State of Alaska
Department of Fish and Game
Habitat and Restoration Division

Nomination for Waters Important to Anadromous Fish

Region: SOUTHCENTRAL ▼ USGS Quad: **Kenai C-3**

Anadromous Water Catalog Number of Waterway: **244-30-10010-2025-3040-0005**

Name of Waterway: Beaver Lake ☑ USGS Name ☐ Local Name

☑ Addition ☐ Deletion ☐ Correction ☐ Backup Information

For Office Use

Nomination #	01 179		
Revision Year:		Regional Supervisor	11/01/01 Date
Revision to:	Atlas ____ Catalog ____		7/13/01
	Both x	AWC Project Biologist	Date
Revision Code:	A-2		11/29/01
		Drafted	Date

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Present	Anadromous
Coho	9/21 - 23/1983		X		☑
Rainbow Trout	9/21 - 23/1983			X	☐
Longnose Sucker	9/21 - 23/1983			X	☐
					☐
					☐

IMPORTANT: Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments:

Add Beaver lake to AWC based on historic USFWS and ADF&G sampling, see attached report excerpts.

Name of Observer (please print): USFWS Kenai Fisheries Research Staff

Signature: _____ Date: 7/10/01

Address: USFWS Kenai Fishery Resource Office

P.O. Box 1670, Kenai, AK 99611

This certifies that in my best professional judgment and belief the above information is evidence that this waterbody should be included in or deleted from the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes per AS 16.05.870.

Signature of Area Biologist: _____

BEAVER LAKE

INTRODUCTION

A fishery survey of Beaver Lake was conducted from September 21-23, 1983. Additional water quality data were gathered on July 21, 1983. Table 1 summarizes Beaver Lake survey findings.

PHYSICAL FEATURES

Beaver Lake is tributary to the Kenai River via Beaver Creek. The lake is located in the west central section of the Kenai National Wildlife Refuge (NWR) at latitude 60° 39' and longitude 150° 58'. The lake and surrounding area were classified in the Moderate Land Use Management Category under Alternative "C" of the draft Kenai NWR Comprehensive Conservation Plan (USFWS 1983). Beaver Lake has a surface area of 425 acres, a volume of 1,970 acre feet, and is at an elevation of 132 feet. The lake is relatively shallow with a mean depth of 4.6 feet and a maximum depth of 14 feet (Table 1 and Figure 1).

The watershed includes approximately 3,000 acres of bogs, lowlands, and low hills rising to slightly over 200 feet in elevation. The exact watershed acreage is difficult to determine due to the flat terrain. Mixed stands of mature and immature paper birch, and white spruce surround the lake with black spruce in wet areas. All the surrounding terrestrial habitat, except for a mature forest stand on the east side, was burned in the 1969 fire.

The water regimen of the lake is maintained by springs, runoff, four small inlet streams, and Beaver Creek, the single outlet. Little or no flow was detected in the inlets at the time of survey. Beaver Creek appeared to be flowing about five cubic feet per second. Beaver Creek provides anadromous fish passage for salmon and spawning habitat for rainbow trout.

Marathon Oil Road provides access to within one mile of the lake. However, the last five miles of the road are closed to public vehicular traffic. The lake can also be reached by float plane. There are no public facilities on the lake.

FISH

Fish captured included rainbow trout, juvenile coho salmon, longnose sucker, and threespine stickleback (Table 2). Rainbow trout taken in gill nets had a moderately high catch per unit of effort (CPUE) of 0.76 fish per net hour, while juvenile coho salmon were 0.05. Longnose sucker were abundant at a CPUE of 1.69. Minnow traps took a moderately high CPUE of threespine stickleback at 2.66 fish per trap hour, as well as low numbers of coho salmon, rainbow trout, and longnose sucker. A total of eight gill nets and 20 minnow traps were used to measure fish abundance.

Figure 1.

BEAVER LAKE

(425 Acres)

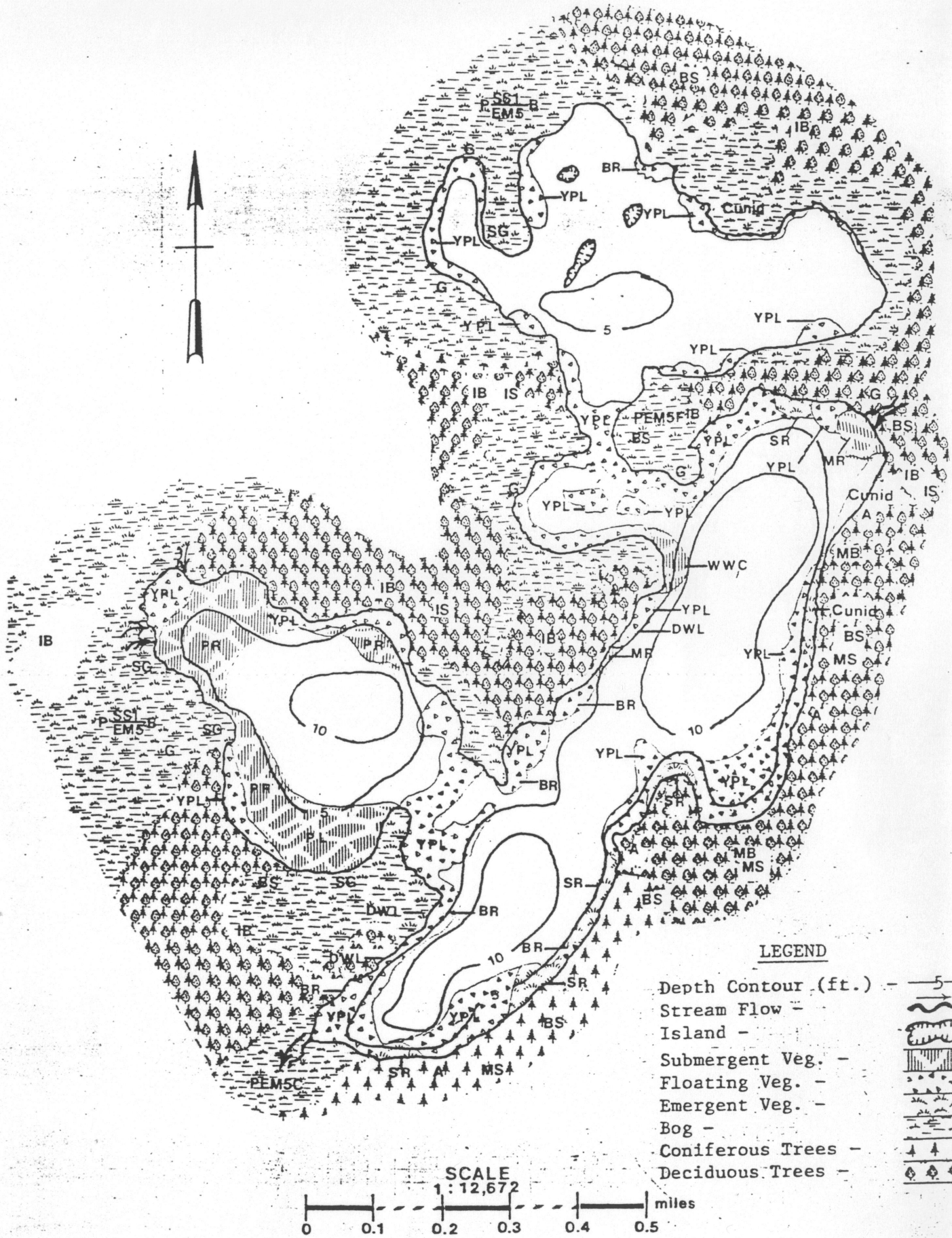


Table 2.

KENAI FISHERY RESOURCES STATION
ALASKA FISHERY RESOURCES PROGRAM
U.S. FISH AND WILDLIFE SERVICE

Summary Fish Catch and Effort Data

Water Body Beaver Lake Code No. _____ Survey Date 9/21-23/83

Gear	Average Fishing Time (hrs.)	Amount Gear (Sq.Ft.)	Mesh Size (In.)	Fish Species	Total Fish Number	Sex M-F-U	Fish CPUE 1000 sq.ft.hrs.	Fish CPUE Net Hour	Fish CPUE Trap Hour
8 Gill Nets	27	1280	1.0	Rainbow Trout	5	0-2-3	0.15	N/A	N/A
				Coho Salmon	9	0-0-9	0.26	N/A	N/A
				Longnose Sucker	2	0-0-2	0.06	N/A	N/A
		1280	2.0	Rainbow Trout	58	6-27-25	1.68	N/A	N/A
				Coho Salmon	1	0-0-1	0.03	N/A	N/A
				Longnose Sucker	39	0-0-39	1.13	N/A	N/A
		1280	2.5	Rainbow Trout	61	10-30-21	1.77	N/A	N/A
				Longnose Sucker	69	0-0-69	2.00	N/A	N/A
		1280	3.0	Rainbow Trout	37	7-24-6	1.07	N/A	N/A
				Longnose Sucker	109	0-0-109	3.15	N/A	N/A
		1280	4.0	Rainbow Trout	3	0-2-1	0.09	N/A	N/A
				Longnose Sucker	146	0-0-146	4.23	N/A	N/A
By Species	27	6400		Rainbow Trout	164	23-85-56	0.95	0.76	N/A
				Coho Salmon	10	0-0-10	0.06	0.05	N/A
				Longnose Sucker	365	0-0-365	2.11	1.69	N/A
Total Fish	27	6400		All Species	539	23-85-431	3.11	2.49	N/A
20 Minnow Traps	23	N/A	N/A	Rainbow Trout	8	0-0-8	N/A	N/A	0.02
				Coho Salmon	18	0-0-18	N/A	N/A	0.04
				Longnose Sucker	1	0-0-1	N/A	N/A	<0.01
				Threespine Stickleback	1222	0-0-1222	N/A	N/A	2.66
Total Fish	23	N/A	N/A	All Species	1249	0-0-1249	N/A	N/A	2.72

Rainbow trout captured in gill nets had a mean fork length of 12.0 inches (305 mm), while the mean fork length from minnow traps was 4.5 inches (115 mm). The fork length range for both gears was from 3.6 inches (92 mm) to 16.9 inches (430 mm). Trout weight averaged 0.8 pounds (363 g) from gill nets and 0.3 pounds (15.8 g) from minnow traps. Weight from both gears varied from 0.02 pounds (9.2 g) to 2.1 pounds (960 g). Condition factors for rainbow trout ranged from 0.51 to 1.93 with a mean of 1.18. Table 3 provides a breakdown for rainbow trout weight and condition by length class. Age structure of the rainbow trout varied from one to eight years. Average annual growth of the trout was 2.1 inches (55 mm). Table 4 shows age and growth of rainbow trout back calculated from scale samples.

Coho salmon captured in gill nets and minnow traps had a mean fork length of 4.6 inches (117 mm) with a range from 3.3 inches (84 mm) to 5.6 inches (143 mm). Their mean weight was 0.04 pounds (18.2 g) and varied from 0.02 pounds (6.9 g) to 0.07 pounds (29.7 g). Coho condition factors averaged 1.09 with a range of 0.86 to 1.23. A sample of 16 coho salmon contained both one and two year old fish. No length or weight data were taken on longnose sucker.

AQUATIC VEGETATION

Aquatic vegetation was abundant in shallow areas around the lake's periphery and in the southwest sub-basin. Water lily and pondweed were the dominant plant families. Other families included crowfoot, water milfoil, bur reed, and sedge. Approximately 28 percent of the lake was covered with aquatic plants. Table 5 lists aquatic species found with locations plotted in Figure 1.

WATER QUALITY

During July all water quality parameters measured were found to be within acceptable limits for fish. Lake water fertility was medium to high using a classification of Minnesota Lakes based on alkalinity levels (MacKenthun and Ingram 1967). Specific conductance at 25°C was 109 umhos, total alkalinity 49 mg/l, total hardness 51 mg/l, total phosphorus 36 ug/l, and Kjeldahl nitrogen 0.51 mg/l. During July dissolved oxygen (Table 6) was slightly supersaturated at the surface (9.5 mg/l) to about 80 percent saturated near the bottom (8.0 mg/l). The lake was not thermally stratified. Water color was dark yellow green with a Secchi disc visibility of 3.6 feet. The Morphoedaphic Index was 77.3 and Shoreline Development Factor 2.66. Additional water quality data are presented in Tables 1 and 7.

MANAGEMENT HISTORY

Beaver Lake was first surveyed by the Alaska Department of Fish and Game in 1967 (Logan 1967). They used three 125 foot x 6 foot experimental gill nets that were fished for 23 hours. A total of 96 rainbow trout, 134 longnose sucker, and 2 juvenile coho salmon were captured for respective CPUE's of 1.39, 1.97, and 0.03 fish per net hour. State biologists indicated the lake had an excellent rainbow trout sport fishery according to Don Johnson,

Table 3. FISH LENGTH, WEIGHT, AND CONDITION SUMMARY
Beaver Lake - 1983

FISH LENGTH BY MESH SIZE

Gear	Species	Mesh Size (in)	Sample No.	F. Length Mean (mm)	F. Length SD* (mm)	F. Length Range (mm)
8 Gill Nets	Rainbow Trout	1.0	3	275	43.3	225 - 300
		2.0	50	275	45.7	210 - 400
		2.5	56	312	36.4	240 - 430
		3.0	35	342	27.6	275 - 400
		4.0	3	285	68.7	210 - 345
20 Minnow Traps		0.125	7	115	14.1	92 - 130

FISH WEIGHT BY LENGTH CLASS

Gear	Species	Length Class (mm)	Sample No.	Weight Mean (g)	Weight SD (g)	Weight Range (g)
20 Minnow Traps	Rainbow Trout	51 - 100	2	9.45	0.35	9.2 - 9.7
8 Gill Nets		101 - 150	5	18.4	2.78	16.6 - 23.3
		201 - 250	22	144	42.4	100 - 280
		251 - 300	33	255	53.7	125 - 370
		301 - 350	36	418	79.8	255 - 645
		351 - 400	23	613	117	400 - 950
		401 - 450	1	960	-	960 - 960

FISH CONDITION (K) BY LENGTH CLASS

Gear	Species	Length Class (mm)	Sample No.	Condition Mean	Condition SD	Condition Range
20 Minnow Traps	Rainbow Trout	51 - 100	2	1.10	0.21	0.95 - 1.25
8 Gill Nets		101 - 150	5	0.99	0.09	0.90 - 1.11
		201 - 250	22	1.19	0.26	0.94 - 1.93
		251 - 300	33	1.15	0.16	0.51 - 1.45
		301 - 350	36	1.19	0.13	0.82 - 1.50
		351 - 400	23	1.23	0.21	0.89 - 1.88
		401 - 450	1	1.21	-	-
Totals		All	122	1.18	0.19	0.51 - 1.93

*Standard Deviation

a Kenai charter pilot, who was operating a fly-in tent camp on the lake. The lake was again sampled on June 1-2, 1978, by the U.S. Fish and Wildlife Service (Crateau, Wooley, and Oliver 1978). One experimental gill net, fished for 19 hours, captured 58 longnose sucker and 17 rainbow trout. The suckers had a mean fork length of 16.1 inches (410 mm) with a range of 10.4 inches (263 mm) to 19.5 inches (495 mm). The mean weight of the suckers was 1.5 pounds (700 g) and ranged from 0.4 pounds (185 g) to 2.8 pounds (1,275 g). The mean condition factor for the 17 rainbow trout was 0.91. CPUE for rainbow trout was 0.89 fish per net hour and 3.05 for longnose sucker. No other fishery surveys are known to have been conducted on the lake.

WILDLIFE

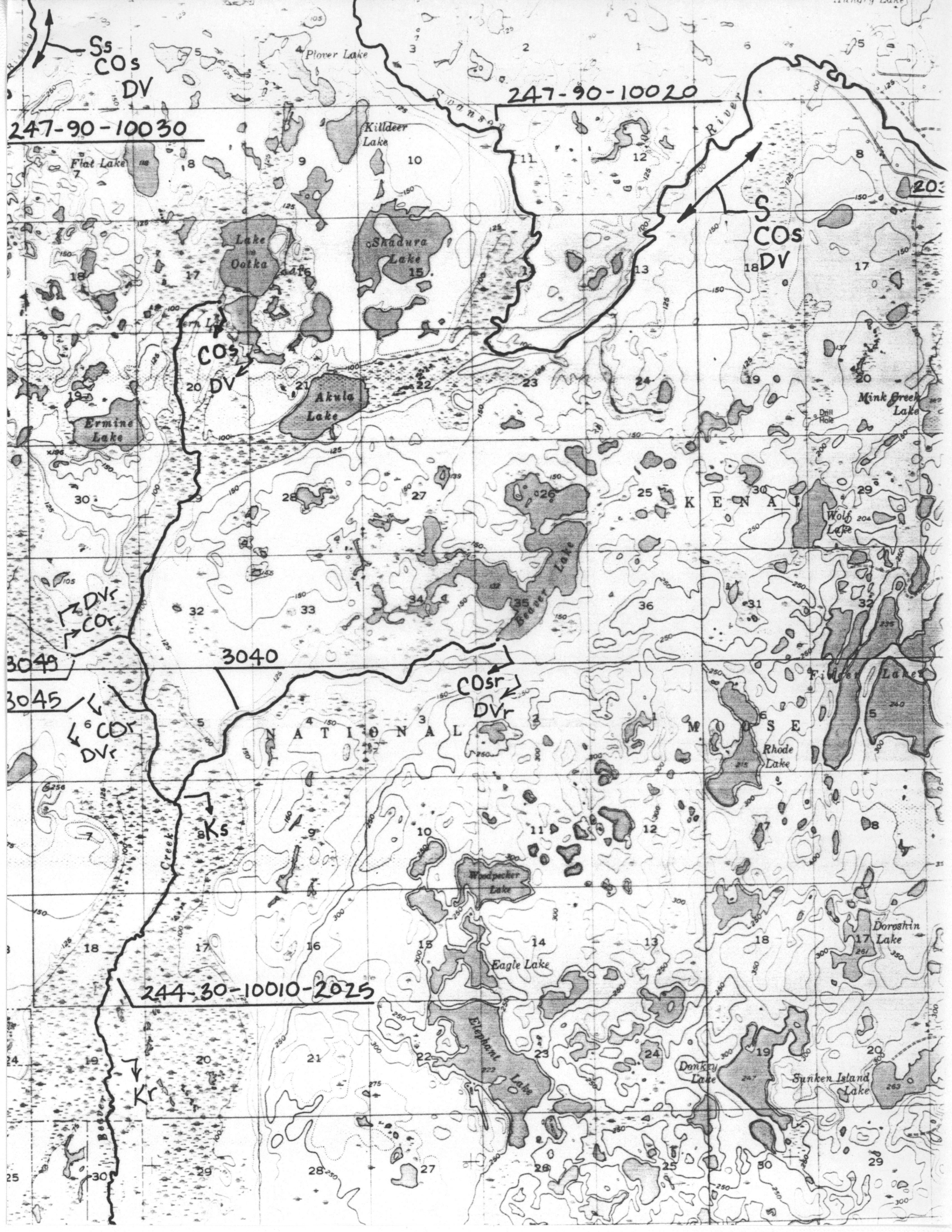
A total of five trumpeter swans were seen on the lake. There was also one bald eagle. Three additional species of waterfowl, two species of passerines, and one gull were also observed. We located one trumpeter swan nesting site. The number and variety of birds we observed may have been lower than normal due to high winds and rain. Three active and one inactive beaver lodges were located on the lake along with moose and muskrat sign. All wildlife species recorded are listed in Table 8.

RECREATIONAL USE

The lake is believed to receive only light fishing and hunting pressure due to difficult access. No anglers were present during our survey. A hunting camp with a cleared area, "A" frame, table, and racks, was located at the southeast end of the lake. The remainder of the lake shows little sign of human use.

FISHERY RESOURCE SUMMARY

Our fishery survey indicated the lake had a moderately high abundance of rainbow trout (CPUE 0.76). Recruitment of younger rainbow trout age classes is occurring. Beaver Creek is believed to provide good rainbow trout spawning habitat. Evidence of rainbow trout spawning has been found in Beaver Creek (Elliot and Finn 1983). The creek also provides anadromous fish passage to the Kenai River. Juvenile coho salmon utilize the lake as a nursery area. Other fish species present include a high abundance of longnose sucker and moderately high abundance of threespine stickleback. Our survey results supported findings of previous fish surveys. Lake water fertility is moderate to high. Other water quality parameters were within acceptable fish tolerance limits. Current sport fishing pressure is believed to be low. Beaver Lake is considered to ~~have the potential~~ to support a moderately high yield rainbow trout sport fishery.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Plover Lake
247-90-10020
Killdeer Lake
Flat Lake
Lake Ootka
Shadura Lake
Swanson River
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Akula Lake
Ermine Lake
Mink Creek Lake
Drill Hole
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Eagle Lake
Doroshin Lake
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Elephant Lake
Donkey Lake
Sunken Island Lake
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Beaver