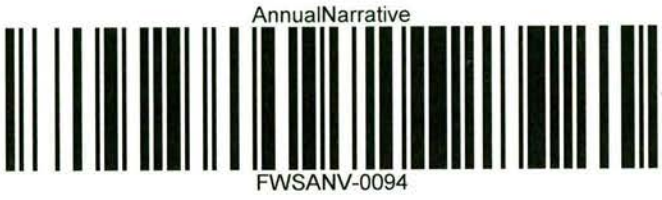
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GRAYS LAKE NATIONAL WILDLIFE REFUGE
Wayan, Idaho

ANNUAL NARRATIVE REPORT
Calendar Year 1991

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

REVIEW AND APPROVALS

GRAYS LAKE NATIONAL WILDLIFE REFUGE
Wayan, Idaho

ANNUAL NARRATIVE REPORT
Calendar Year 1991

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Date: 7-6-92

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Date: 7/30/92

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Date: 8/4/92

INTRODUCTION

Grays Lake National Wildlife Refuge (part of the Southeast Idaho Refuge Complex) is situated in Caribou and Bonneville counties, near Wayan, Idaho. The refuge lies in the remote and sparsely populated Grays Lake Basin. Grays Lake is a high altitude, mountain valley marsh, composed principally of hardstem bulrush and cattail with scattered small shallow ponds. Snowmelt from mountains which ring the valley accounts for the primary source of water for the basin marsh. The elevation of the marsh is about 6385 ft., while the highest surrounding mountain peak is Caribou Mountain at 9803 ft. Within the approximately 32,825-acre refuge boundary, about 60% is shallow watered bulrush marsh, 20% wet and semi-wet meadow, 12% brush and grassland, 5% shallow open water, and 3% aspen forest and willow thicket.

The Grays Lake Valley is subject to severe prolonged winters, with unofficial temperatures reaching below the -50° F mark, and 40-50 in. of snow accumulating on the valley floor. The coldest official temperature in the Grays Lake Basin was -40° F in 1922, the warmest reading was 103° F in 1919. Summers are characterized by warm days and cool nights, with high temperatures only rarely exceeding 90° F. The last killing frost in the spring usually occurs between May 25 and June 5, and the first frost of the fall usually occurs around August 20; however, frost may occur any month of the year. Annual precipitation averages about 17 in. and mean snowfall approximately 115 in.

Initial enabling actions for the establishment of the refuge, were the 1964 Memorandum of Understanding between the FWS and BIA, and the Refuge Use and Cooperative Use Agreement Grays Lake, Idaho of 1965 with private landowners for approximately 13,000 acres. It was estimated that 30,000 ducks and geese would be produced annually after rehabilitation, as well as numerous non-game birds, such as the greater sandhill crane. Muskrats were also a very important resource and moose frequently utilized the area. In 1972, a new boundary was approved along with the purchase of 7,630 acres of land. Specific purpose of the refuge at that time was listed as waterfowl production, with concern for the Great Basin Canada goose, maintenance of the greater sandhill crane population and relief from depredation problems.

At the present, one of the primary roles of the refuge is that of providing a nesting ground for the sandhill cranes. Grays Lake is considered the nucleus for the Rocky Mountain population of greater sandhill cranes, and has the greatest concentration of crane nests in North America, and possibly the world. Some of the nesting sandhills were being utilized as foster parents for whooping cranes. It was hoped that through this means a second flock of wild whooping cranes could be established. In 1978, the Grays Lake NWR and all contiguous land and water within 1 mile of the refuge boundaries was designated as critical habitat for the endangered whooping crane.

High mortality of fostered whoopers had lead to a change in the program. The present emphasis is to attempt to get adult whoopers (cross-fostered and/or pen-raised birds) to reproduce naturally at Grays Lake.

Of the approximate 32,825 acres within the approved refuge boundary, 18,450 acres are controlled by the FWS. The remaining 14,375 acres of land within the boundary are under private, BIA, BLM, and the State of Idaho ownership.

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Nothing to Report.

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(Inside back cover)

A. HIGHLIGHTS

For the first time in three years Grays Lake received near-normal precipitation (Section B., F.2., G.2a., and 3a.).

Biological control of weeds was implemented at Grays Lake (Section F.4.).

Grays Lake saw a third consecutive year of no whooping crane production (Section G.2a.).

More force-paired whooping cranes were released at Grays Lake (Section G.2a.).

The peregrine hacking program continued to be a great success with a pair of falcons producing two chicks in the tower (Section G.2c.).

A pair of trumpeter swans nested at Grays Lake in a different location than 1990 (Section G.3b.).

The trumpeter swans translocation program continued in 1991 with 29 swans (Section G.3b.).

The Refuge was visited by tourists from 35 states, 2 Canadian Provinces and 7 foreign countries (Section H.1.).

B. CLIMATIC CONDITIONS

As usual, the weather data reported here was graciously provided by Engineering Equipment Operator Ralph Stoor. His weather records are from his ranch at the south end of the Grays Lake Valley. The area is comparable to the refuge.

Snow pack was only fair and covered most refuge fences but caused only minor damage. There was adequate snowpack for snowmobile operation.

The deepest 1991 snow recorded at refuge headquarters was 18 inches on February 11. The snow lasted until the end of April. This marginal amount of snow left us in a grim situation at spring breakup.

Basically, 1991 was saved by spring and summer rains. Total precipitation was 19.38 inches, (see Table 1) 25% better than last year (15.44 inches). We even exceeded the long-term average (LTA) of 17.27 inches. January-May gave 9.97 inches, which is 2.07 inches more than the 30-year average (7.90 inches) and 1.11 inches more than 1990. May had the highest precipitation with 3.69 inches. June through October yielded 5.93 inches better than last year and near the LTA of 6.28 inches. 1991's moisture created good herbaceous vegetation and was somewhat better for invertebrate productivity. It was an average year, but we needed outstanding moisture to recover from the preceding three years of drought.

Table 1. Monthly normal and 1991 climate data for Grays Lake.

	mean high Temp(°F) 1931-1960[a]	mean low Temp(°F) 1931-1956[a]	mean Precip(in) 1931-1960[a]	1991[b] High Temp(°F)	1991[b] Low Temp(°F)	1991[b] Precip
Jan	27	-18	1.51	43	-02	1.01
Feb	34	-15	1.66	50	-12	0.45
Mar	39	-07	1.60	52	-05	2.92
Apr	49	09	1.42	60	10	1.90
May	60	22	1.80	69	16	3.69
June	72	28	2.06	79	17	1.93
July	81	34	.79	86	28	0.71
Aug	79	31	1.02	85	32	1.14
Sept	69	23	1.03	80	16	1.02
Oct	58	15	1.38	70	-10	1.13
Nov	40	-04	1.40	48	-27	2.95
Dec	32	-13	1.60	44	-24	0.53
Total Precipitation			17.27			19.38

[a]Compiled from official weather station at Gray, Idaho. (Roscoe Sibbett residence, 1 1/4 air miles north of refuge headquarters).
[b]From Ralph Stoor Ranch, 5 air miles south of refuge headquarters.

D. PLANNING

5. Research and Investigations

Grays Lake NR 88 - Whooping Crane Cross-Fostering Experiment (14612-01)

The principal investigator of this project is Dr. Roderick Drewien of the University of Idaho. See section G.2a for information on this project.

Grays Lake NR 88 - Evaluation of Level Ditching at Grays Lake NWR (14612-02)

This project was evaluated in 1990 and is not scheduled for resurvey until 1992.

E. ADMINISTRATION

Ewart Muir, Mike Fisher, Desmond Call, Ralph Stoor MNF

1. Personnel

1.	Michael N. Fisher	Refuge Manager PFT GS-9
2.	Desmond Call	Maintenance Mechanic CS WG-9 Retired 11/30/91
3.	Ralph E. Stoor	Engineering Equipment Operator CS WG-8
4.	G. Ewart Muir	Tractor Operator WG-6

The manager is also a trumpeter swan biologist and worked January through April on trapping and monitoring swans at Harriman State Park. Mike put in major amounts of time trapping and monitoring swans in January through April, but had only minimal trumpeter swan work in November and December.

Two career-seasonal positions are included each year under the full time category. Each of these employees were furloughed again this year for 1 month.

Maintenance Mechanic Desmond Call retired this year and one of the refuge's pioneers left our ranks. Des started working for the Service before the refuge was established. He worked on the first fences and dikes of the project. A life-long resident of the Grays Lake Valley, Des was a descendent of the areas' first settlers. He farmed, ranched, trapped and hunted the valley and surrounding mountains. His knowledge of the area and

his woodcraft are first-rate and have been invaluable to the refuge on many occasions. Des was the Animal Damage Control Agent for the refuge during the 10-15 years we removed predators to protect whooping crane chicks. This key facet of the Whooping Crane/Sandhill Crane Project was only possible through Des's ability as a marksman and trapper. He donated countless hours to the refuge. We will miss his cheerful presence and look forward to his visits and counsel.

Des Call at his retirement party in Pocatello, ID. MF

Southeast Idaho Refuge Complex

Left to Right: Back Row - Peck, Bouffard, Gladwin
Front Row - Hall, Jarolimek, Butler, Greer

1.	Charles Peck	Refuge Manager/Trumpeter Swan Coordinator PFT GS-12
2.	Terrell Gladwin	Refuge Manager/Project Leader PFT GS-12
3.	Stephen Bouffard	Wildlife Biologist PFT GS-11
4.	Elaine Greer	Administrative Support Assistant PFT GS-6
5.	Wendy Hall	Office Automation Clerk PFT GS-4
6.	Terri Butler	Student Trainee (Wildlife Biology) PPT GS-4
7.	Toni Jarolimek	Office Automation Clerk TPT GS-2

Table 3. Five year comparison of on-board strength.

	Permanent			Total
	Full Time	Part Time	Temporary	FTE
FY 91	3		1	3.27
FY 90	3		1	3.17
FY 89	3		1	2.15
FY 88	3		1	2.55
FY 87	3		1	3.27
FY 86	3		1	3.27

3. Other Manpower Programs

This summer there were no Peregrine Fund hack attendants observing the hack tower due to its occupancy by a pair of falcons. Results are discussed in detail in Section G.2b.

4. Volunteer Programs

Mrs. Lurae Brinkerhoff, returned to Grays Lake again this summer and served as a volunteer for the refuge and Dr. Drewien. She assembled and typed reports for Dr. Drewien and the refuge on her computer. Mrs. Brinkerhoff accompanied refuge visitors to the viewing platform to be certain each person had the opportunity to see a whooping crane. She also conducted crane surveys and assisted with other wildlife work. Besides being invaluable in helping visitors and in clerical support, Lurae was a big help in acting as a recorder on surveys and banding projects. She even banded ducklings when other staff were unavailable. Lurae did a great job as refuge photographer and selflessly even provided her fine Nikon cameras for the task. Lurae was always ready to help and work hard and we certainly appreciated it.

5. Funding

The four refuges (Bear Lake, Camas, Grays Lake, and Minidoka) and the Headquarters of Southeast Idaho Refuge Complex are operated under a single fund target and FTE ceiling. There is flexibility to utilize funds and manpower where needs or benefits are greatest. FTE ceilings are not a constraint because funds limit staffing. As usual, base funding was inadequate to meet base funding needs but as usual we operated through the end of the year. This was possible because some vacancies were not filled, some private wetland restoration projects were done force account thus using Farm Bill Funds to cover some salaries and by charging staff time spent on the swan project to swan project funds. This enabled us to operate within available funds but diverted available staff time away from refuge work and added to the existing backlog.

The following table that summarizes funding and staffing separates the refuge activities from the swan project activities. The funding information is more accurate than the staffing information because various refuge offices provided administrative and maintenance support to the swan project that aren't reflected in the summary.

Refuge Activities

	FY 90	FY 91
1120 Farm Bill (Administration)		*5,000
1120 Farm Bill (Private Wetland Restoration)	*7,000	*5,000
1261 Operations	544,000	544,000
1262 Maintenance	189,590	200,000
Total 1260 O&M Funds	733,590	744,000
6860 Expense for Sales	3,000	3,000
7201 Contributed Funds (Pumping at Camas)	**250	250
9110 Fire Program Management		1,200
9120 Fire Pre-Suppression	46,200	6,500
Total Available for Refuge Activities	782,790	759,950

*Not included in total. Used for off-refuge activities
**Sequestered. Not available in FY 90

MMS Special Projects in FY 91

Replace Bridge Decks (Camas)	14,000
Replace Outboard Motor (Minidoka)	4,000
Repair Dikes (Bear Lake)	6,000
Total	24,000

Quarters Receipts

FY 90 Carryover	4,402
FY 91 Collections	2,643
FY 91 Revenue Distribution	992
Total Available	6,053

Trumpeter Swan Activities

	FY 90	FY 91
1111 Region 1 FWE Non-Game Funds	40,000	0
1113 Region 1 FWE Recovery Funds	0	50,000
1261 Region 1 SIRC Refuge	1,600	0
1261 Region 6 Refuge Funds	9,000	0
1971-0046 Bureau of Reclamation Research Funds	8,500	8,500
7208-0026 Contributed Funds	0	40,000
Total Available for Swan Activities	59,100	98,500
Service FTE's	.72	1.15
IPA Staff Time	.75	.80
	1.47	1.95

6. Safety

Tailgate safety sessions were held as needed throughout the year, a few examples of which are: step-ladder safety for the student trainee and volunteer, airboat safety (volunteer); flatbed trailer/heavy load (maintenance staff); Thiokol marsh cat (volunteer). Material distributed by the RO was read and discussed. Articles were brought in by staff and reviewed. All refuge personnel participated in meetings, including the volunteer. All are safety conscious and no lost time or reportable accidents occurred. Refuge personnel attended Adult CPR Training given by the American Red Cross in Pocatello.

Monthly drinking water samples were collected by the Forest Service. These were submitted to the Idaho State laboratory in Pocatello to check bacteria levels. The Forest Service is interested in a dependably safe potable water source for the Grays Lake guard station. They depend on our well and share maintenance costs. Test results were good throughout the summer, but failed in the fall. High coliform levels were detected but the exact cause is still undetected. Chlorine was added to the well. The Forest Service wants a chlorination system installed to permanently correct the situation. We would like a safer and less maintenance intensive type of system.

All refuge first aid kits and supplies were checked and replenished where needed. Individual firefighter first aid kits were purchased sufficient to supply a six-person crew.

Fire Safety Service of Pocatello checked and tested the refuge fire extinguishers.

F. HABITAT MANAGEMENT

2. Wetlands

Management of wetland habitat in the 22,000 acre marsh is directly related to water management which is controlled by Bureau of Indian Affairs (BIA). A drawdown agreement between BIA, local ranchers and FWS specifies water levels at Beavertail Point from 6387.4 ft. msl on May 10 to 6386.0 ft. msl by June 25. Recording stations located at Clark's Cut, Beavertail Point and Grays Lake Outlet indicate approximately 19,000 acre-ft. of water are removed annually from Grays Lake for irrigation on the Fort Hall Project.

This winter's low precipitation prevented water from reaching the agreement level of 6387.4. The April 19 elevation at Beavertail Point was 6386.42, slightly lower than the 10-year average of 6386.57. By the drawdown initiation date of May 10 the water was still 0.45 inches low. In spite of the shortfall BIA had opened all three gates three inches between May 16-20. The drawdown schedule caught the falling water level on the June 1 and 10 reference dates. In fact, water levels exceeded the schedule by 0.08 inches on those days. A maximum elevation of 6387.09 was recorded at Beavertail Point on May 20, nine days earlier and 0.19 inches higher than last year. BIA releases fluctuated radically throughout the

season, but peaked from May 30 to June 4. The BIA closed the gates completely on June 25, with an elevation of 6386.00. Unlike 1990, ponds retained water all year, although depths were very shallow by late summer and early fall.

The BIA-installed headgates at Clark's Cut continue to leak; probably several cfs. In drought years this leakage is appreciable. No known repairs have been attempted to date.

4. Croplands

Objectives of the refuge farming program are to provide supplemental food for whooping cranes and hold them on the refuge where they are more secure. Although GLNWR no longer has a depredation control objective, the farming program helps reduce Canada goose and sandhill crane depredations on nearby private grain fields. The extra nutrients provided by the crops allow the whooping cranes to maintain better physiological condition for migration. All farming is done by force account and about 60 acres were seeded to barley. The crop was sufficient to feed the cranes all summer and only one load of bait grain was needed as supplement.

The 60 acres planted yielded as much or more barley than is usually produced on 90 acres. We were able to reduce acreage and still maintain production by implementing a full summer fallow program in 1991. We had been concerned about our limited crop acreage being unable to fulfill crane forage needs and, consequently, always kept nearly all our fields planted. The wild oat problem had grown worse without a summer fallow program and in the absence of chemical control (all wild oat herbicides are restricted-use). Grain yields were so extensively reduced by the oat increase that we probably produced less barley by farming all our acreage than if we summer fallowed half of it.

Otis 2-row barley was planted at 80 lbs. per acre. Farming was completed in May. We customarily use this barley variety since it performs fairly well in the Grays Lake climate and the birds utilize it well. We had no problems with 6-row barley contaminating our seed as happened in 1990.

Grain mowing began in August and was finished in September. This encourages crane use by removing stalks around the outer edge of the stand that have already been eaten by the birds. This allows the birds full access to unused grain and reduces predator cover.

No grain credit was received in 1991 and 1988 grain was used. Barley stored in refuge grain bins was spread for supplemental crane feed. Like 1990 the birds did not consume the refuge grown barley as rapidly as usual and feeding was limited to only one load.

Food plots were disced in the fall, two weeks before hunting to avoid the baiting issue.

5. Grasslands

Management of grasslands consists of controlled grazing and haying on select tracts to create optimum feeding and loafing sites for cranes and geese. On areas not used by whooping cranes as primary feeding, loafing, or roosting sites grazing commences July 1.

Haying and grazing provided the only source of funds associated with the Revenue Sharing Act. FY 1990 receipts provided Bonneville County with $7866.00, and Caribou County with $2357.00.

7. Grazing

Special Use Permits were issued to 7 grazing permittees and 1 individual took nonuse in 1991.

Grazing was allowed after July 1 on pastures without whooping cranes. The lakefront pasture was opened in early October after all the cranes had migrated. There were no significant delays in lakefront grazing due to whooping cranes this year. Most cattle were off the refuge by mid November, but one operator stayed on until late December.

Grazing use in 1991 totaled over 1200 AUMs at $4.00 each for an income to the government in excess of $4800.00. Another 240 AUMs of forage were consumed under an exchange of land use permit (Bigler tract). The Bigler grazing system was modified this year. The Cinder Knoll tract (#25a) was rested for the first time in many years and in its place Tract 25b was grazed. The BIA lease at the north end of the refuge was offered to, and accepted by, an adjacent landowner but other commitments prevented him from utilizing the permit. This was only for the portion north of the Grays Lake Road.

One other Special Use Permit was issued in conjunction with a permittee's use of adjoining unfenced privately owned land. The permit was for haying and grazing approximately 15 acres (Tract 31) for a flat-rate fee of $40. The landowner's private airstrip is associated with this tract.

The Kackley tract, which was purchased last year, was rested in 1991. The pasture was severely overgrazed for several years and needs to be idled for at least one more year in order for range vegetation to regain vigor. Recuperation in 1991 was encouraging.

8. Haying

Six Special Use Permits were issued for haying. Haying provides weed control and short grass areas for cranes and geese for feeding and loafing. Crane chicks are more easily monitored by researchers and the birds can see predators more easily on hayed areas.

Hay production was average, with about the same number of acres mowed as last year. Grass production was average. The rate remained at $6.00/ton,

plus a $25.00 flat-rate to one permittee on Tract 31 for an income to the government of over $4000.00.

Like grazing, haying is not permitted prior to 1 July and is controlled by several special conditions. August 15 was specified as the closing date for haying because most fields are near food plots. Haying operations can move cranes onto private grain causing depredations.

Hay permittees were shifted this year to areas that were closer to their home bases. We felt that this would facilitate their operations and speed the harvest, helping them finish by the 8/15 deadline. Engineering Equipment Operator Stoor suggested the change and his detailed knowledge of the haying program and local operations was instrumental. It did, in fact, streamline the hay program.

9. Fire Management

No prescribed fires were conducted and no wildfires occurred on the refuge. The refuge cooperates with private landowners because of the lack of any formal fire suppression forces in the Grays Lake Valley. A minimum of four off-refuge wildfires were reported to USFS and BLM.

10. Pest Control

Spraying with 2,4-D amine to keep Canada thistle and other noxious weeds in check is done annually in support of Caribou and Bonneville Counties' noxious weed control programs. In 1991, refuge employees sprayed about 60 acres of cropland with 0.5 lb. active ingredient (a.i.) 2,4-D per acre. Roughly 40 acres of grassland are annually spot treated with 1.5 lb. a.i. of 2,4-D combined with 0.25 lb. a.i. of Banvel per acre.

We continued leafy spurge control in 1991. 2,4-D was spot applied with Banvel, as long as active spurge growth could be found. The infestations were treated weekly and the majority of the infestation was controlled. However, some plants did set seed. Three monitoring plots with photo points and stem counts were established in the infestation.

Biological control was added to Grays Lake's program this year with the release of gall flies (Urophora cardui). The flies are agents against Canada thistle and 100 were released on a heavily thistle infested dike. The release site is remote from any sprayed areas and has an unlimited food supply for the flies. We intended to release a stem-mining weevil for thistle control and a flea beetle for leafy spurge abatement. These releases were abandoned due to funding shortfalls and a failure of the pest vendor to procure an adequate supply of insects.

We discovered that the musk thistle in Grays Lake is already infested with a beetle released years ago in Idaho. The musk thistle beetle was present on all musk thistles checked. It apparently also attacks the native elk thistle and because of this broad spectrum the insect would not have been

approved for release if it were evaluated under today's standards. Thistle stands exhibiting musk thistle beetles were avoided during spraying.

11. Water Rights

The State of Idaho's adjudication of the Snake River Basin water rights continued in 1991. Water right applications were prepared by refuge staff and additional information was supplied to the Regional Solicitor's office and the regional office. In November, a regional office water rights specialist was given a tour of the refuge.

Although an average year for vegetation production, 1991 was a low run-off year. No Bridge Creek water was available for our water right in the Ostler South 40 pasture; likewise for Herman Creek water to the Rich Tract and Crane Creek water to Tract 25b (Bigler). We were unable to service any of these claims due to low flows. Our claims involving Eagle Creek, Willow Creek and Gravel Creek did receive adequate water.

G. WILDLIFE

2. Endangered and/or Threatened Species

a. Whooping Crane

The Rocky Mountain Experimental flock was down to 12 whooping cranes returning from the southwest this spring. A maximum of six birds used the refuge in the summer of 1991, with five being a more common total. The whoopers migrated later than usual and it was nearly June before the Grays Lake Valley had six whooping cranes in it.

For the third consecutive year no eggs were brought to Grays Lake from Wood Buffalo National Park in Canada. The cross-fostering of whooper chicks by sandhill cranes at Grays Lake is definitely over although Dr. Drewien did travel to Canada and assist with whooper egg gathering for use in other parts of the U.S..

Attempts continued to "force pair" whoopers in an effort to get the birds to reproduce at Grays Lake. Dr. Drewien and Wendy Brown describe the capture work for the force pairing in the following excerpt from their January-March 1991 quarterly report.

CAPTURING WHOOPING CRANES AT BOSQUE REFUGE

Efforts were made during January and February to capture whooping cranes at Bosque Refuge to continue pair formation experiments at Grays Lake Refuge in spring 1991. In August 1990 we captured a 4 year-old female at Grays Lake and she was confined in our pen facilities near Grace, Idaho (see Rept. 90-3). Our objectives in capturing whoopers at Bosque Refuge included obtaining a male to put in the pen with the female and getting any of the 3 remaining females that continue to summer alone and away from Grays Lake NWR. Arrangements were made by Dr. James Lewis, Whooping Crane Coordinator, to transport any captured cranes by commercial air from Albuquerque to Salt Lake City; field assistant Kent Clegg would accompany any whoopers shipped by air.

Capture efforts were by night-lighting and confined to nights during the dark phase of the moon. During 5 nights of night-lighting (15-16 Jan., 17-19 Feb.) we approached 5 different whoopers in 17 capture attempts and caught 2 (Patuxent female no. 7, and male 76-7). The female normally summers in Yellowstone National Park and the male in the upper Green River Basin, Sublette County, Wyoming.

In 15 of 17 capture attempts, whoopers flushed as we approached. Flushing distances were:

<10m	11-25m	26-50m	>50m	Total
1	5	7	2	15

As in the previous winter, large numbers of snow geese, other waterfowl, and sandhill cranes on night roosts with whoopers greatly hampered capture efforts. When we entered roost sites, snow geese were especially wary and readily flushed, thereby alarming and often flushing cranes.

No problems were encountered in transporting the 2 whoopers to Idaho. Female Patuxent 7, captured in January, was placed in the pen already occupied by the 4 year-old female captured last August. The 2 whoopers were compatible; no aggression or other problems occurred between them, and they stayed together. Patuxent 7 rapidly adjusted to captivity; her adjustment was probably facilitated by the presence of female 86-15 who was already adapted to the pen.

On 20 February, male 76-7 was placed in the pen but was separated from the 2 females by a net partition. The 2 females immediately attempted to join the male. This behavior continued intermittently for a week with all 3 whoopers exhibiting interest in each other. At the end of one week, the partition was removed and the 3 cranes immediately got together and

danced. No aggression has been noted through 31 March and the trio remain together.

The refuge staff assisted Dr. Drewien and others release the three captive whoopers in May. The birds were liberated near the edge of the marsh west of refuge headquarters. One of the females soon left and established herself on the west side of the refuge. The male left the refuge shortly after the release. The second female remained on the east side of Gray Lake NWR for the balance of the season. She associated with males in the area, but apparently did not pair.

The future of the Rocky Mountain experimental population remained an issue in 1991. In an August meeting whooping crane specialists modelled the Grays Lake population and determined it would become extinct even if the females bred. Other options are under consideration which include capturing birds that do not summer at Grays Lake for addition to the captive population. The Calgary Zoo is interested in receiving these birds to start a captive propagation effort. Another approach was using Grays Lake whoopers as guide birds for experiment to see if young cranes would more properly imprint if fostered to whoopers rather sandhills and still learn migration routes. One suggestion would use juvenile red-naped cranes at Grays to test the method before committing whooping crane young. The final decision of the Whooping Crane Cross-Fostering Experiment is not known.

b. Peregrine Falcon

No chicks from the Peregrine Fund were placed in the tower this year as it was occupied by a pair of falcons. The peregrines were a banded female and an unbanded male. They produced two young which were banded by the IDFG Raptor Biologist Ed Levine on 7/8/91. They are assumed to have successfully fledged.

3. Waterfowl

Waterfowl production estimates are difficult to obtain at Grays Lake because of the potential disturbance to the whooping crane program. Any waterfowl survey activity in areas where whoopers were located was only done in support of the crane project. Therefore, only rough estimates of production are available.

Spring rains helped produce a near-average year for the first time since 1986. Marsh water was not good, but satisfactory for waterfowl and much better than the preceding four years.

Straw bales were replaced as needed on goose nesting platforms.

The annual Canada goose pair aerial survey indicated average numbers for Grays Lake and Blackfoot Reservoir. This breeding population did

not have a good production year in 1991. Predation was extreme with foxes and coyotes apparently rebounding vigorously after the cessation of refuge predator control in 1988. On the South Canal and the Clarks Cut Canal, where Dr. Drewien and SIRC Biologist Steve Bouffard counted over 100 goose nests in 1990, less than 10 successful nests were found in 1991. On the North Canal predated goose egg shells were scattered to a density approaching one every 100 feet. This carnage resulted in few goose broods being noted, although the birds did seem to respond with overwater renesting attempts away from the dikes.

The goldeneye nest boxes were checked in June with over 50 hens and ducklings marked. Barrow's goldeneye were again the only ducks using the boxes, but other wildlife species utilized many of the more than 75 boxes available on the refuge.

Web tagging a Barrow's golden eye duckling. LB

Trumpeter Swans

As in 1990 a pair of swans successfully nested and produced two young. The pair nested in a different location than last year's birds and utilized a pond east of an old homestead known as Shorty's on the west side of the refuge. This was not the same pair as last year. Unfortunately the cygnets were lost to unknown causes.

Our fourth trumpeter swan translocation was accomplished this year. Twenty-nine Red Rocks NWR swans were moved to Grays Lake and released on July 16. The birds were released in the same area as last year (Grays Lake Outlet) and did well for the remainder of the season. No losses are known.

4. Marsh and Waterbirds

Dry conditions were again a problem on major greater sandhill crane production areas in eastern Idaho and western Wyoming, although not as bad as 1990.

The drought greatly reduced populations of invertebrates used as forage for chicks. As the marsh dried, cranes had to take broods to upland areas to find insects. The uplands are inherently poorer brood rearing areas and chick mortality was probably significantly higher than normal. Only 6 colts were banded by crane researcher Wendy Brown, assisted by the volunteer and the refuge staff, after several weeks of effort. In the past, easily 10 times that many were marked.

Grays Lake again experienced some localized, heavy grasshopper infestations. The extra forage was heavily used by cranes' and probably delayed the cranes' use of barley fields, as in 1990.

Habitat conditions stayed dry through the fall at pre-migration staging areas. Most cranes migrated the last week of September.

White-faced ibis nesting on the refuge were observed in 1991. A survey of the large Franklin's gull rookery in the north end of Beavertail Point pond revealed ibis nests and eggs. No young or fledglings were observed.

5. Shorebirds, Gulls, Terns and Allied Species

Franklin's were the most numerous gulls on the refuge, as usual. They are very abundant, probably numbering five to ten thousand birds. One nesting colony survey was made in 1991 on the Beavertail Point rookery.

Two black tern colonies were discovered in 1991. One was a few hundred yards north of the west end of Bear Island, while the other was a similar distance south of the middle of the island. Both colonies were a few acres in extent.

6. Raptors

The usual population of rough-legs (winter), Swainson's, redtails, and northern harriers were present.

8. Game Mammals

A small band of elk wintered south of headquarters. While not unprecedented it is somewhat unusual as the severe Grays Lake winters normally drive the elk south, or west, to lower elevations. This probably reflects 1991's mild winter conditions. This small herd was assisted by the refuge in their winter survival when they consumed all the hay we had stacked for use on goose nesting platforms.

Dr. Drewien commented on the decline of the local deer population the last 20 years. He described large herds approaching or exceeding 100 individuals using transitional range approximately one mile north of headquarters (i.e. upslope from the old Gray townsite), among other areas. While still probably a healthy herd, climatic conditions and management have apparently resulted in a smaller population with fewer trophy class

males (for which the area has a good reputation) according to Dr. Drewien. Lack of suitable winter habitat further west, due to depredation problems on surrounding farmlands, is a major contributing factor he thinks.

10. Other Resident Wildlife

The muskrat population remains severely depressed. Very few lodges are noted and very little muskrat foraging is evident on the bulrush. The continuous drought has probably denied them sufficient water to overwinter. We are still prohibiting trapping in hopes that the population will rebound sufficiently to help reduce emergent vegetation. The climatological cycle will apparently have to change before the rats can increase.

15. Animal Control

No funding was provided for predator control and none was undertaken. This had been a major program in support of endangered species (whooping crane) activities on the refuge; a great deal of time and resources were formerly devoted to it. Unless and until whooping crane eggs or chicks are again on the refuge, it is doubtful control activities will take place. The refuge staff and Dr. Drewien reviewed the old control program with Dr. John Grandy, American Humane Society, during his visit to Grays Lake.

As was expected, casual observation by the crane biologists and refuge staff indicated substantial increases in fox and coyote populations.

16. Marking and Banding

A quota of 100 mallards of each sex and age was assigned to the refuge in 1991. This was the first banding in several years. Over 400 mallards were banded and almost 700 ducks total. Swim-in traps and airboat night-lighting were employed.

Baiting the swim-in trap. LB

17. Disease Prevention and Control

No waterfowl disease outbreaks were detected. Any carcasses noted are immediately removed from the marsh by the refuge staff.

H. PUBLIC USE

1. General

Whooping cranes are still the main attraction for refuge visitors. Tourists that signed the register came from 35 states and two Canadian provinces. Other foreign countries were Brazil, Sweden, Africa, France, Germany, England, and Japan. The location for 1 entry could not be deciphered.

Table 6. Total visits at Grays Lake NWR, 1984-1991.

	1984	1985	1986	1987	1988	1989	1990	1991
Visitors	870	880	995	1330	1826	1452	1178	1129

In 1991, 1129 people signed the visitor center register. This is a decrease of 4% from last year, but better than the 18% less last year, or the 21% decrease the year before. Perhaps our decline is leveling-off. There are probably 25 percent more that don't sign-in.

As always, volunteer Lurae Brinkerhoff greeted visitors, helped them observe whooping cranes and explained the cross-fostering program. Lurae has done a great job and tourists receive a lot of personalized service. Through the regional office we were able to get Lurae a volunteer patch and cap this year.

6. Interpretive Exhibits/Demonstrations

The visitor center was left open from spring through fall, as usual. The facility is appreciated by the public and streamlines the interpretation process at the refuge, reducing demand on the staff. Changes in the whooping crane cross-fostering project have dated some of the presentations, but they are still generally useful. No permanent display updates will be made until the future of the crane project is more certain.

7. Other Interpretive Programs

Tours and talks explaining the whooping crane cross-fostering program and refuge operations were presented to Boy Scout groups. The public's favorite part is actually viewing cranes with a scope spotted by refuge personnel or volunteers. General information concerning the crane program, refuge management, were given to visitors by volunteer Brinkerhoff.

8. Hunting

Waterfowl is the only hunting allowed on the refuge. Duck season was not split as usual and ran from October 5 - December 2. The local conservation officer indicated the original intent had been to have a split season. Bag limits were again 4 ducks including not more than 3 mallards (only 1 may be a hen), 1 pintail, 2 redheads, 2 canvasbacks, or 1 redhead and 1 canvasback. Another change was, goose season opening the same day as duck, rather than first as usual. Goose season ran October 5 - January 12, which is a week longer than normal. This was the first year of steel shot only use at Grays Lake.

Waterfowl hunting at Grays Lake was better than last year, and a few hunters participated. The low continental waterfowl population again yielded few birds for hunters, although opening day provided good over-water goose shooting. Water levels were better than last year and satisfactory blind sites were available. Four groups of hunters were observed on the opening day of waterfowl season with 2 parties limiting-out. Hunting activity decreased on subsequent weekends and weekday use was nonexistent. Harvest of waterfowl was estimated at less than 100 birds, which is not impressive, but far better than last year.

Snipe hunting is not permitted on Grays Lake NWR.

Refuge staff extensively posted the hunting area with warnings to hunters that both whooping cranes and trumpeter swans use the refuge. One whooping crane was still on the refuge during the waterfowl opener, but remained in the closed zone. Several trumpeter swans were present throughout the hunting season and we were concerned that some might be shot, especially the dark, grey cygnets. On field interviews hunters were again cautioned about the presence of swans. No swan losses, wounding or attempts to take were recorded.

17. Law Enforcement

The Grays Lake Manager performed all law enforcement this year. No FWS Special Agent or IDF&G officers were known to have worked the refuge area. No citations or warnings were issued and no infractions noted.

All officers in the Refuge Complex attended Law Enforcement Refresher Training at the California Highway Patrol training facility near Sacramento. The alternate 6-month qualification with Service revolvers was supervised again this year by instructors from the IDF&G.

I. EQUIPMENT AND FACILITIES

1. New Construction

A wheelchair access ramp was added to the bus unloading/general viewing slab west of the visitor center. Des Call and Ewart Muir completed the project.

Handicap Access. MF

3. Major Maintenance

Twenty-five to 30 miles of fence were repaired.

The Combee airboat's hull was refiberglassed to repair damage from winter swan project operations.

The ware yard equipment parking was reorganized.

Refuge all-terrain cycles were taken to the dealer for their yearly valve adjustment and general tune-up service.

The new ten-wheeler dumptruck from Camas NWR was used to haul about 100 yds. of rock and gravel from Thayne, Wyoming for improving the observation point loop, filling low spots in the ware yard, providing access to the Rich Tract, creating or improving irrigation ditch crossings.

4. Equipment Utilization and Replacement

Grays Lake and Bear Lake Refuges continued to exchange use of the farm tractor.

5. Communication Systems

Our radio net was operational in 1991. We still have no radio contact with SIRC headquarters in Pocatello.

7. Energy Conservation

The heat pump in the shop is still not functional and funds have not been available to repair it.

J. OTHER ITEMS

1. Cooperative Programs

Weekly snow depths were reported to the Boise weather service.

The trumpeter swan summer range expansion project is carried on cooperatively with Red Rock Lakes NWR, IDF&G and Wyoming Department of Game.

The annual goose breeding pair count was flown in cooperation with IDF&G.

The peregrine hack tower was operated with the Peregrine Fund and Idaho Department of Fish and Game.

4. Credits

Part of Section G.2. was excerpted from Dr. Rod Drewien's and Wendy Brown's report. Section B. weather data was provided by Ralph Stoor. Chuck Peck wrote Section E.5. Mike Fisher wrote the remainder of the report. Wendy Hall and Toni Jarolimek typed and edited this report. It includes data provided by Ralph Stoor, Idaho Department of Fish and Game, Dr. Rod Drewien, Wendy Brown and the Complex Office staff. Photos credits:
LB = Lurae Brinkerhoff, MF = Mike Fisher

K. FEEDBACK

Nothing to Report.

REFUGE NARRATIVE REVIEW RECORD

Please comment below or attached your comment sheet to this sheet.

Date	Initials	Comments
11/12/92	Ed M.	
11/12/92	JA.	NICELY INFORMATIVE!
11/12	DM	
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