SWAN RIVER

NATIONAL WILDLIFE REFUGE
Kalispell, Montana

ANNUAL NARRATIVE REPORT
Calendar Year 1988

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U.S. Department of Interior
FISH AND WILDLIFE SERVICE

NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

SWAN RIVER NATIONAL WILDLIFE REFUGE

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ANNUAL NARRATIVE REPORT

Calendar Year 1988

Ray Wentlandt — Refuge Manager — 1-24-89 — Date

Jon M. Malcolm — Project Leader — 2/2/89 — Date

Bandew Johnson — Refuge Supervisor Review — 2/10/89 — Date

Ralph A. Frisa — Regional Office Approval — 3/2/89 — Date

INTRODUCTION

The Swan River National Wildlife Refuge is located in northwest Montana, 38 miles southeast of the town of Kalispell, in the serene and picturesque Swan Valley Mountain Range, (Figure 1).

Figure 1. The Swan Valley offers a tranquil and peaceful setting. The Refuge lies at the south end of Swan Lake which can be seen to the left in the above photo. This view looks to the southeast over the majority of the Refuge's floodplain. The 1,009,356 acre Bob Marshall Wilderness area is located beyond the Swan Mountain Range, which is in the background. This area has been designated as habitat "necessary or critical for the recovery" of the grizzly bear. RM 8/81

Swan River National Wildlife Refuge was established in 1973 at the request of Montana Senator Lee Metcalf, who desired to see the area preserved. Today the Refuge consists of 1,568 acres, with an additional 210-acre Forest Service inholding that is managed under a Memorandum of Understanding. The Refuge lies in the floodplain of the Swan River above Swan Lake and between the Swan Mountain Range to the east and the Mission Mountain Range to the west. The valley was formed when glacial water poured down the steep slopes of the Mission Range into Flathead Lake. The valley floor is generally flat, but rises steeply to adjacent forested mountain sides. Approximately 80 percent of the Refuge lies within this valley floodplain, which is composed mainly of reed canary grass. Deciduous and coniferous forests comprise the remaining 20 percent. Swan River, which once meandered through the floodplain, has been forced to the west side of the Refuge by deposits of silt, leaving a series of oxbow sloughs within the Refuge floodplain.

Objectives of the Refuge are to provide for waterfowl habitat and production and to provide for other migratory bird habitat. The Refuge also provides nesting sites for a pair of southern bald eagles and a variety of other avian species. In addition, deer, elk, moose, beaver, bobcat, and black bear are known to inhabit the area. There are no significant developments or facilities on the Refuge and present management is directed at maintaining the area in its natural state. The Refuge is a satellite unit of the National Bison Range. Day to day administration and operations are the responsibility of an on-site Refuge Manager located at Creston, Montana, 33 miles northwest of the Refuge.

INTRODUCTION

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HIGHLIGHTS

Snowfall for the year totaled 147 inches, which equaled the 10-year average, (Sec. B.).

Due to below normal mountain snow pack and subsequent low run-off, water levels were the lowest in four years.

Estimated duck production declined 47 percent; while Canada goose production increased 100 percent, (Sec. G.3.).

State fisheries biologists continued northern pike netting and food study habits, (Sec. G.11.).

B. CLIMATIC CONDITIONS

The early winter months of 1988 were again generally mild with temperatures ranging from a low of -17° in January to a high of 54° recorded on February 27. Snowfall for the first three months was 41 percent below the ten-year average, resulting in a corresponding 55 percent decline in total precipitation for the first quarter.

The first two weeks of April brought cool, wet weather conditions. By mid-month the temperature rose to 79° and spring seemed to officially arrive. Temperatures were near normal for the second quarter except for a low of 19° recorded in early April. Total precipitation (6.84") was slightly above the ten-year average.

Warm, dry conditions prevailed throughout July and August. Temperatures rose into the low 90's on several occasions. Drought conditions prevailed in August when only .16" of rain fell. September brought some relief to parched soils when 2.76" were recorded; however, precipitation remained nearly an inch below normal for the three-month period.

Temperatures were near normal throughout most of October with several heavy frosts recorded near month's end. The first snow of the year fell on November 9. Heavy snows continued, resulting in a total of 45.3" for the month. All interior oxbows and sloughs that had any water in them were frozen by mid-November. Heavy snowfall continued throughout December when an additional 53.5" fell. The combined late season snowfall was 41 percent above average. These heavy snows resulted in 9.5" of total precipitation which brought the year's total to 26.33" However, this was still three inches below the ten-year average.

Table 1. 1988 Climatic Data, Swan River National Wildlife Refuge*

MONTH	TEMPERATURE		PRECIPITATION (INCHES)		SNOWFALL
	HIGH	LOW	1988	10-YR AV.	1988
January	46°	-17°	1.34"	3.82"	28.0"
February	54°	- 4°	1.29"	3.07"	12.0"
March	14°	62°	1.53"	2.21"	8.0"
April	79°	19°	1.56"	1.68"	.0"
May	86°	28°	3.22"	2.56"	.0"
June	92°	36°	2.06"	2.08"	.0"
July	91°	33°	.75"	1.35"	.0"
August	89°	33°	.16"	1.89"	.0"
September	91°	28°	2.76"	1.68"	.0"
October	76°	18°	2.11"	2.04"	.0"
November	64°	23°	5.47"	3.12"	45.3"
December	49°	-12°	4.08"	3.76"	53.5"
Totals			26.33"	29.26"	146.8"

* Climatic data for the Refuge is provided by Adolf Kopp, Jr. Adolf lives near the town of Swan Lake and is under contract with the National Oceanic and Atmospheric Administration.

C. LAND ACQUISITION

1. Fee Title

There was no land acquisition in 1988. Several surrounding tracts and one wetland inholding have been identified as potential acquisitions. These tracts were identified in 1986 as potential areas for wildlife mitigation that is required by the 1980 Northwest Power Act. This Congressional act required mitigation for wildlife losses due to the construction of hydroelectric projects on the Columbia River system. In northwest Montana, wildlife losses have been attributed to two such projects, Hungry Horse Dam, constructed in 1948 and Libby Dam, constructed in 1968. A total of 4,568 acres has been established by the Montana Department of Fish, Wildlife & Parks and the Bonneville Power Administration as a goal for waterfowl restoration. Mitigation implementation for these acres is the responsibility of the Bonneville Power Administration (BPA) via ratepayer dollars.

No BPA dollars were allocated this year for purchase of the delineated wetland tracts on the Refuge or within the wetland district. In 1988, state biologists in Kalispell continued putting together a priority list of waterfowl mitigation/acquisition sites in the north valley. Manager Malcolm and Assistant Managers West and Washtak met with state personnel on several occasions this year to discuss the feasibility of several potential acquisition sites, none of which included lands near the Refuge.

In April of this year, Realty Division was informed that the owner of a 71-acre inholding west of Swan River declined the Services' appraised offer, (Fig 2).

Figure 2. The owner of this 71-acre roundout adjacent to Swan River refused to sell this tract to the FWS due to a "low appraisal". In May and June of each year this area is completely flooded and provides excellent pair and brood habitat. R.W. 9-26-88

E. ADMINISTRATION

1. Personnel

The Swan River NWR is a satellite unit of the National Bison Range that is manned by an on-site Refuge Manager (Figure 3).

Figure 3. Ray Washtak, Refuge Manager, Swan River National Wildlife Refuge. L.L. 1/11/89

Administrative and operational functions pertaining to the Refuge are conducted from the Creston Fisheries Center. The Fisheries Center is located 15 miles east of Kalispell and approximately 71 miles north of the Bison Range. The Center is the only FWS facility in the "north valley" area. Several other FWS divisions, including Fish and Wildlife Enhancement, Fish and Wildlife Assistance, and Hatcheries are headquartered at the center.

Supervision of the Refuge Manager is the responsibility of the Project Leader at the Bison Range. However, daily management responsibilities, operations and most administrative aspects of the Refuge are left up to the discretion of the on-site manager.

On March 27, Kevin Shelley (Figure 4) E.O.D. as a Bio-Tech. (temporary) for both the Refuge and Wetland District.

Figure 4. Bio-Tech Kevin Shelley. This was Kevin's third year working for FWS in northwest Montana. His assistance included all phases of field operations and some administrative functions. His performance greatly aided Refuge and WMD operations. R.W. 9/8/87

Daily clerical support for the Refuge program is provided by the Fisheries Center Administrative Assistant, while the Refuge Assistant at the Bison Range provides direction and administrative support for detailed Refuge administration. Administrative

assistance provided by the Fisheries Center clerk and Refuge office space at the Center is provided on a cooperative reimbursable basis.

Table II. * Number of "On-Site" Employees
Swan River NWR

	Full Time	Part Time	Temporary	Total FTEs
85	1	0	0	1
86	1	0	1	1.4
87	1	0	1	1.4
88	1	0	1	1.4
89	1	0	1	**1.6

* Table II lists "on-site" north valley Refuge personnel only. For a complete listing of personnel and employment summary refer to the National Bison Range annual narrative.

** Currently planned for FY 89.

4. Volunteer Programs

In 1988, Mike Herman volunteered approximately 810 man-hours assisting with various Refuge and WMD field operations, (Figure 5).

Figure 5. Refuge volunteer Mike Herman. Mike is a 1985 graduate of the University of Nebraska (B.S. Wildlife Management). His assistance with Refuge and WMD operations included pair and brood counts, noxious weed control, nest searching, signing and posting, WPA cleanup and many hours of predator management. R.W. 4-26-88

5. Funding

Funding for the Swan River National Wildlife Refuge (and for WPA's located in Flathead County) is included in the overall annual appropriation of the National

Bison Range (NBR). For FY 89 approximately $72,000 has been tentatively allocated for the north valley refuge and wetland district operations (Table III). Work programs and projects on these units are planned by the on-site manager, coordinated with the Project Leader at the Bison Range for approval; then, if the dollars are there, included in the annual work plans of the NBR. Projected "north valley" funding for FY 89 represents a tentative 11 percent increase over FY 88 funding. Base target appropriations for the Bison Range (Table IV) were reduced by 4 percent from FY 88 funding levels, and total funding was reduced by 6.5 percent.

A further discussion of funding matters and needs can be found in the NBR narrative.

Table III. Annual Appropriations
Swan River N.W.R. and Flathead County W.P.A.s

	FY	O & M	Additional Funding
*	85	34,000	$12,000 (small ARMMS)
	86	50,000	$10,000 (small ARMMS)
	87	50,000	
	88	64,000	
**	89	72,000	

* Since 1985 funding has been provided from the overall annual appropriation of NBR. Prior to FY 85 the administration and operation of the north valley Refuge program was the responsibility of the Project Leader at the Fisheries Center. Funding was provided to the Center from the Division of Refuges and Wildlife - Denver.

** Tentative

Table IV. A five-year comparison of funding for the NBR Complex

FY	1261-2	6860	ARMM	O & M TOTAL	8610	YCC
89	416,000	42,000	--------	458,000	9,800*	
88	457,000	42,000	--------	499,000	9,900	3,000
87	313,000	42,000	110,000	465,000	9,700	3,000
86	300,000	45,000	154,000	499,000	4,700	13,000
85	360,000	45,000	62,000	467,000	7,000	13,000

*Projected available

6. Safety

In early December, eight working days were lost when Assistant Manager Washtak strained his back while working on the new shop/storage facility. Severe muscle spasms resulted in three days of hospitalization and five days of bed rest.

In April and May, wetland personnel received the required three-shot-anti-rabies-vaccine series for protection during predator control operations.

7. Technical Assistance

When scheduled Refuge work programs are not interferred with, technical assistance is provided, as requested, to other FWS divisions located at the Fisheries Center and to private landowners.

This year, Manager Washtak spent three days assisting Wildlife Biologist Bill Mytton (T.A. Division-Creston) with banding Canada geese on the Fort Belknap Indian Reservation, (Fig 6).

Figure 6. A total of 107 Canada geese were captured and tagged. Tribal officials requested the banding project. Also assisting was Refuge Manager Gene Sipe (Bowdoin NWR) who is sitting in the foreground. R.W. 7-26-88.

In June, Manager Washtak spent five days assisting the wetland staff at Benton Lake NWR with farm sign-up in Glacier County in north central Montana.

8. Other

Meetings and/or training attended this year included:

Several meetings with BIA, BOR, FWS, MDFWP, and Forest Service biologists concerning BPA mitigation planning, coordination and implementation.

The annual meeting of the Montana Wildlife Society Chapter and mid-year Project Leaders Meeting in Lewistown.

Flathead Valley Canada Goose Committee Meetings; participants included FWS managers, state and tribal biologists, and University of Montana wildlife cooperative unit personnel.

Annual Work Plan Meeting - West Yellowstone (Red Rock Lakes NWR).

Annual L.E. Re-certification - Marana, Arizona.

Database III and Wordprocessing Computer Courses - Flathead County Extension Office, Kalispell, MT.

Computer training at NBR, presented by Mike Long, Computer Specialist, Denver.

Farm Bill Coordination Meeting - Malta, MT

Attended the Waterfowl Nesting "Island Symposium" - Jamestown, N.D.

F. HABITAT MANAGEMENT

2. Wetlands

Approximately 1,254 acres of the Refuge can be classified as a wetland/grassland complex (Figure 7). All of this acreage lies within the "alluvial floodplain" adjacent to the south end of Swan Lake.

Figure 7. The alluvial floodplains which occupy the majority of the Refuge are easily seen in this aerial photo taken in April of 1986. Vegetation consists mainly of reed canary grass. Heavy snows compact the thick vegetation each year; subsequent spring snowmelt creates excellent pair habitat. R.W. 4-3-86

Other wetland classifications within the Refuge consist of Swan River on the west side of the Refuge and Spring Creek which meanders through the eastern portion of the Refuge. These two systems occupy about 5 percent of the Refuge acreage.

With the exception of a culvert through which Spring Creek flows under Bog Road and a site gauge within the creek that is used for recording water flow levels, no other water control facilities or developments exist on the Refuge.

In normal years approximately 80 percent of the Refuge floods in May, June and July. Flooding is caused by mountain snowpack runoff and subsequent overflow from Swan River. In 1988 snowpack levels averaged 54 percent of normal resulting in approximately 45 percent of the Refuge flooding. Water levels within the flood zone averaged 12 inches compared to a three-year average (1985-1987) of 18-20 inches.

3. Forests

Forested areas comprise approximately 313 acres of the Refuge. Wooded tracts lie primarily on the west, south and southeastern portions of the refuge. Major tree species include, old growth fir, spruce, cedar and larch. All forested units continue to be maintained in their natural state.

4. Croplands

There are no croplands on the Refuge. Annual flooding prohibits the establishment of any type of cropland.

5. Grasslands

Grasslands within the Refuge are composed primarily of dense stands of reed canary grass, all of which lie within the alluvial flood plain. This area comprises approximately 80 percent of the total Refuge acreage. There are no other seeded or prairie grassland units on the Refuge. Annual flooding also prohibits establishment of stands of cool season grasses and/or forb mixtures.

7. Grazing

There was no grazing on the Refuge in 1988. Wet meadows would likely benefit from periodic grazing to create openings and additional pair habitat. However, finding a willing cooperator has been difficult due to;

1) lower A.U.M. rates offered by surrounding Forest Service lands; and 2) the necessity and difficulty of establishing temporary interior fences needed to control the cattle and achieve desired management results.

8. Haying

Approximately 45 acres of reed canary grass were hayed this year (Figure 8.).

Figure 8. An aerial view of the 5-10 acre hayed tracts on the Refuge. Some of these openings will flood in the spring providing increased pair habitat. Those that don't flood should provide additional browse areas for Canada geese. R.W. 9-24-88

9. Fire Management

Due to the difficulty of proper control there were no prescribed fires on the Refuge this year.

10. Pest Control

Canada thistle is the major noxious weed found on the Refuge. Infestations are limited to elevated upland sites and the nesting islands located in the northwest portion of the Refuge. Due to herbicide use constraints no spraying was done this year. Approximately one acre was hand chopped in late August to reduce the spread of windborne seeds. However, past hand chopping operations have not controlled the weeds, but resulted in only a temporary cosmetic control.

11. Water Rights

Water rights and subsequent usage within the "water rights claim area" occupied by the Refuge has been based on historical irrigation use due to natural flooding. Past water right claims (by private individuals) were not issued on an acre-foot basis because "natural flooding" did not involve a "point of diversion"; hence it was not possible to determine actual acre-footage claimed or used. In 1981 the FWS filed and received a preliminary decree for water rights on a "claimed" 19,117 acre feet. These water rights are based on "FWS use", meaning, for wildlife benefits. This type of use is also based on a "point of diversion" which is in contrast to past historical water rights. When issuing the preliminary decree, state authorities did not award a specific quantity as listed in our request, because no point of diversion exists. In 1986, the FWS filed an objection with the Department of Natural Resources Commission on the grounds that the Service requires a specified number of acre-feet as a water right. A pre-hearing conference was held in 1986, but no word has ever been received as to the outcome of the pre-hearing conference. In 1987 Cheryl Willis (Water Resource Specialist - Denver) submitted "suggestive language" that the state could use in issuing a revised preliminary decree. In May of this year we received word that the State Department of Natural Resources and Conservation withdrew it's objection to our long-standing request for specific water right volumes. The reason for the State's

decision was given as: 1.) budgetary limitations and 2.) new statutory language regarding water right volumes in decrees.

The following indicates the proper administrative description of filed water rights for the Refuge:

Claim No.	Sources	Use	Flow Rate	Ac. Ft./ Year
76K-W-190863	Swan Rvr.	F/W use	**	3,395
76K-W0188287	Swan Rvr.	Irrigation	**	3,395
76K-W-188249	Bond Crk.	F/W use	**	268
76K-W-190565	Stopher Crk.	F/W use	**	1,900
76K-W-190564	Lime Crk.	F/W use	**	1,793
76K-W-190566	Lime Crk.	F/W use	**	1,807
76K-W-188248	Spring Crk.	F/W use	135 cfs	8,260

** = Natural overflow

G. WILDLIFE

2. Endangered Species

The southern bald eagle is the only endangered species common to the Refuge. In 1988 an adult pair was observed several times on the Refuge but did not attempt to nest. This is the first time in three years that nesting was not initiated. The reason for this is unknown; however, the pair remained on or in the vicinity of the refuge throughout the year, presumably feeding on crippled waterfowl and/or rodents.

Additional use of the Refuge by other bald eagles is considered to be of a migratory nature. On October 2, two additional adults were observed adjacent to Swan

River. Total use-days were estimated at 720, a nearly 50 percent decline from estimated use-days in CY 87.

3. Waterfowl

Waterfowl populations that continued to utilize and/or nest on the Refuge in 1988 included several duck species and the Canada goose. Because the majority of the Refuge is generally flooded each year during May and June, nesting habitat for upland nesters is limited to elevated upland sites or forested areas where suitable nest cavities can be found. For this reason, waterfowl species such as the wood duck, common merganser and common goldeneye are more commonly observed on the Refuge.

Pair counts were completed on May 17th this year, followed by brood counts in early July (Figure 9).

Figure 9. Duck brood counts require slow walking in accessible locations on the Refuge and by observing oxbows and ponds located in the interior of the Refuge; however, in some locations dense vegetation makes accurate counts difficult. A jet boat is used to count broods in Spring Creek and Swan River. Goose brood counts are done by aerial survey. R.W. 7-6-88

The number of observed waterfowl pairs increased 22 percent this year compared to 1987 figures, Table V.

Table V. Pair Count Data 1985 - 1987

SPECIES	1985	1986	1987	1988
Mallard	32	35	35	50
Cinnamon/BW teal	32	15	23	29
Common goldeneye	15	5	15	19
Wood duck	8	1	3	0
Common merganser	0	4	1	3
Widgeon	2	0	5	0
Pintail	2	0	3	0
Ringneck	2	0	0	4
Barrows goldeneye	1	0	0	0
Shoveler	1	0	0	2
Bufflehead	0	0	1	0
Greenwing teal	0	0	0	3
Total	95	60	86	110

In 1988 we attempted to conduct a nest search to determine nesting pairs and habitat preferences, (Figure 10).

Figure 10. Cable drag attempts were futile due to wet boggy conditions and old snags that continuously caused problems with our drag. Only five nests were found in three separate searches. Other areas on the Refuge, such as elevated dikes were searched by walking. R.W. 6-6-88

Due to a statistically invalid number of nests found, this years' duck production figures are estimated by using a productivity rate based on data obtained in 1988 from Lake County WPA nest searches. The Lake County studies indicated a productivity rate of .35, which was applied to Refuge pairs to estimate broods hatched. A brood survival rate of .7 was then applied to the average brood size to estimate production. Production figures are summarized in Table VI.

Waterfowl population estimates continue to be based on random ground counts made in conjunction with on-going work activities and scheduled aerial census flights. This year, waterfowl populations peaked in March (spring migrations), Table VII, and in October and November (fall migrations), Table VIII. Total waterfowl use-days this year were estimated at 155,250, a 29 percent increase from CY 87 estimates.

Estimated Canada goose production increased 100 percent this year when compared to CY 87 figures. Nesting probably occurs on the Refuge in elevated upland sites and on remnants of old borrow dikes. Breeding pair population objectives have been set at 30 pairs for the "Swan River System". This area includes adjacent off-Refuge areas, (i.e., Swan Lake islands and the Swan River). Twenty-five pairs were observed within this system during the April 12th aerial flight compared with 32 pairs observed in 1987.

Table VI. Estimated Waterfowl Production, 1978-1988
Swan River National Wildlife Refuge

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Canada geese	85	10	39	25	56	34	36	94	67	38	77
Ducks	262	42	42	683	1152	1005	*	244	150	172	91

* Duck production unknown, no surveys made.

Table VII. Peak Waterfowl Populations, Spring Migrations
Swan River National Wildlife Refuge

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Swans	10	30	100	80	8	20	40	0	16	100	136
Canada geese	5	120	35	280	380	350	300	223	75	150	
Ducks	410	1900	2390	530	1770	1270	136	920	367	215	535

Table VIII. Peak Waterfowl Populations, Fall Migrations.
Swan River National Wildlife Refuge

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Swans	18	1	30	28	52	20	37	10	10	35	36
Canada geese	280	370	180	330	260	200	165	40	175	175	275
Ducks	2450	170	2640	720	1050	1160	780	440	847	495	1086

As in past years, the number of goose broods, (Table IX) may or may not represent actual production on the Refuge. At various times broods which hatch within the Swan River system migrate to the Refuge in search of food, loafing sites or for safety reasons. Therefore, the figures listed in Table IX represent what was observed the day of the count and may not reflect actual Refuge production. However, only one aerial census of pairs and broods is made each year. These figures represent our most consistent annual estimation of goose production. None of the 17 new goose structures put out in 1987 were used this year. The reason for this is not certain, but low water levels on the Refuge resulted in some structures being "high and dry". One other possible reason is that most Canada geese that nest within the Swan System are ground nesters and will not readily go to an elevated structure the first year.

Table IX. Swan River NWR, Canada Goose Breeding Pairs and Estimated Production.*

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Breeding Pairs	61	34	38	13	23	15	40	32	25
Number of Young Observed	39	25	56	34	36	94	67	38	77

* Figures listed are based on one flight made in mid-April (for pairs) and one flight made in early June (for broods).

4. Marsh and Water Birds

With water levels at an all time low most interior wetlands on the Refuge offered minimal habitat for many species within this group. However, soras, pied-billed grebes, red-neck and horned grebes, American bitterns, and great blue herons were often observed throughout the spring, summer and fall months. Populations are monitored through random observations done in conjunction with on-going Refuge work activities. Nesting probably occurred, but was not documented this year. Populations peaked in June when only 150 birds were counted.

5. Shorebirds, Gulls, Terns & Allied Species

As in 1987, low lake levels this year resulted in mudflats along the lake shoreline and at the mouth of Swan River. Species utilizing these areas again this year included common snipe, Wilson's phalarope, least sandpipers, ring-billed and California gulls. Black terns were also observed in the interior of the Refuge's flood plain. Population estimates are based on random observations made in conjunction with on-going work programs. Populations peaked in July and August with an estimated 655 birds observed.

6. Raptors

Coniferous and deciduous forest areas on the Refuge again offered excellent resting and loafing sites for many raptor species. Various food sources are available within the open area of the floodplain, making the Refuge ideal habitat for hawks, owls and eagles (Sec. G.2). Northern harriers, Swainsons hawk, red-tailed hawks and great-horned owls were the more commonly observed species. Two northern harriers nests were found during the nest search, however, the exact extent of raptor nesting activity is not known.

Peak populations of this group are also based on random observations, and apparently peaked in September, when 41 raptors were observed during one random count.

7. Other Migratory Birds

Mourning doves are considered migratory birds. No "coo count" surveys are done on or near the Refuge. Use of the Refuge by this species is incidental in nature as evidenced by two random sightings made in July.

8. Game Mammals

Wet-meadow grasslands, brushy areas and forested tracts on the Refuge continue to offer ideal protective and cover habitat for a wide variety of game mammals. White-tailed deer are the most commonly observed species and are considered to be "annual" residents. Populations were estimated at 20-25 deer this year. Fawning probably occurred within the Refuge boundary, but has not been documented. In the past year mule deer and elk have been considered "transient" winter residents, utilizing the Refuge as part of their winter range. No elk or mule deer were observed this year.

In early June fresh black bear scats were found along the old road which traverses through the southcentral portion of the Refuge. The scats were confirmed to be from a black bear by state game biologists and were found on several occasions. The droppings were considered to be one-two weeks old. However, no actual sightings of the bear(s) were made this year.

10. Other Resident Wildlife

The Refuge mammal list includes: coyote, gray wolf, lynx, bobcat, mountain lion, mink, river otter, beaver, raccoon and skunk.

In 1988, coyotes were observed on the interior portion of the Refuge during all aerial flights. In October, a family group of five coyotes was observed just north of Bog Road in Section 22. As was the case last year, it is suspected that coyote populations are increasing on the Refuge; however, exact populations are unknown at this time.

Beaver populations on the Refuge also appear to be increasing as evidenced by newly cut trees and increased number of slides along the river. All

beaver activity appears to be restricted to the interior river portion of the Refuge. No surveys have been conducted to estimate populations.

In May of this year, Amy Johnston, a graduate student at the University of Montana reported that one of her radio implanted river otters was observed in the Refuges' portion of Swan River. On several occasions thoughout the summer another unmarked otter was also observed in the River. It is not known whether mating occurred. No other sightings were made after July.

11. Fishery Resource

Unusually low water levels this year severly limited any sustained fishery resource on most of the Refuge. Swan Lake, which borders the Refuge on the north, Swan River and Spring Creek offered the only quality fishing.

As in past years, the densely vegetated areas of Spring Creek which empties into the lake on the northeast corner of the Refuge provided excellent pike spawning habitat. The creek was again closed to fishermen as part of the annual Refuge closure of March 1 - July 1 (Sec. H.1). However, from mid-April through June fishermen anchored just outside the mouth of the creek and caught pike as they headed into the spawning area.

In an effort to determine food habits of spawning northern pike, state fisheries biologists again set gill nets within Spring Creek. Traps were set on two separate attempts in April, (Figure 11).

Figure 11. Only 16 pike, ranging in size from .6 - 16.25 lbs. were caught. Bob Domrose, State Fisheries Biologist, is holding two of the larger pike netted. Primary food species were yellow perch, pea-mouth and pumpkinseed. This year's data, along with previous years' data, will be analyzed for future fisheries management actions planned for 1990.
(Photo courtesy of MDFWP 4-19-88)

H. PUBLIC USE

1. General

Public use of the Refuge is often limited due to its somewhat secluded, out-of-the-way location and annual flooding; in addition, the lack of interpretive

routes, foot trails, and camping facilities further limited potential visits. Those residents of the town of Swan Lake and other nearby small rural communities who enjoy bird-watching, hiking, waterfowl hunting and fishing accounted for the majority of consumptive and non-consumptive uses. Because the Refuge is located 30 miles from the manager's headquarters, it is not possible to determine exact public use.

2. Outdoor Classroom - Students

In June, two 3-hour outdoor workshops on "mini-refuges" were given to 48 enthusiastic 4-H campers at their annual 3-day outing near Loon Lake. The workshops involved discovering and interpreting relationships of flora and fauna within designated small "refuge" areas.

7. Other Interpretative Programs

In April, bio-tech Kevin Shelley presented a two-hour waterfowl management slide series to members of the Whitefish Chamber of Commerce.

Also in April, Washtak presented a 30-minute tape on the National Wildlife Refuge System to 25 sixth graders at Cayuse Prairie School. The tape was followed by a short question and answer period on waterfowl managers' duties and responsibilities. In June, Washtak also served as a Science Fair judge for elementary science exhibits at the same school.

In June and then again in October, Washtak was interviewed by television station KPAX (Missoula) concerning waterfowl populations, potential nesting and fall flight predictions.

8. Hunting

Approximately 40 percent of the Refuge (627 ac) is open to waterfowl hunting. All of the hunt area is located north of Bog Road and along the Swan River. Non-toxic shot is required.

Western Montana's waterfowl season opened October 1 (for geese) followed by the duck opener on October 8. Opening day pressure was light with the majority of

hunter activity again taking place along the lake's west shore and near the mouth of Swan River. Success was also light due to a lack of birds, blue-bird weather and the fact that antelope season opened October 9, sending many hunters after pronghorns instead of ducks. In addition, all interior potholes and sloughs were nearly dry. Hunter visits this year were estimated at 135, resulting in 800 estimated activity hours.

Little hunting activity occurred throughout the remainder of the season; however, good populations of Canadas and mallards remained along open stretches of the River at year's end. The duck season closed on November 26 and reopened for one week on December 24. All waterfowl hunting closed for the year on January 1, 1989.

The Refuge is closed to hunting of all upland game birds and big game.

9. Fishing

Fishing activity on the Refuge was again limited to portions of the Swan River within the Refuge boundary and Spring Creek after the closure period. The most popular fishing spot was at the mouth of Spring Creek in late April and early May where anglers fished the reed beds for spawning pike, (Figure 12).

Figure 12. The mouth of Spring Creek is a popular northern pike fishing spot. Although no anglers were out at the time this photo was taken, several 10-15 pounders were caught in May. However, rapidly receding water levels and rapid submergent aquatic growth in this area apparently reduced the number of fishing visits this year. R.W. 5-17-88

10. Trapping

There is no trapping allowed on the Refuge.

17. Law Enforcement

Law enforcement efforts on the Refuge this year were again concentrated on three areas of concern: 1) waterfowl season, 2) the closure season (March 1 -

July 1), and 3) during the winter months when snowmobilers take to the trails and forests.

The waterfowl hunt area was patrolled on opening weekend of waterfowl season. This was the third year that non-toxic steel shot was required for waterfowl hunting in Lake County. Compliance was excellent. Increased hunter use of the WPA's, particularly pheasant hunting, precluded additional routine patrols of the Refuge this year.

No citations were issued this year although snowmobilers still continue to ride within the Refuges' boundary.

I. EQUIPMENT AND CONSTRUCTION

1. New Construction

There was no construction on the Refuge this year.

In July, north valley refuge personnel, accompanied by Bison range maintenance crews, disassembled three 28 x 28' sheet metal buildings at the BLM project site in Duchesne, Utah. One of the buildings was installed at the Creston Fisheries Center for storage and workspace for Refuge personnel, (Figures 13 and 14).

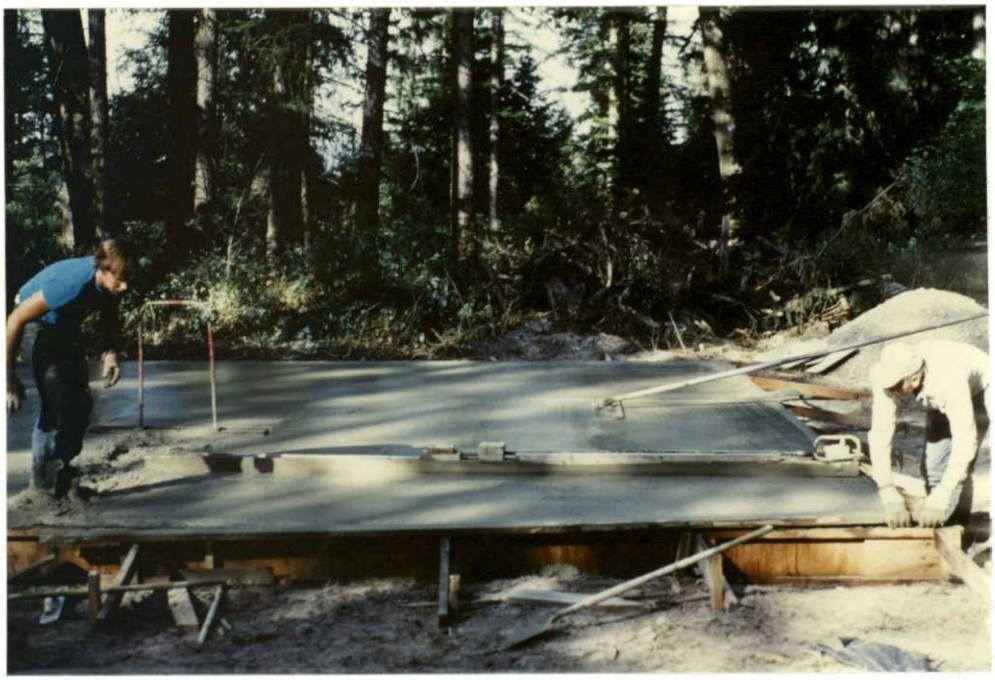


Figure 13. A site for the "new" shop/storage building was selected behind the administrative office at the Hatchery complex. Several large spruce and larch trees were removed in early August. By mid-month the contractor had completed the concrete pad. K.S. 8-16-88

Figure 14. The building was put up by force-account. Work was slowed due to weather delays, other duties and trying to remember how to "put it back together". Most of the insulation, electrical work and wood stove installation was completed by late December. R.W. 12-19-88

2. Rehabilitation

In July, final posting of the south and southwest boundaries of the Refuge was completed with assistance from the Nature Conservancy who owns an adjoining 397-acre preserve. All posting was done by "meets and bounds".

4. Equipment Utilization and Replacement

In May, two Husqvarna hand-held, gas-powered weed eaters were purchased to assist with mechanical weed control efforts.

In December, Refuge Law Enforcement equipment was upgraded with the purchase of a new Remington Model 870 12 gauge shotgun.

J. OTHER ITEMS

4. Credits

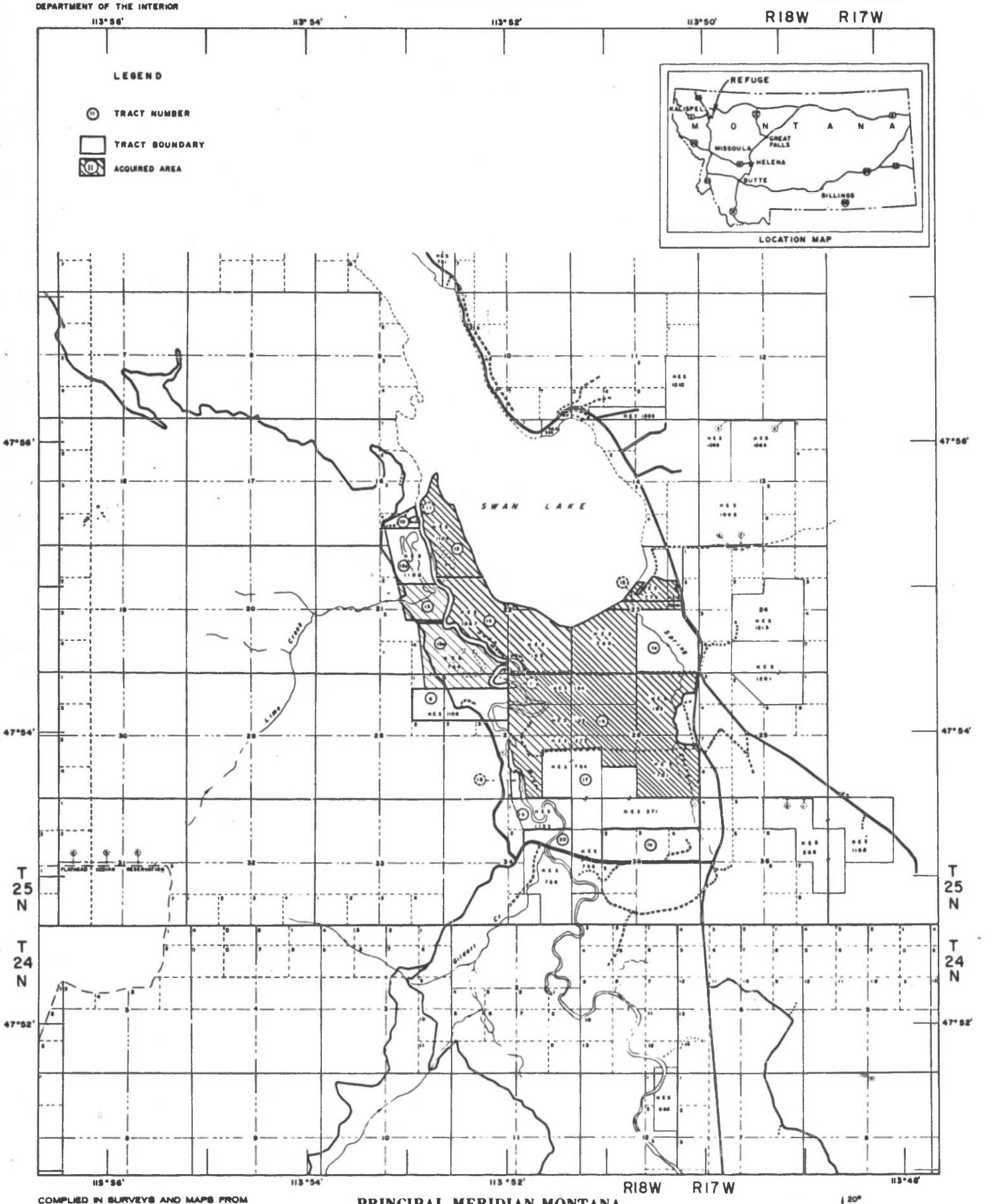
Ray Washtak wrote this report. Jon Malcolm provided editing services. Sharon Hooley and Sharol Birks typed it.

SWAN RIVER NATIONAL WILDLIFE REFUGE

LAKE COUNTY, MONTANA

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE



COMPILED IN SURVEYS AND MAPS FROM SURVEYS BY THE BLM AND USGS

PRINCIPAL MERIDIAN MONTANA

0 2640 5280 7920 10560 FEET
0 1/2 1 1 1/2 2 MILES

20° MEAN DECLINATION 1975

DENVER, COLORADO
REVISED: May, 1977

MAY 1972

6R MONT. 857 404

Birds of the

Swan River

NATIONAL WILDLIFE
REFUGE

Montana

Welcome to

SWAN RIVER NATIONAL WILDLIFE REFUGE

The 1,568-acre Swan River National Wildlife Refuge is located 38 miles southeast of Kalispell, Montana. The variety of habitats including grassland, marsh, and wooded river bottom support elk, deer, moose, grizzly and black bear, beaver, river otter, muskrat, and at least 171 species of birds.

The Refuge provides nesting habitat for the endangered bald eagle, great blue herons, black terns, 23 species of waterfowl, and a variety of raptors and songbirds. A canoe trip through the Refuge on the Swan River provides excellent birding throughout the spring, summer, and fall. Canada geese, whistling swan, mallard and goldeneye winter in the open waters of the Swan River and the canals and creeks which cross the Refuge.

The following birds have been observed on the Refuge since its establishment in 1974. Very special thanks must go to Ellie Jones and other Audubon Society members who have contributed much time to the completion of this pamphlet. The Swan River NWR was adopted by the Flathead Chapter of the National Audubon Society in 1981 under the Society's Adopt-A-Refuge Program.

EXPLANATION OF SYMBOLS:

Seasons:

S— March-May
S— June-August
F— September-November
W— December-February

Birds nesting on the Refuge are preceded by a •.

Symbols indicating seasonal abundance of each species are as follows:

c—common	should see in suitable habitat
u—uncommon	might see in suitable habitat
o—occasional	seen only a few times during a season
r—rare	seen at intervals of 2 to 5 years

The following bird list is in accordance with the 5th A.O.U. Check-List as amended. New names are used in all cases.

	S	S	F	W
LOONS				
___• Common Loon	c	c	u	
GREBES				
___• Red-necked Grebe	c	c	c	
___• Horned Grebe	c	c	c	
___• Eared Grebe	c	c	c	o
___ Western Grebe	u	c		
___• Pied-billed Grebe	c	c		
CORMORANTS				
___ Double-crested Cormorant	o			
HERONS AND BITTERNS				
___• Great Blue Heron	c	c	c	c
___• American Bittern	u	u	o	
SWANS, GEESE, DUCKS				
___ Whistling Swan	u	r	c	u
___• Canada Goose	c	c	c	c
___ Snow Goose	o		o	r
___ Ross' Goose	r		r	
___• Mallard	c	c	c	c
___• Gadwall	c	c	u	
___• Pintail	c	u	c	o
___• Green-winged Teal	u	u	u	r
___• Blue-winged Teal	c	c	c	
___• Cinnamon Teal	c	c	u	
___• American Wigeon	c	c	c	
___• Northern Shoveler	u	o	u	
___• Wood Duck	c	c	u	
___• Redhead	u	u	u	o
___• Ring-necked Duck	u	u	u	o
___ Canvasback	u	o	u	o
___ Lesser Scaup	o	o	o	
___• Common Goldeneye	c	c	c	c
___• Barrow's Goldeneye	c	u	u	o
___ Bufflehead	c	u	u	o
___ White-winged Scoter	r			
___ Harlequin Duck	r			
___• Ruddy Duck	u	o		
___• Hooded Merganser	u	u		
___• Common Merganser	c	c	c	u
___ Red-breasted Merganser	r			
EAGLES, HAWKS, AND FALCONS				
___ Goshawk	u		u	u
___ Sharp-shinned Hawk	u	u	u	u
___• Red-tailed Hawk	u	u	u	
___ Swainson's Hawk	u			
___ Rough-legged Hawk				c
___ Golden Eagle	c			
___• Bald Eagle	c	c	c	c
___• Marsh Hawk	u	c		
___ Osprey		c		
___ Prairie Falcon	o	o	o	
___ Merlin	o	r	o	
___• American Kestrel	o	c	o	
GROUSE, PHEASANTS				
___ Blue Grouse	o	o	o	o
___• Ruffed Grouse	c	c	c	c
___ Ring-necked Pheasant	o	o	o	o
RAILS				
___• Sora	u	c		
___• American Coot	c	c	c	
PLOVERS				
___• Killdeer	c	c	c	
SHOREBIRDS, GULLS, TERNS				
___• Common Snipe	c	c	o	u
___• Spotted Sandpiper	c	c	u	
___ Solitary Sandpiper	o	r		
___ Greater Yellowlegs	o	o		
___ Lesser Yellowlegs	o	u		
___ Least Sandpiper	o	u		
___ Long-billed Dowitcher	u	u		
___ Marbled Godwit	o			
___ American Avocet	o			
___ Black-necked Stilt	o			
___• Wilson's Phalarope	u	u		
___ California Gull	o	u	u	
___ Ring-billed Gull	o	c	u	
___ Forster's Tern	o	o	o	
___• Black Tern	c	c	u	
DOVES				
___ Mourning dove	o	o	o	
OWLS				
___ Screech Owl	r	o	r	
___• Great Horned Owl	u	o	u	u
___ Pygmy Owl	o	o	o	o
___ Barred Owl	o	o	u	
GOATSUCKERS, SWIFTS, HUMMINGBIRDS				
___ Common Nighthawk	u	c		
___ Vaux's Swift	o	u	o	
___ White-throated Swift	o	r		
___• Rufous Hummingbird	u	u		
___• Calliope Hummingbird	u	u	u	
___• Black-chinned Hummingbird	r	u	u	
KINGFISHERS, WOODPECKERS				
___ Belted Kingfisher	o	o	o	o
___• Common Flicker	u	c	c	u
___ Pileated Woodpecker	u	u	o	o
___ Lewis's Woodpecker	o	o		
___ Yellow-bellied Sapsucker	u	u	u	
___• Hairy Woodpecker	u	u	u	r
___• Downy Woodpecker	u	u	u	r
FLYCATCHERS				
___• Eastern Kingbird	o	u	o	
___• Western Kingbird	o	c	u	
___• Willow Flycatcher	c	c		
___ Hammond's Flycatcher	u	u		
___ Dusky Flycatcher	o	u		
___ Western Flycatcher	o	u		
___ Western Wood Pewee	u	u		
LARKS, SWALLOWS				
___ Horned Lark	o	o	r	r
___• Violet-green Swallow	c	c		
___• Tree Swallow	c	c		
___• Rough-winged Swallow	c	c		
___• Barn Swallow	u	c		
___• Cliff Swallow	u	u		
JAYS, MAGPIES, CROWS				
___ Gray Jay	o	o	r	u
___ Steller's Jay	r	r	o	r
___• Black-billed Magpie	c	u	u	u
___• Common Raven	c	c	c	u
___• Common Crow	c	u	u	
___ Clark's Nutcracker	r		o	o
CHICKADEES, NUTHATCHES, CREEPERS				
___• Black-capped Chickadee	c	c	c	c
___ Mountain Chickadee	u	o	u	o
___• Chestnut-backed Chickadee	o	o	u	u
___• White-breasted Nuthatch	u	u	u	u
___• Red-breasted Nuthatch	u	u	u	u
___• Brown Creeper	u	u	o	o

	S	S	F	W
DIPPERS				
___ Dipper	o	o	u	u
WRENS				
___ Winter Wren	o	o	o	o
___• Long-billed Marsh Wren	u	c	c	o
MOCKINGBIRDS				
___• Gray Catbird	u	u	c	
THRUSHES, BLUEBIRDS				
___• American Robin	u	c	c	u
___• Varied Thrush	c	c	u	r
___• Swainson's Thrush	u	u	u	
___ Veery	o	u	o	
___ Mountain Bluebird	c	u	o	
___ Townsend's Solitaire	o		o	
KINGLETS, PIPITS				
___ Golden-crowned Kinglet	u	u	u	u
___ Ruby-crowned Kinglet	u	u	u	u
___ Water Pipit	u		o	o
WAXWINGS, SHRIKES, STARLINGS				
___ Bohemian Waxwing	u			c
___ Cedar Waxwing	u	u	u	
___ Northern Shrike	u		u	u
___• Starling	c	c	u	
VIREOS, WOOD WARBLERS, WEAVER FINCHES				
___• Red-eyed Vireo	u	u		
___• Warbling Vireo	o	u		
___ Orange-crowned Warbler	u	u	u	
___ Nashville Warbler	u	u	u	
___• Yellow Warbler	c	c	u	
___• Yellow-rumped Warbler	c	c	u	
___ Townsend's Warbler	o	c	u	
___ Northern Waterthrush	o	c	u	
___ MacGillivray's Warbler	o	u	u	
___ Common Yellowthroat	u	u	u	
___ Wilson's Warbler	o	u	o	
___ American Redstart	o	u	u	
___ House Sparrow	o	o		
BLACKBIRDS AND ORIOLES				
___ Bobolink	u	u		
___ Western Meadowlark	u	u	u	
___• Yellow-headed Blackbird	c	c	u	
___• Red-winged Blackbird	c	c	u	
___ Brewer's Blackbird	u	c		
___• Brown-headed Cowbird	u	c		
TANAGERS				
___ Western Tanager	o	o		
GROSBEAKS, SPARROWS, AND FINCHES				
___• Black-headed Grosbeak	u	u		
___ Lazuli Bunting	o	u		
___• Evening Grosbeak	u	u	u	u
___ Cassin's Finch	o	u	o	o

	S	S	F	W
___ House Finch	o			
___ Gray-crowned Rosy Finch	o			
___ Common Redpoll				u
___• Pine Siskin	c	c	c	u
___ American Goldfinch	o	o	u	o
___• Red Crossbill	u	u	u	u
___ White-winged Crossbill				o
___ Rufous-sided Towhee	u	o	o	
___• Savannah Sparrow	u	u	u	
___ Grasshopper Sparrow	u	o	u	
___ Vesper Sparrow	u	c	u	
___ Lark Sparrow	o			
___ Dark-eyed Junco	c	c	c	c
___ Tree Sparrow				o
___• Chipping Sparrow	o	u	u	
___ Harris'Sparrow				u
___ White-crowned Sparrow	u	u	o	o
___ Fox Sparrow	o	o	o	
___• Song Sparrow	c	c	u	u
___ Snow Bunting				u

PLEASE NOTE:

We would appreciate your help if you observe birds that are listed as rare to the Swan River National Wildlife Refuge or if you notice unusual concentrations or activities of birds on the Refuge. Please report the folllowing information by letter or telephone to the Refuge Manager:

Your name, address _____

date, weather, exact location _____

species, number of birds _____

distinguishing features and/or _____

activities _____

Where to write for current regulations and information:

Refuge Manager
Northwest Montana Fish and Wildlife Center
780 Creston Hatchery Road
Kalispell, Montana 59901
406/755-4375

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

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