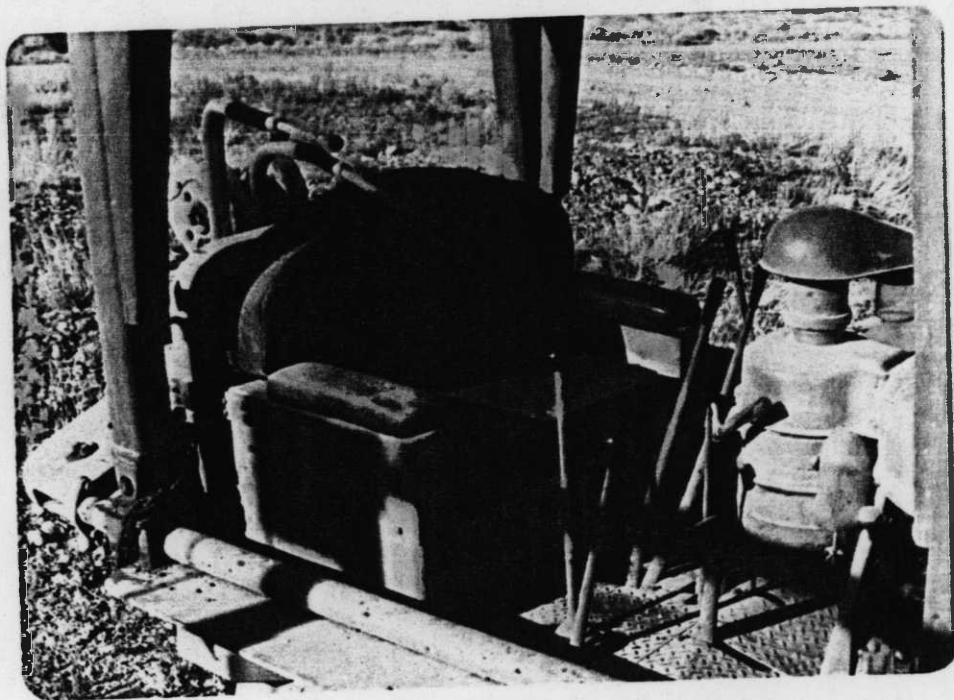
We transplanted some elm trees into the yard at Res. #39 to provide shade. The trees were removed from areas that were difficult to irrigate.

In order to comply with safety regulations, the gasoline and diesel fuel tanks were painted red.

The seats on the D-6 "Cat" were reupholstered. A considerable contribution to employees comfort and morale.



D-6 "CAT" SEAT, BEFORE



D-6 "CAT" SEAT, AFTER

Excellent improvement!

C. Wildfire

None

III. HABITAT MANAGEMENTA. Croplands

None

B. Grasslands

The grasslands at Fish Springs are isolated small meadows and islands with dense stands of salt grass (Distichlis stricta) interspersed in certain areas with alkali sacaton (Sporobolus airoides). Fire is used to remove dead material, and it greatly increases the production of green shoots that are used by feeding geese. No burning was undertaken this year.

C. Wetlands

*That salt grass really burns!
H.T.*

Water level management is the prime consideration in maximizing on our potentials. The first concern in water level management here, is to maintain circulation and flow. Pool circulation (water movement) is the best hedge against the high summertime evaporation rate. Evaporation averages about .75 inches/day with extremes to 1 inch/day.

The stop-logs are manipulated to flow a lot of water there, rather than trying to maintain even flows. The idea is to keep the water in the distribution ditches moving. The advantages of this philosophy follow: Moving water does not evaporate as fast as standing water because the surface tension is disturbed, which in turn, reduces the latent heat build-up at the surface and minimizes vaporization. Moving water inhibits the growth of aquatic vegetation that chokes the ditches. Moving water also improves pool circulation, minimizing stagnation. As the evaporation rate exceeds the spring production, the water levels in all units are allowed to drop, but the circulation is maintained.

Salt cedar (Tamarix pentandra) control is being planned for next year. The newly rehabilitated area in the Avocet Unit is being infested from a source that apparently had lain dormant while the area was dry. The area is isolated and the first effort will be to contain it.

*As I know what
you'd do for control
but you'd get the idea!
H.T.*

The rehab area in the Avocet Unit is vegetating naturally and is improving every year. The initial regrowth was a phantasmagoria of floral events. Unfortunately, our plans to seed some areas to alkali bulrush (Scirpus paludosus), sago pond weed (Potamogeton pectinatus), and widgeon grass (Ruppia maritima) fell on hard times. We planted some test ponds with sago and widgeon grass - seeds in mudballs, buried whole plants, and a control pond in 1975, but we were so short of funds and manpower this year we never got around to checking on them in detail. A casual walk-by seemed to indicate that the mudball technique is best, but nothing conclusive can be reported. We also had planned to stabilize some of the new earthen check dams with bulrushes, but could not afford the intermittent manpower to get it done. Some of the check dams washed out and will have to be repaired later.

The ducks seem to have taken to nesting in the dense salt grass (Distichlis stricta) under a canopy of bassia (Bassia hyssopifolia). The bassia is an invader that proliferated rapidly on the fire disturbed soil after the reflooding. If the 1977 nesting data shows a similar pattern, we may deliberately disturb the salt grass cover occasionally to maintain the bassia disclimax. The birds relish the seeds.

May have a good thing going

The wetland cost code was redefined for FY 77, and as a result many of the projects that were AWPed under 1210-330 will actually be accomplished under 1210-142 and 143. The old definition had the maintenance of structures and vehicles used in marsh management cost coded directly to wetlands; however, the FY 77 definition puts this maintenance under 142 and 143, respectively.

D. Forestlands

None

E. Other Habitat

1. Desert Uplands

The desert uplands lie along the west side of the refuge and consist of talus and alluvial deposits from the Fish Springs Range. Vegetation consists of horsebrush (Tetradymia spp.), Mormon tea (Ephedra nevedensis), and shadscale (Atriplex spp.) with an understory of Indian rice grass (Oryzopsis hymenoides) and cheatgrass (Bromus

tectorum). The uplands give way to greasewood (Sarcobatus vermiculatus) flats that grade into the marsh. The uplands host chukars, rabbits, and dickey birds.

2. Salt Flats

The east and southern margins of the marsh are bounded by barren mud flats interspersed with clumps of pickleweed (Allenrolfea occidentalis).

3. Rocky Out Crops

Part of the Fish Springs Range is on refuge property and there are a number of caves that may be of archeological significance.

F. Wilderness and Special Areas

None

G. Easements

None

IV. WILDLIFE

A. Endangered and Peripheral Species

1. Peregrine Falcon

Only one peregrine was seen on the refuge on several occasions during the first half of the year. The single bird accumulated an estimated 74 use days in 1976. Two peregrines accumulated 359 use days in 1975. No peregrines were seen the last half of 1976, but since we were short-handed, they could have been overlooked.

2. Ferruginous Hawk

One hawk was seen on numerous occasions throughout the year. Total use days this year amounted to 170 compared to 113 use days in 1975.

3. Others

White-faced Ibis numbers declined 38% from last year while northern long-billed curlew and snowy plover numbers increased 23% and 52%, respectively. We were insufficiently staffed to gather data for causal speculation. A few prairie falcons are seen throughout the year. One or two osprey are seen each spring, occasionally in the fall, and western burrowing owls are seen on rare occasions in the summer. Burrowing owl use could probably be increased on the refuge by introducing prairie dogs on our greasewood flats. Our habitat is good, but not enough burrows.

B. Migratory Birds

1. Waterfowl

- a. Swans: We maintain a small wintering population of swans here every year. The population peaks in December and January with about 15 birds-usually all whistlers, but occasionally a few trumpeters are also seen. The 1975 peak population was 30 in December.

- b. Canada Geese: Goose production and maintenance has fluctuated drastically the past several years. The reasons are obscure; subsequently, the following theories are our best shots based on known parameters: The breeding population and production has been relatively stable prior to 1973 when the production fell off markedly (see graphs). We feel this, may in part, be due to the ban on coyote poisons and the rapid increase of these predators immediately thereafter.

The increased predation may have also played a part in the decreased breeding population in 1974. We began intensive predator control in the winter of 1974-75 and the breeding population and production went up significantly. Of course, habitat improvements were also made during 1974. The rehab area in the Avocet Unit was reflooded in March of 1975 and by 1976 it played a major role in increased nesting success, production, and goose maintenance.

We banded 36 geese this year with about the same effort in man-hours as it took to catch seven in 1974 - just more geese. No geese were banded in 1975.

- c. Ducks: Duck production and maintenance also responded to improved water management. The peak waterfowl population of over 37,000 ducks in November this year, is the highest number of ducks ever recorded at Fish Springs. Pintails and G-W Teal usually make two migration peaks each fall - one in Aug-Sep. and another in November. The migration this year was no exception with pintails, widgeons, G-W teal, mallards, gadwalls, cinnamon teal, and redheads making up the migration in descending order of abundance. Spring migration is another matter. G-W teal and pintails again take the lead, but redheads move up to the number three spot. The spring migration peaked at over 13,000 in March.

TABLE III DUCK PRODUCTION

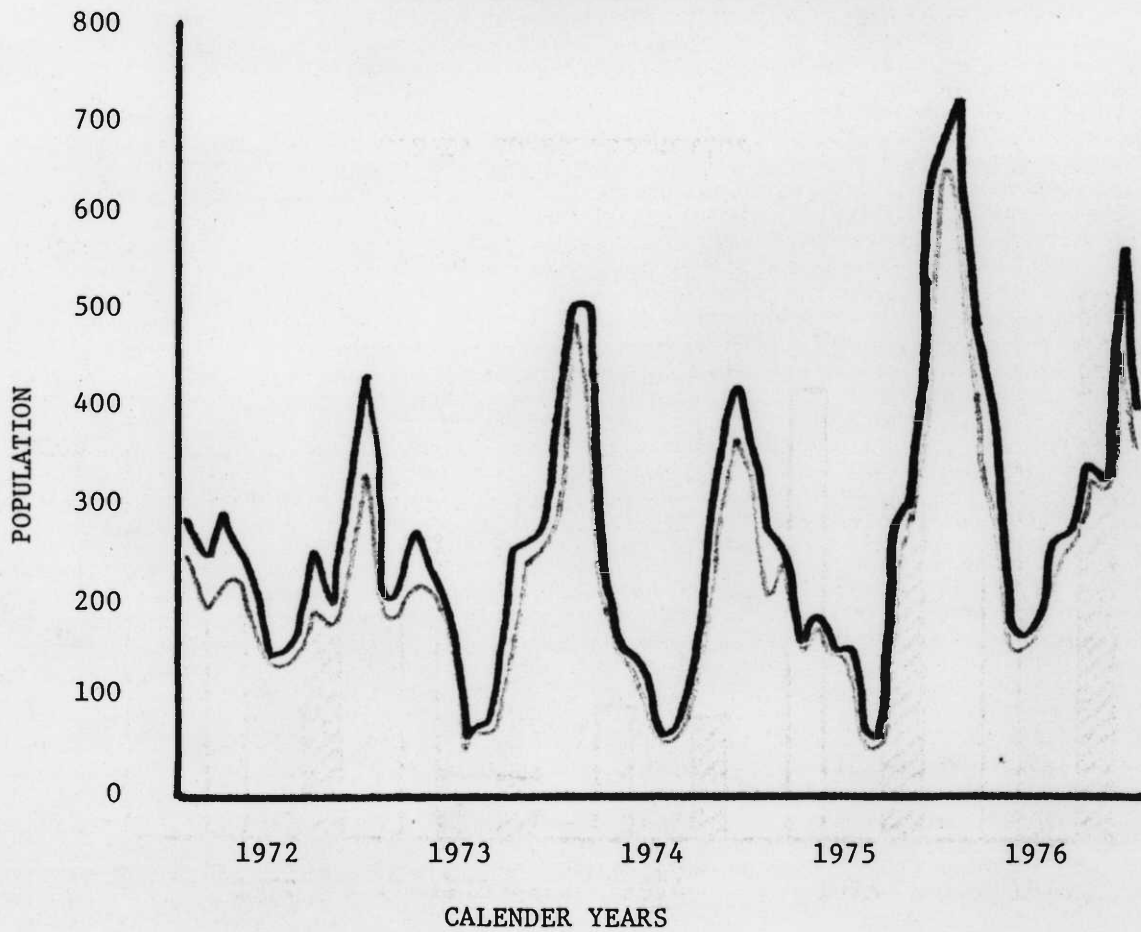
Year:	1972	1973	1974	1975	1976
Ducks:*	608	713	1026	3568	7270

*To flight stage

*looks good
LTH*

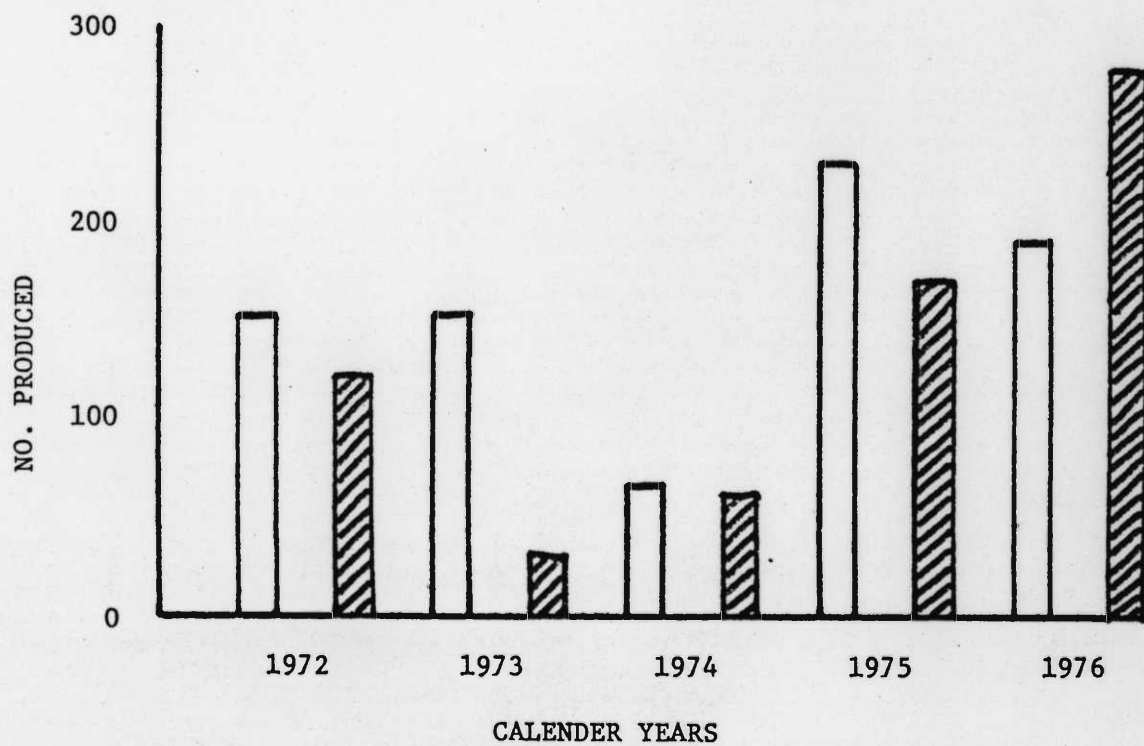
*Redf. you've got to understand!
HT*

GOOSE POPULATIONS 1972 - 1976



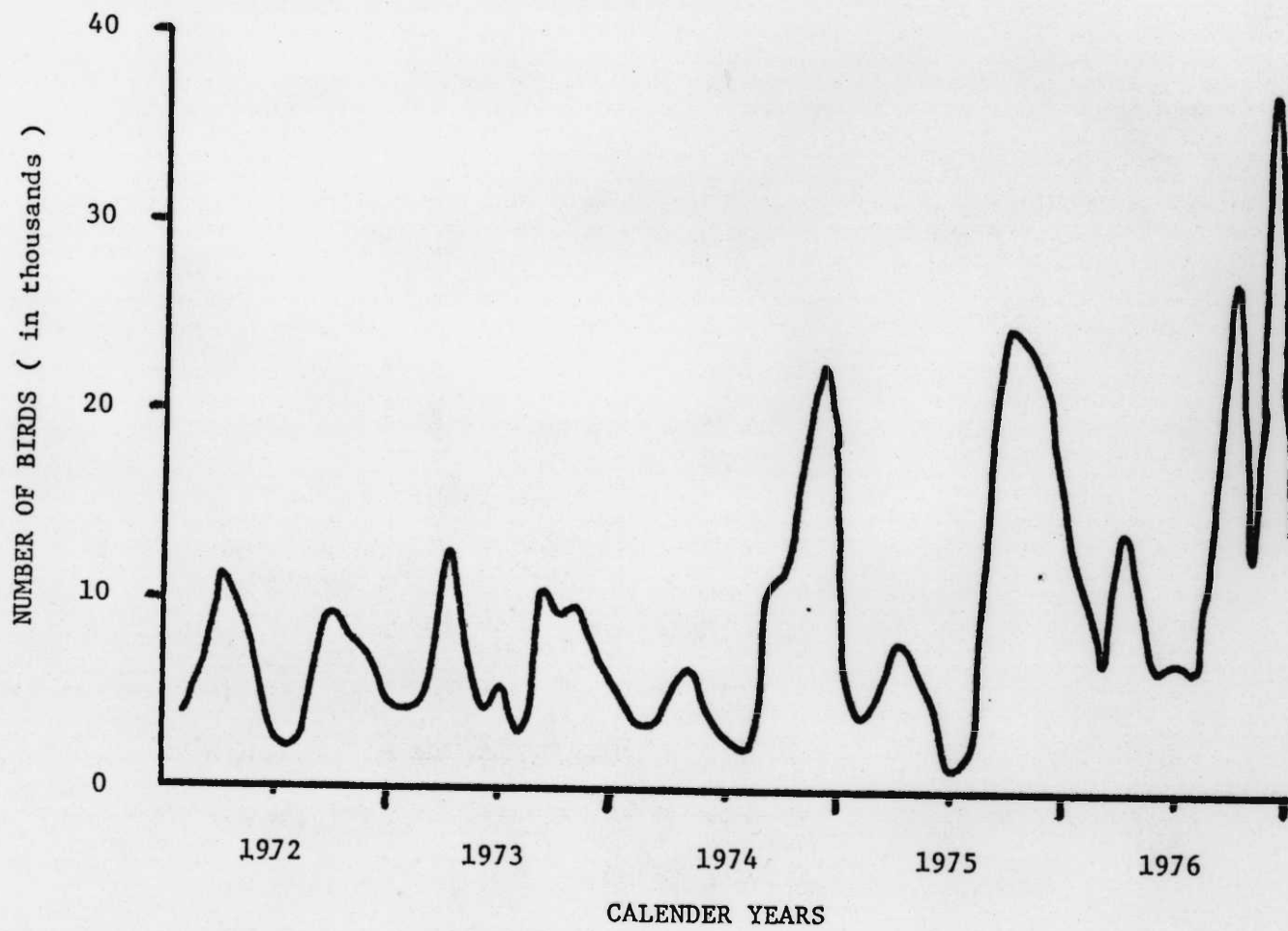
Peak Population —
Ave Population —

CANADA GOOSE PRODUCTION



Breeding Population
Production to Flight Stage

PEAK DUCK POPULATIONS





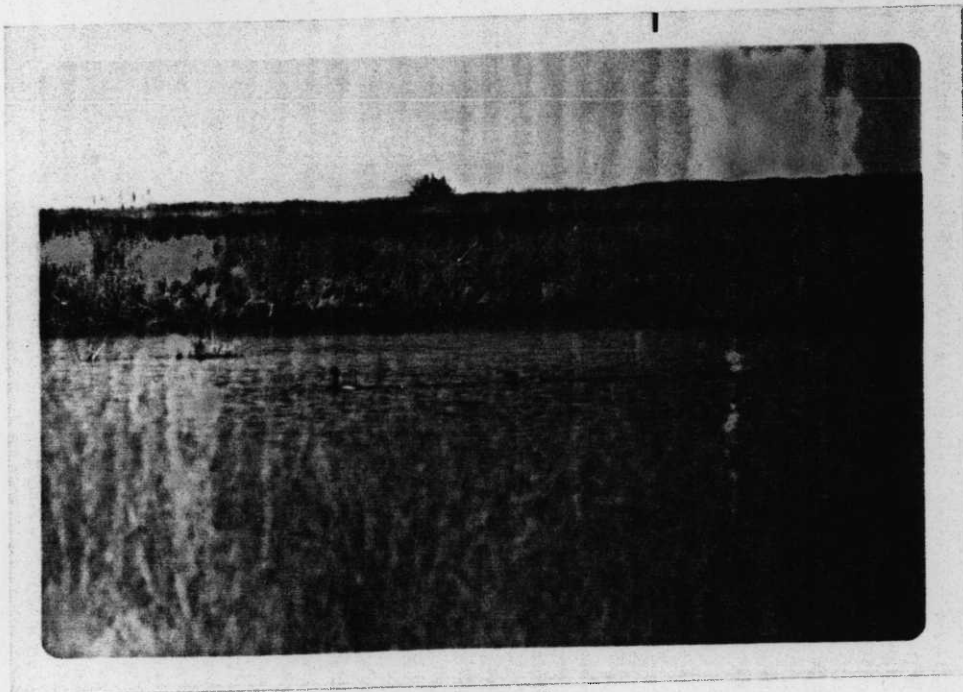
FLYING GEESE - AVOCET REHAB AREA



GOOSE BANDING - MIKE PERKINS (L)
BANDS WHILE IRL TIMM RECORDS

*Work is right,
An air boat can be
nothing but work. Any
time you can make a pleasure
is a big gain L.H.T.*

*This
looks
like a
working
boat - that
is a pleasure
boat - see
the a boat*



"REDHEADS"



AVOCET UNIT: REDHEADS AND COOTS



MALLARD BROODS, AVOCET REHAB AREA



Production was also up this year (see Table III). The Avocet Rehab Area is responsible for over half of our present production, and essentially more than doubled our total production. Improved water management is believed to be responsible for the increase in 1974, while predator control and more comprehensive census methods account for the 1975 increases.

The production census method is a three point approach. Pair counts are used to estimate the breeding population. Nesting surveys are used to determine hatch success and nest predation, and brood counts provide the production data base (e.g. the number of breeding pairs, minus the nest failures, times the Class I brood size = the initial production. The average class I brood size, minus the average Class III brood size = mortality. Initial production, minus mortality = Production to Flight Stage. This process is used for each species). The nest survey also includes the collection of data to determine predator species and problem areas to aid in planning the predator control program.

- d. Coots: A boon year for coots. The population peaked with over 22,000 in November. We have had a considerable waste problem relative to hunting. More about that in Section V.

B.

2. Marsh and Water Birds

As expected with the overall habitat improvement, marsh and water bird populations increased slightly. Some of the increase of more secretive species, such as Virginia rails and American bitterns, were due to more intensive census, but the increases in grebes and herons are considered "real", resulting from improved habitat.

The refuge serves as a wintering area for bitterns, blue herons, night herons, and Virginia rails. Observations seem to indicate that the refuge hosts two populations of black-crowned night herons, a summer nesting colony, and a wintering population, with distinct lulls between the migration of one and the arrival of the other.

Snowy egrets usually create one or two rookeries, over water, in dense stands of hardstem bulrush (Scirpus acutus). The rookery site is shared with black-crowned night herons that nest on the edge of the slough and sort of surround the nesting egrets. As a result the herons suffer greater losses to coyotes.

Greater sandhill cranes are still seen on occasion, so perhaps, the captive crane project that was terminated in 1975, due to a lack of success, was not a complete failure. Greater sandhills nested here traditionally, but, ironically, the marsh development work in the early sixty's disrupted the nesting and the birds left.

The captive crane project was an attempt to re-establish a nesting flock at Fish Springs. The intent was to raise sandhill chicks, captured at Gray's Lake Refuge, Idaho, to maturity in hopes of their nesting in captivity, and the offspring to return here to nest (it worked with our Canada geese). Sandhill crane chicks were captured and raised every year from 1970 to 1974, but the project was beset with mortality resulting from sibling rivalry, predation, and territorial fighting.

The staff and budget reductions of 1973 denied us the manpower to properly maintain the project, and as a result, all of the 1974 chicks escaped because we didn't wing clip soon enough. We wintered three birds in 75/76, two were found dead due to territorial fighting in April. I released the last bird when it moulted and was again capable of flight. Greater sandhills were seen again during the rest of 1976, so there is still hope.

3. Shorebirds, Gulls, Terns, and Allied Species

Shorebird populations fluctuated; however, we have no data to contemplate. Ring-billed gulls and western sandpipers declined

from last year while avocets, black-necked stilts, yellow legs, and spotted sandpipers increased. Forty black terns were seen this year - we have not seen this species in several years.

4. Raptors

The improved marsh conditions could account for the increases in marsh hawks, rough-legged hawks, and great horned owls through increased prey numbers, but the decline in red-tailed hawks cannot be explained. The most remarkable increase was the peak population of 85 rough-legged hawks in 1976 compared to only 5 in 1975.

Two young golden eagles were found on the refuge in a weakened condition. Both were caught by hand and put in the old brood house to recuperate. The birds were provided fresh jack-rabbits and water and responded favorably.

On one occasion we fed them a mature goose that died during banding operations. They consumed the entire goose in one night.

There was no sign of injury or poisoning, and we speculated that the parents may have been killed and the young birds were victims of hunting inexperience. They were found within a mile of each other on successive days and both were thin and weak, and caught with a minimum of struggle. After a few days of ample food, approaching them in the brood house became an exercise in "sweet talk" and agility - they got down-right nasty! After their strength returned, we took them out individually for flight exercise daily until they were strong enough to keep us from catching them.

5. Other Migratory Birds

Mourning dove and dickey bird populations remained about the same as last year.

c. Mammals, Non-Migratory, and Others

1. Game Mammals

A small herd of mule deer (*Odocoileus hemionus*) still inhabit the refuge during the late summer and fall when the mountain springs dry up. The deer provide good viewing opportunities on the refuge and hunting for them off the refuge is discouraged. The herd peaked at only seven animals this year. Four pronghorn (*Antilocapra americana*) visited the refuge this year.



This immature golden eagle was found weakened, and was recuperated in the Refuge "raptor hospital"



Assistant Manager Mike Perkins exercises the "patient".

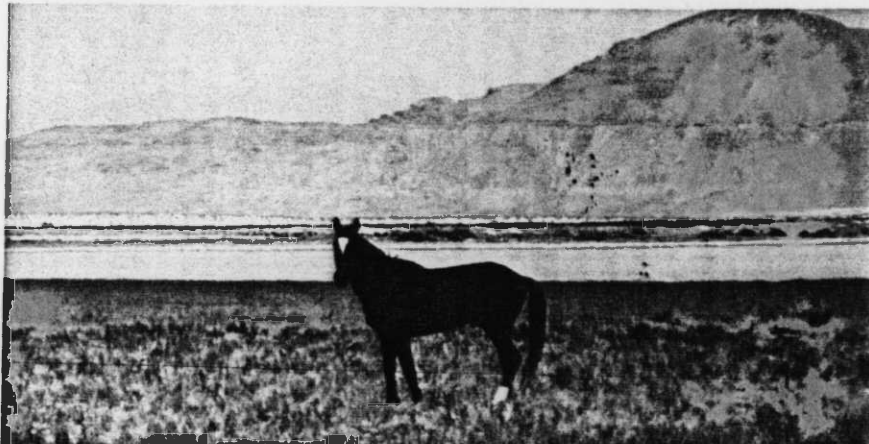
2. Other Mammals

Coyotes (Canis latrans) are our number one predator. A total of 30 coyotes was removed from the refuge through combined efforts of refuge and ADC personnel.

Muskrats (Ondatra zibethica) are doing considerable damage to refuge water control structures. With the demise of "Trapper" Jim Harrison in October of 1975, the refuge had no means for muskrat reduction. A recreational trapping plan was developed for muskrat reduction. ~~A recreational trapping plan was developed~~ ^{trapping effort} in January 1976, but has not yet been approved. Muskrat trapping by refuge personnel was initiated this spring in an effort to curb damage to our water control structures, but the program was started too late in the spring to salvage the hides. A total of 269 rats was taken this year. We were appropriated 1220 money for muskrat trapping in FY 77, but hope the recreational plan can be approved this year. Muskrats can be beneficial in areas of dense vegetation. By maintaining at least six inches of surface water, the muskrats can remain active, creating "eat outs" in their house building efforts, and thereby creating open water and loaf sites for ducks. Muskrats are good workers, but require a lot of supervision. ^{neat! A.T.}

We have had some striped skunk (Mephitis mephitis) problems, but not enough to warrant intensive control. Black-tailed jack rabbit (Lepus californicus) are on the increase again. ^{See case in Predator increase in prey 3/8/77}

A wild mustang (Equus Caballus) from Granite Mountain on Dugway Proving Grounds took up residence on the refuge during the summer of 1975 and stayed until the fall of 1976. After the mustang arrived, a search of the barren salt flats revealed a single set of hoof prints leading from Granite Mountain. After leaving, the stallion was seen again on Dugway near Granite. The mustang tried to leave in the spring of 1976, but the drift fence kept him from going west or south, and the mud flats were too soft for horses in the spring. One could see where he tried the mud, but then backed off.



"WILD MUSTANG"

We found, what we believe to be raccoon (Procyon loter) tracks, in the Harrison and Avocet Units.

3. Resident Birds

The pheasant population was normal, (30 birds), but the chukars were way down on the desert. No chukars were seen on the refuge this year.

4. Other Animal Life

David Bickel, Phd, Minot State College, N.D., working under contract to the Office of Endangered Species, visited the refuge in July in search of the elusive freshwater snail Stagnicola pilsbryi. The first specimens were collected at Fish Springs in 1868 by Henry Hemphill and described in 1890. Richard Russel, University of Arizona, found some additional shells here in 1970. No live specimens have ever been found, its anatomy is unknown, and the snail is believed to be endemic to Fish Springs

V. INTERPRETATION AND RECREATION

Fish Springs National Wildlife Refuge is no longer that quaint, little "out-of-the-way" place where nobody ever goes. As the public becomes more mobile and the close-in areas become overcrowded, Fish Springs is just not that far away. Recreation use at Fish Springs is increasing much faster than projected when we wrote our initial objectives in 1970-71. At the time we stretched our imaginations and predicted that we would have 1800 visits by 1978. We had over 2100 this year, and are now projecting over 2500 for 1978.

The most interesting facet of all this is that the activity hours are increasing over twice as fast as the number of visits. An analysis of the data shows that the number of visitors has been increasing at 9.2% per year since 1972, while the activity hours have been increasing at 22% per year (See Table IV) when projected on a smooth curve.

Table IV PROJECTED PUBLIC USE, 1972-1976
WHERE VISITS INCREASE AT 9.2% /ANNUM
ACTIVITY HOURS INCREASE AT 22% /ANNUM

Year	1972	1973	1974	1975	1976
Projected Visits	1507	1645	1797	1962	2142
Projected Activity Hours	4690	5721	6980	8516	10389

You will probably have a whole

herd of raccoons in a few years Ref B.D.

*Two specimens
kept signed off!
#1*

Actually, there was decline in visits in late 1973 and 1974, probably the result of the energy crisis, but the activity hours continued to increase suggesting that people were getting out of their cars and staying longer (See Table V)

TABLE V TOTAL PUBLIC USE 1972 - 1976

Year	1972	1973*	1974*	1975	1976
Visits (Actual)	1507	1446	1362	1703	2150
Activity Hours	4690	4892	5172	6716	10385

A. Information and Interpretation

1. On-refuge

Our isolation limits the demand for on-refuge conducted interpretation. As a result, we program for only two or three conducted interpretive programs each year. This year conducted tours were provided for a boy scout troop on a hiking tour of the desert, a group from Granite Elementary School in Salt Lake City, and a familiarization tour for Nature Photographer Ray Kirkland and wife.

The refuge also provided the site for a group of Venture Scouts from Lehi to conduct a conservation project. The group cleaned up much of the remaining debris from the old frog farm.



Kirkland's Mud Hogs

Lehi Venture Scouts on refuge conservation clean-up project.

A Coot Barbecue was held on Sunday of the opening weekend of the waterfowl season as an interpretive demonstration. The Coot Program is aimed at increasing hunter awareness to the table qualities of the bird - an effort to reduce the wanton waste of the coot in the field. A hand-out was prepared and provided to each group of hunters as they checked in at the Visitor Contact Station. The hand-out explained the program and asked interested hunters to bring their own coots to the barbecue, Sunday noon, and we-? *DLK* would show them how to dress the bird in less than 30 seconds, and provide the barbecue. (The demonstration showed the hunter how to grasp the wings behind the back, stand on the feet, and gently pull - the breast comes clean from the body, cut off the wings, wash, and you are done). The refuge staff provided the sauce and charcoal and set up the program in the refuge picnic area. Only 15-20 people showed up, but everyone who tried the barbecued coot liked it. *A certain BLM person cleaned coots all day for this Barbecue. DLK. Rorilli*

This was the second year of the program. The first coot barbecue was held on the opening weekend of the 1975 season. News releases were written and a second barbecue was held for television coverage. The Coot Barbecue and Hunt Program also received television coverage prior to the 1976 season. KUTV Sports, Channel 2 News, Salt Lake City, devoted about three minutes to the refuge on their evening newscast using film they shot on the refuge in 1975. The program seems to be paying off - less than 10 wasted coots were found on the marsh after the opening weekend this year, compared to over 150 last year.

2. Off-Refuge

The refuge provided an exhibit for the West Desert Fair held in Callao every year. A slide program relative to refuge projects was presented at Utah State University, Logan to members of the USU Student Chapter of the Wildlife Society. The refuge manager attended the Wildlife Society Technical sessions in Salt Lake City, and the Pre-hunting Season Rap-session with Utah Division of Wildlife Resources with Area Manager Shields, Assistant AM Sheldon, and other Utah refuge managers.

B. Recreation

1. Wildlife Oriented

Most of our wildlife oriented recreation consists of waterfowl hunting. Of the 2150 visits and 10,385 activity hours recorded in 1976, 1112 visits and 6182 activity hours were devoted to hunting. Most of our non-hunting recreation is



Coot Barbecue 1975 Hunters daubing on the sauce (no pun)
Jim Coyner (red shirt) SKC AO helped us out

SKC



Coot Barbecue 1976 The hunters give it a try -"Nummy, Nummy"!

from people who stop by the refuge while touring the desert. Most non-hunting visitors take the self-guided auto tour, but some hike and use the picnic area. The number of people using the auto tour increased from 519 in 1975 to 856 in 1976 (65%) while A.H. increased from 726 to 1414 (95%) during the same period. Wildlife/Wildlands - foot, and land vehicle, made similar increases. We separate the auto tour from W/W land vehicle by observations and check marks on our visitor register. If a visitor only checks the auto tour - that is his activity, but if he also checks wildlife observation or hiking, and spends a lot of time out of the car, then his activity falls into the wildlife/wildlands category. We consider all of our picnicking visitors as wildlife oriented since almost all of our picnicking visitors take, at least, the auto tour, and no one comes all the way out here just to picnic. We have some boating, but it is all wildlife oriented, mostly refuge employees, and guests, canoeing during off-duty hours.

Waterfowl hunting is on the increase. Hunter visits have increased over 300% since 1972 (see Tables VI, VII) and activity hours over 220%. The energy crisis of 1973 did depress hunter numbers, activity hours, and quality in the opening weekend. Hunter numbers for the 1973 season showed a non-energy crisis increase, but AH and other hunt statistics remained depressed. One possible explanation could be car pooling, instead of a few hunters/car making many trips, they could have come out in larger groups/vehicle, making fewer trips, causing spotty overcrowding, and resulting in a loss of quality.

Table VI Opening Day Waterfowl Hunting Data

1972-1976

Year	1972	1973*	1974	1975	1976**
Hunters	195	173	214	249	248
Activity Hours	1093	905	1098	2007	1368
Duck Taken	383	266	472	358	678

* Energy Crisis

** Heavy rains on opening day reduced hunter turnout an estimated 16%.

Table VII Season Waterfowl Hunting Data 1972-1976

Year	1972	1973*	1974	1975	1976
Hunters	367	553	665	702	1112
Activity Hours	2764	2678	3407	4908	6182
Ducks Taken	998	669	992	1316	2561
Coots Taken	93	13	354	575	631
Ducks/Hunter	2.7	1.2	1.5	1.9	2.3
Hours/Duck	2.8	4.0	3.4	3.7	2.4
Hours/Hunter	7.5	4.8	5.1	7.0	5.6

* 1973 Energy Crisis

The hunting area boundaries were changed for the 1976 season. The improved habitat in the Avocet Marsh Rehab Area gave us the opportunity to comply with the advice on hunting quality and virtually eliminate the problem of intermittent overcrowding in the Mallard Unit. The results in improved hunting quality were quite impressive (see Table VII above). With more hunters than ever before, we increased the ducks/hunter 21%, while reducing the hours/duck 35%, and the hunters stay by 20%, allowing more room for others.

We did have some problems towards the end of the season. As the marshes froze up north, we saw a significant change in the caliber of sportsmen visiting the refuge. Littering, sky busting, wanton waste of game, and closed area violations all increased during the last three weeks of the season. Our regulars are to be applauded after seeing the difference.

A recreational trapping plan for muskrats was prepared this year, but has not yet been approved. Recreational trapping was considered over commercial trapping for several reasons: More people could take advantage of the program, the refuge could maintain better flexibility and control of the harvest, recreational trapping is consistent with the AWP advices. *typical H.E.*

2. Non-Wildlife Oriented

The refuge has no non-wildlife oriented recreation. Picknicking showed up on the output reports under this category on several occasions, but that was due to reporting errors.

C. Enforcement

Except for the opening day of the waterfowl season, visitors/hunters are pretty much left to their own recognizance. On the opening day, we man the visitor contact station to insure that everyone signs in and out, and we assist hunters with identification while we check their bag. SRA Hogue, SLC, worked the refuge on the opening weekend this year, but wrote no violations. The refuge staff makes irregular patrol during the season and during the last three weeks of the season we began to notice a decline in hunter ethics and summarized that a different class of hunter was coming ~~and in~~ as the marshes up north froze them out. The refuge manager wrote six violations, and SRA Hogue, SLC, wrote three during the last week of the season. The violations ranged from wanton waste, to rallying and shooting in the closed area.

*That is the old
Bent River Reservoir
1977*

The manager and assistant attended the 40 hour LE workshop in Salt Lake City in July.

VI. OTHER ITEMS

A. Field Investigations

Nothing to report.

B. Cooperative Programs

We have standing agreements with the Weather Service, for weather monitoring and the U.S. Army (Dugway) to allow mosquito collecting for their arbovirus research. Other cooperative programs include: providing bunkhouse accommodations for ADC operations on the West Desert, providing bunkhouse accommodations for the Archeological Division, Utah State Department of History, while on contract work for BLM, issuing a special use permit to Phillips 66 for the acquisition of drill water, and loaning Assistant Manager Perkins to Monte Vista NWR for nesting transect work.

C. Items of Interest

1. Training

Manager Kraft attended the CSC course Middle Management Institute, Gyroscope II, and a seminar on the Privacy/FIO Acts. Assistant Manager Perkins attended the CSC course Basic Management Function. The entire refuge staff took Pesticide Application Training.

2. EEO

Refuge Manager Kraft presented a program on the employment situation to wildlife students at Utah State University, Logan. In view of the "grim" employment possibilities, the program centered on "making the most of your potential", and using the SF-171 to ones best advantage. The refuge manager also provided career counseling for a remotely assigned BLM employee. Assistant Manager Perkins assisted a talented young wildlife artist in applying for employment with the FWS.

3. Personnel

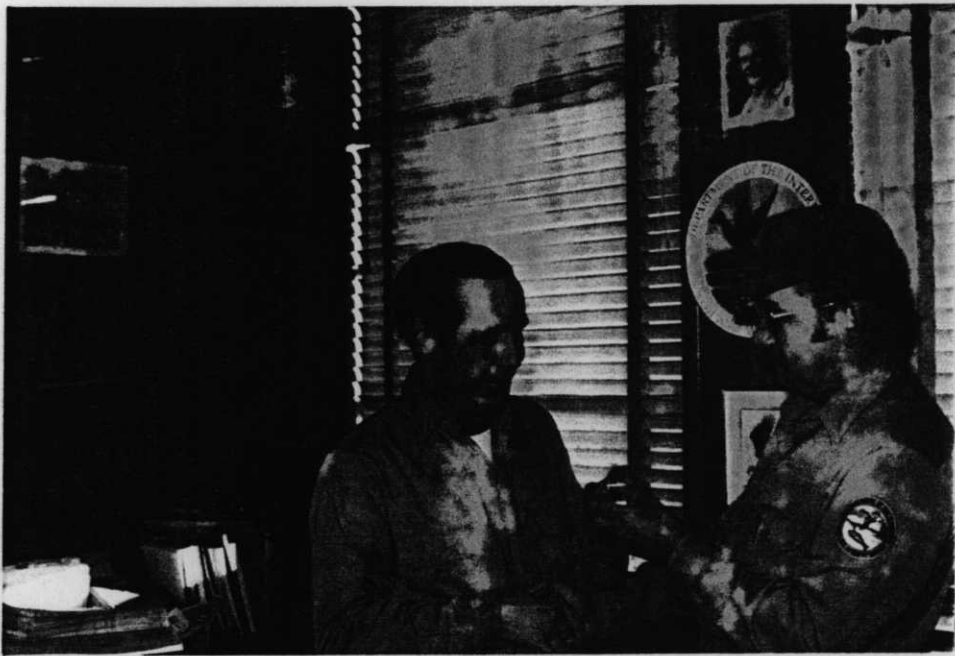
Assistant Manager Mike Perkins transferred to the Wetland District Office in Madison, SD on 7/31/76. Refuge Manager Rolf H. Kraft, and Maintenceman Irl G. Timm received "10 years of Federal Service" pins this year.

4. Miscellaneous

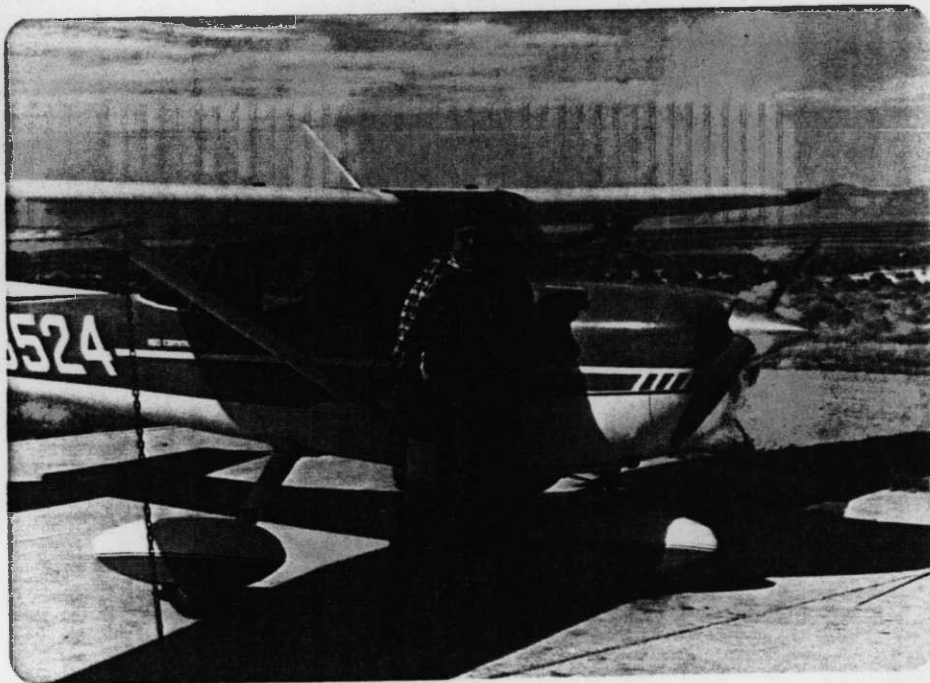
Merritt Island Refuge Manager Bob Yoder and wife visited the refuge in September. Bob was manager here from '64 to '69.

Refuge Manager Kraft earned his Private Pilot's License this year, so "Mallard Air-West" is now in service. The airplane cuts commuting time to Salt Lake City from three hours to one.

Fish Springs Super Service is grudgingly still in business. A new crop of desert visitors every year has to try out the mud flats and we end up pulling them out. A case in point: we pulled out two stuck 4 x 4's from the mudflat on the south end of the refuge. The second guy got stuck in the same hole as the first one, only a week later. I asked him why he tried it when he could plainly see that the first guy didn't make it across the wet place. He said "Yah, but I got a Bronco"!



Refuge Manager Rolf H. Kraft congratulates Maintenceman Irl Timm on "Ten Years of Federal Service"



"Mallard Air-West" Pilot Rolf H. Kraft and his Cessna cut the commuting time to Salt Lake City by two hours.

*Nice picture
I wonder who
took it?*

*The Brown Baron lives...
gashed in the latest special
uniform components for aerial
"front!"*

*Nice!
JK*

*Great picture
of Rolf*

*good looking
Brown Baron*

D. Safety

Safety is a continuous on-going program. Aside from the Safety Meetings, we take the time to discuss the safety aspects of every job where a hazard potential is recognized.



THAT'S FANTASTIC! I KNOW - IF YOU
COULD ONLY FIND AN EAGLE
WITH LONG TALENS AND...
OK.

FISH SPRINGS
NATIONAL WILDLIFE REFUGE
DUGWAY, UTAH

ANNUAL NARRATIVE REPORT
(Transition Period)
July 1, 1975 - December 30, 1975

Personnel

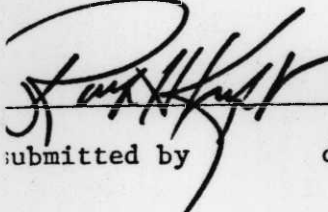
Name:

Title:

Wolfgang H. Kraft
Michael W. Perkins
Earl G. Timm
Russell L. Hoffman

Refuge Manager
Biological Technician
Maintenance Worker
Maintenance Helper

Review and Approvals


submitted by _____ date 3/9/77

Area Office Date

Regional Office Date

. Climate

Weather conditions were typical for the desert - hot summer, cool fall. Temperatures ranged from 102°F in August to 11°F in December. Precipitation was above average in July (1.53 inches), but below average rainfall the rest of the period left us with 3.45 inches - .01 inches below normal. Precipitation included 7.7 inches of snow in Nov-Dec..

. Habitat

The annual pool level draw-down due to evaporation went as usual, except in the Avocet Unit Rehab Area. As expected, the rehab area was close enough to the spring heads to be maintained during the summer without significant detriment to the other units.

The rehab area is a myriad of ponds and sloughs and makes better use of the water than the large impoundments further from the springs. The Avocet Rehab Area was rehabilitated through deep-burning of the old peat-choked ponds and sloughs. The area burned for two years and was reflooded in the spring of 1975. Once reflooded, the vegetation recovered quickly. Many rootstocks and other disseminules that had lain dormant for many years immediately recovered when the water was applied. Barren areas were rapidly covered with smotherweed (Bassia hyssopifolia). We had some problems with spiny niad (Najas mariana) in the collection ditches. The check dams that were constructed in the ditches to facilitate the reflooding precluded the use of the underwater weed-cutter.

The rehab area provided habitat for 4-5000 birds this fall. A portion of the unit does not freeze due to the warm water, but the other units began icing in late November and were completely frozen by mid December.

. Construction

J.P. McCarren Plumbing and Heating, Kearns, Utah, under contract, replaced the plumbing in the bunkhouse and installed new evaporative coolers in the office/shop. The bunkhouse was also repainted inside, and additional attic insulation was installed to protect the new plumbing.

An Operation and Maintenance Manual was written for the stand-by generators, and major repairs were made on several refuge vehicles.

An eighteen inch screwgate was installed at Str # 4a and a Parshall Flume was installed in Middle Spring in our continuing effort to maintain efficiency in water management.

To comply with safety regulations, our overhead fuel tanks were painted red, and a liquid-tite conduit was installed on the domestic water pump.

TABLE I

Precipitation (July-Dec 1975)

Month	Snow (inches)	Precip (inches)	Normal*
July		1.53	.66
August		.13	.29
September		.24	.45
October		.90	.73
November	2.0	.35	.74
December	5.7	.30	.37
Totals	7.7	3.45	3.24

*16 year average- 1960-1975

TABLE II

Temperatures (July-Dec 1975)

Month	High	Low °F	High	Low °F (1960-75)
July	100	44	109	44
August	102	52	108	42
September	94	43	98	29
October	90	33	94	9
November	84	13	84	1
December	60	11	70	-18

Wildlife

A pretty good year for waterfowl use.-Improved marsh management practices have increased our waterfowl use and production. Waterfowl use peaked with 24,000 ducks in October, 6300 coots in November, and 600 geese in December. Waterfowl production was estimated at 170 geese, and 3850 ducks. We expect the Avocet Rehab Area to increase production even more.

A wild mustang from Granite Mountain on Dugway arrived on the refuge in July and stayed the remainder of the period

Interpretation and Recreation

The refuge staff prepared an exhibit for the West Desert Fair at Callao - 140 people attended.

Duck hunting pressure is increasing. To hold the line on opening day, we installed the clock in the VCS again this year to remind hunters to set their watches. Early shooting was a problem in the past, but this year the first shot was fired at 12:01:43 PM. On opening day, 249 hunters took 680 birds, and the season ended with 702 hunters taking 1891 birds in 4908 AH. Hunter use was up 35% over last year.

In an effort to reduce the wanton waste of coots, the refuge staff initiated an on-refuge demonstration to acquaint hunters with the table qualities of the coot. A Coot Barbecue was held at the picnic area on the opening weekend. A handout was prepared asking interested hunters to bring some coots to the barbecue and we would show them how to clean and cook the bird. Everyone who tried the barbecued coot liked it, and I think we changed a few minds. Jim Coyner, FWS, ES, SLC AO helped out, and KUTV Ch 2 SLC provided television coverage.

Other Items

Bio-Tech Mike Perkins spent six weeks in Canada on a banding assignment. Maintenance Worker Irl Timm suffered another heart attack - OK now. 'Trapper' Jim Harrison died in a SLC Hospital on 10/21/75.