Observations of Bald Eagles Along the Flathead River during the 1983-1984 Kokanee Spawning Periods

Open File Report

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This report summarizes fall observations of eagles made along the Flathead River below the South Fork during 1983 and 1984. The eagles gather along the river to feed on spawning kokanee salmon, which have migrated upstream from Flathead Lake. The eagle counts were made incidental to kokanee spawning surveys by personnel of the Flathead River System kokanee study (funded by the Bonneville Power Administration). The observers were John Fraley, Mark Gaub and Jon Cavigli.

Background

Kokanee salmon were introduced into Flathead Lake in 1916. By the mid 1930's, both lakeshore and inlet river system fall spawning runs had developed (Alvord 1975). Kokanee were first reported in the McDonald Creek drainage in Glacier National Park in 1934 (U.S. Fish and Wildlife Service 1968), and spawning runs increased over the next four decades. A strong kokanee run developed in the Flathead River below the South Fork after the completion of Hungry Horse Dam in 1953. During the 1960's and 1970's, the main stem Flathead River and McDonald Creek were the major kokanee spawning areas in the river system. The number of spawners in the Flathead River below the South Fork was estimated at 330,000 in 1975, a year considered representative of the period (Fraley and Graham 1982). McDonald Creek also supported a strong run of kokanee during the 1960's and 1970's. Although no good estimates are available for the number of kokanee spawning in McDonald Creek during the period, Region 1 fisheries biologists feel that it probably ranged from 75,000 - 150,000 (D.A. Hanzel pers. comm.). The spawning run in the Flathead River declined during the late 1970's, and has averaged only 10,000 fish over the past six years (Fraley and McMullin 1983, Fraley 1984). Because of improved flows below Hungry Horse Dam, the population is expected to recover by the mid to late 1990's. The number of kokanee spawners in McDonald Creek has remained relatively stable over the past six years, averaging 62,000. The McDonald Creek spawning run has comprised 74% of the total observed kokanee spawning escapement in the Flathead River-Lake System over the past six years.

Bald eagles have gathered along McDonald Creek in the fall to feed on spawning kokanee since 1939 (McClelland 1973). Maximum counts of eagles along the creek have generally increased since 1950. Over the past six years, a strong relationship has existed between maximum eagle counts and peak kokanee counts along McDonald Creek (Table 1). McClelland (1984) has documented the relationship between eagles and the salmon food supply.

TABLE 1.Peak counts of eagles and kokanee for McDonald Creek, 1979-1984.

Year	Peak eagle count	Peak salmon count
1984	571	86,500
1983	251	34,000
1982	306	31,000
1981	639	104,000
1980	377	50,000
1979	516	65,000

Eagles also congregate along the main Flathead River below the South Fork to feed on spawning kokanee. Timing of this eagle congregation is slightly later than along McDonald Creek, due to the later timing of the river spawning run. No records of the Flathead River eagle concentration were kept before 1983. Observations of a smaller concentration of eagles along the South Fork of the Flathead were made in 1982 and 1983 (US. Fish and Wildlife Service 1984).

Methods

Eagles were counted from a moving jet boat on the Flathead River below the South Fork and classified as juvenile, adult or unidentified. Eagles were perched in conifers or cottonwoods above salmon spawning areas. As the jet boat approached, the birds either remained stationary or flew downstream of the boat. At times, observations were made from a stationary point or from the air. Soaring eagles were also counted. Observations on the Flathead River indicate that eagles perched in conifers are difficult to count from a low-flying aircraft because of speed of the pass, branch cover and distance from the birds.

McClelland (1984) surveyed eagles along McDonald Creek and the Middle Fork of the Flathead from a moving canoe. The U.S. Fish and Wildlife Service counts eagles from the ground in a November-February concentration along the Missouri River on the Carl Mundt National Wildlife Refuge in South Dakota.(Dave Hiley pers. comm.) The US Fish and Wildlife Service found that ground counts are more effective than aerial counts for eagles along the South Fork of the Flathead River (Larry Lockard pers. comm.).

Results and Discussion

A summary of all fall eagle observations made on the Flathead River during 1983 and 1984 is presented in Appendix A. Area descriptions and kokanee redd counts are given for comparison purposes in Appendix B.

Two complete eagle counts along the river were made by jet boat from Kalispell to the mouth of the South Fork during the peak concentration period for both years (Figures 1 and 2). During 1983, 90 eagles were counted from November 9-14. About 70% of the eagles were observed above Columbia Falls on November 9. The eagle concentration was associated with the kokanee salmon run, as 80% of the kokanee spawning was in the same 8 km section.

A total of 182 eagles was counted from December 7-11, 1984. About 49% of the eagles were observed above Columbia Falls on December 7. Again, the eagles appeared to be distributed in relation to kokanee spawning, as 41% of the total kokanee spawning took place in the same portion of the river (Figure 2). The greater total number of birds counted in 1984 may have been due to the generally larger numbers of salmon in the system as compared to 1983.

Timing of the eagle concentration along the river appeared to be affected by the timing of kokanee spawning. Kokanee spawned about one month later in 1984 than in 1983, and the peak eagle concentration also occurred one month later in 1984. The larger and later kokanee spawning run in McDonald Creek in 1984 may also have kept eagles in the area for a longer period of time. The peak eagle concentration along McDonald Creek also occurred about one month later in 1984 than in 1983 (Riley McClelland, pers. comm). Observations of birds marked along McDonald Creek and later seen along the Flathead River have indicated movement between the two areas.

Systematic counts of eagles in the fall concentration along the Flathead River similar to those conducted on McDonald Creek would be valuable in determining the relationships and interchange between the two concentrations. Regular counts could also be used to evaluate the effects of the expected recovery of the Flathead River kokanee population on the two eagle concentrations.

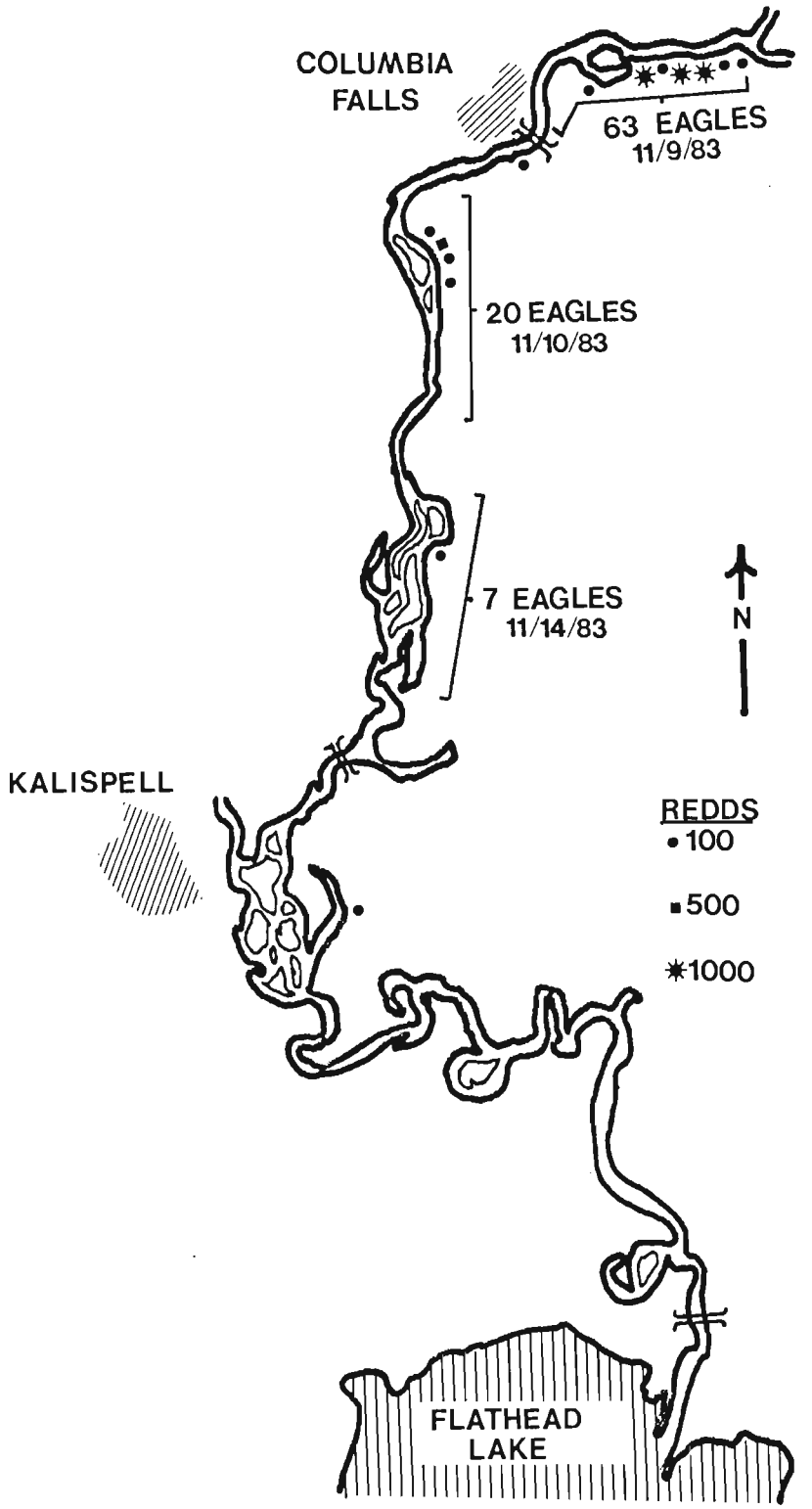

Figure 1. Counts of bald eagles and kokanee salmon redds along the Flathead River in 1983.

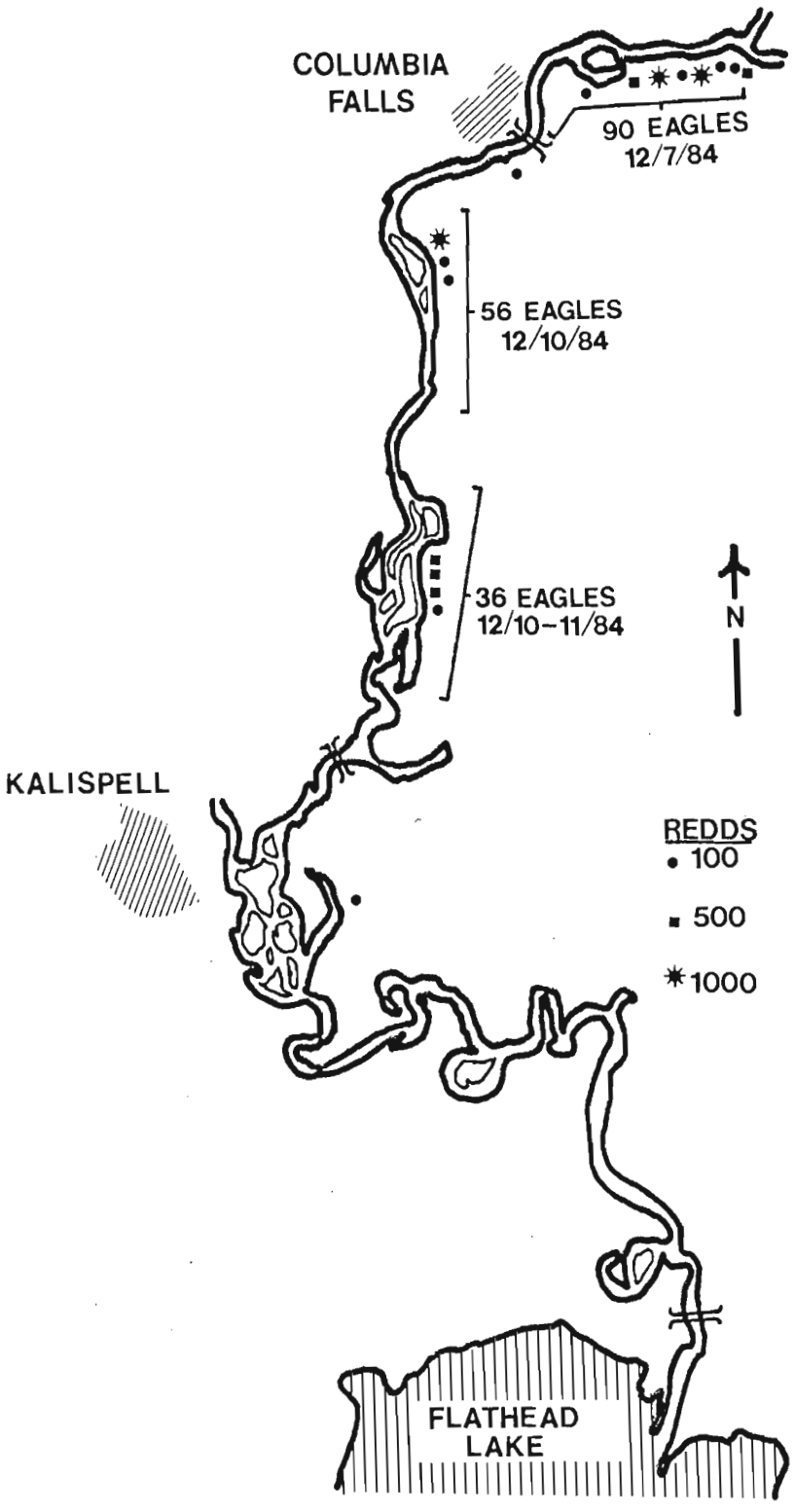

Figure 2. Counts of bald eagles and kokanee salmon redds along the Flathead River in 1984

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Appendix A

Summary of Observations of Bald Eagles along the Flathead River below the South Fork

TABLE 1. Fall observations of eagles on the Flathead River below the South Fork during 1983.

				Number of Eagles by Age Class			
	Date	River KM	Spawning Area No.	Adult	Subadult	Unid	Total
Sept.	3	5	sport. br.	1	0	0	1
	15	37	1	1	0	0	1
	25	68.5	38	1	0	0	1
	25	33	Foy's bend	1	0	0	1
	27	71	41	1	0	0	1
Oct.	12	37	1	1	0	0	1
	12	54	24-25	1	0	0	1
	17	69.5	39	0	1	0	1
	18	69.5	39	0	1	0	1
	18	68.5	38	0	2	0	2
	19	69.5	39	1	2	0	3
	20	69.5	39	1	1	0	2
Nov.	4	66-69	32-37	9	8	0	17
	4	68.5	38	1	2	0	3
	4	69.5	39	2	1	0	3
	4	71	41	0	1	3	4
	4	73.5	42	0	0	5	5
	8	71	41	1	1	0	2
	8	69-69.5	39	13	4	8	25
	9	66	32	0	0	5	5
	9	66.2	32	3	1	0	4
	9	67.5	35	10	2	0	12
	9	68.5	36	10	18	0	28
	9	69.5	39	12	9	1	22
	9	71	41	1	0	0	1
	10	66	32	3	1	0	4
	10	63	Vets home	1	3	3	7
	10	63	29	4	0	0	4
	10	60.5	27	0	0	2	2
	10	52	20	2	0	1	3
	14	44-47	4-11	2	0	0	2
	14	48-52	12-19	4	0	0	4
	14	46.5	10	1	0	0	1
	29	73.5	42	0	0	2	2
	29	71	41	2	0	0	2
	29	69.5	39	8	6	2	16
	29	68.5-69.5	39	15	1	3	19
	29	66.2	33	1	0	0	1
	30	66	32	2	0	0	2
	30	63.7	Vets home	0	1	0	1
	30	62.1	Vets home	2	1	0	3
	30	60.3	25	2	0	0	2
Dec.	1	45-47	8-12	3	0	1	4
	1	43.9	7	1	0	0	1
	8	41.4	2	3	1	0	4

Table 2. Fall observations of Eagles on the Flathead River below the South fork during 1984.

				Number of Eagles by Age Class			
	Date	River KM	Spawning Area No.	Adult	Subadult	Unid	Total
Sept.	8	65	32	1	0	0	1
	8	42.2	4	1	0	0	1
	18	50.5	27	1	0	0	1
	24	48.3	13	1	0	0	1
Oct.	1	69.5	39	1	0	0	1
	4	66	33	1	0	0	1
	9	68.5	38	1	1	0	2
	23	46.7-55.5	10-20	6	1	0	7
	23	39	64.5	1	0	0	1
	31	41.4	2	1	0	0	1
	31	48.3-55.5	13-24	3	0	0	3
Nov.	2	41.9	2	3	0	0	3
	6	46.7	10	1	0	0	1
	6	49	15	1	0	0	1
	6	55.5	24	1	0	0	1
	7	60.2	26	3	0	0	3
	7	61	30	2	0	0	2
	7	61.5-65	31-32	3	0	0	3
	8	66	33	1	0	0	1
	8	68.5	38	1	0	0	1
	8	69.5	39	3	0	0	3
	14	69.5	39	1	0	0	1
	16	69.5	39	3	0	0	3
	17	69.5	39	1	0	0	1
Dec.	3	46.7	10	1	1	0	2
	3	52.2-52.4	21-22	1	0	0	1
	3	55.5	24	3	0	0	3
	3	68.5	38	0	0	1	1
	3	69.5	39	6	1	0	7
	7	65.8	32-42	88	2	0	90
	10	63.7	32	1	0	0	1 *orange
	10	61.5	31	30	3	0	33 wing marker
	10	60.3	27	1	0	0	1
	10	60.7	28	6	0	0	6
	10	59.8	25	5	0	0	5
	10	55.5-59.8	24-25	9	2	0	11
	10	54.4	22	1	0	0	1
	10	52.4	21	3	0	0	3
	10	50.5	18	10	0	0	10
	10	49	15	6	0	0	6
	11	50	17	14	1	0	15
	11	4831	13	1	0	0	1
Jan.	8	37.0	1	0	1	0	1

Appendix B

Kokanee Redd Counts at spawning areas

in the Flathead River below the South Fork

TABLE 1. Numbers of kokanee redds counted during late November 1983 and 1984 in spawning areas utilized by kokanee salmon on the Flathead River below the South Fork. Spawning area descriptions are given in Fraley and Graham (1982).

Area Number	River km	1983	1984
1	37.0	278	155
1	37.0	0	0
2	41.42	0	16
3	42.0	0	0
4	42.2	0	0
5	42.5	0	0
6	43.4	0	0
7	44.3	0	0
8	45.0	0	0
9	45.5	7	0
10	46.7	19	476
11	47.9	0	350
12	48.0	0	0
13	48.3	0	71
14	48.8	0	0
15	49.0	0	34
16	49.4	0	0
17	50.0	0	550
18	15.5	2	0
19	52.0	6	0
20	52.2	130	38
21	52.4	24	27
22	54.4	0	69
23	55.3	0	38
24	55.5	0	0
25	59.8	124	22
26	60.2	0	40
26A	0.0	0	33
27	60.3	368	115
28	60.7	60	90
29	60.8	197	0
30	61.0	103	99
31	61.5	25	800
32	65.0	199	137
32A	65.5	10	0
33	66.0	36	0
34	66.5	123	115
35	67.6	25	60
36	68.5	0	0
37	67.7	1302	45
38	68.5	260	890
39A	69.0	30	19
39B	69.4	108	76
39	69.5	1852	1123
39C	70.1	742	240
40	70.6	231	2
41	70.9	8	0
41A	72.0	0	260
42	73.7	222	0
42A	73.7	192	443
TOTAL		6683	7433