

## Fall Raptor Concentration on Henrys Lake Flats

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In the early 1970's we became aware of raptor concentrations of primarily *Buteo* spp. on Henrys Lake Flats in late summer and early fall. A concentration of large numbers of raptors on a high mountain meadow intrigued us, and from 1974 to 1983 we conducted annual roadside surveys to monitor raptor abundance and gain insight into why they were concentrating in this area.

Henrys Lake Flats is located between 1,950 and 2,000 m in

elevation in Fremont County in the northeast corner of Idaho. The flats extend from 1 to 8 km from Henrys Lake and are characterized by large, wet meadows and gently rolling plain dominated by big sagebrush (*Artemisia tridentata*). Most of this land is moderately grazed by cattle with at least a short grass/herb cover over practically all the land during the period of our surveys. The flats are surrounded by coniferous stands of primarily lodgepole

Table 1. Total raptor sightings on a 32 km automobile transect around Henrys Lake, Idaho, for the period 1974-1983. All transects conducted between 28 August and 4 September of each year.

SPECIES	YEAR										
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	MEAN
Red-tailed Hawk ( <i>Buteo jamaicensis</i> )	12	10	6	14	28	32	114	135	136	39	52.6
Ferruginous Hawk ( <i>Buteo regalis</i> )	46	28	16	7	16	48	67	21	34	31	31.4
Swainson's Hawk ( <i>Buteo swainsoni</i> )	11	12	3	3	4	15	34	17	19	14	13.2
Unidentified Buteo		2				3		4	1	9	1.9
Sub-total	69	52	25	24	48	98	215	177	190	93	99.1
Northern Harrier ( <i>Circus cyaneus</i> )	11	11	5	9	3	2	6	2	4	5	5.8
Sharp-shinned Hawk ( <i>Accipiter striatus</i> )	2	2	5	2	2		1			1	1.5
Cooper's Hawk ( <i>Accipiter cooperii</i> )				2			1		1		0.4
Goshawk ( <i>Accipiter gentilis</i> )			2			2					0.4
Osprey ( <i>Pandion haliaetus</i> )		5	2	2	2					8	1.2
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )				1	1	3	2	1	2	2	1.2
Golden Eagle ( <i>Aquila chrysaetos</i> )		1	2		1		1		1		0.6
American Kestrel ( <i>Falco sparverius</i> )	33	12	8	9	5	9	5	4		9	9.4
Prairie Falcon ( <i>Falco mexicanus</i> )	2		2			3	4	3		1	1.5
Total	119	83	49	51	62	115	235	187	198	112	121.1

pine (*Pinus contorta*) extending down from surrounding mountains.

We drove a 32 km automobile transect route around Henrys Lake once annually in the last few days of August or first week of September. Heading north, the route started in Section 24, Range (R) 43 East (E), Township (T) 14 North (N) on a secondary road which parallels U.S. Highway 20/191. We detoured approx. 1.5 km onto the road to Henrys Lake State Park, where we parked and walked about 100 m north to a bluff and surveyed the surrounding area with a 30 X spotting scope. We returned to U.S. Highway 20/191 and continued north until turning west on U.S. Highway 287. We traveled on U.S. Highway 287 until turning south on a gravel road in Section 32, R 42 E, T 13 N, where we continued around the lake and reunited with U.S. Highway 20/191. The route traveled was mainly through open meadow or sage plain with the exception of the last few km before rejoining U.S. Highway 20/191. Using USGS quadrate maps, we estimated surveying about 68 km<sup>2</sup> of open country.

Surveys were conducted on calm, clear mornings and were generally completed before 1030 H. At least 2 competent observers conducted each survey. The transect route was traveled at speeds < 35 kph, and frequent stops were made at good vantage points or when raptors were sighted. Traffic was minimal on the route, except sometimes U.S. Highway 20/191 had moderate traffic.

An average of 121.1 raptors/yr were sighted for the 10-yr period (Table 1), of which 99.1 (83%) were buteos, resulting in 4 raptors sighted/km traveled. Sightings in 1974-75 were near the 10-yr average, but sightings in 1976-77 were low. Buteos were particularly low in 1976-77. A severe drought in 1976-77 resulted in a reduction in raptor productivity in the Birds of Prey Natural Area, near Boise, Idaho (Snake River Birds of Prey Environmental Statement, 1980, B.L.M., Boise, pp. 2-11), which corresponds with an ebb in our observations. Perhaps the build-up in subsequent years is a reflection of raptor recovery from the 1976-77 drought.

The Red-tailed Hawk (*Buteo jamaicensis*) was the most common raptor sighted, averaging 53 birds/survey (Table 1) with a range of 6 - 136 birds. Such a large range for sightings could reflect annual productivity in the region, since > 90% of red-tail sightings were of birds in immature plumage. Adult red-tail sightings were confined to small meadows and clear-cuts surrounding the main flats. Adults may have limited themselves to peripheral areas to avoid harassment from immatures who often congregated around kills. Once we observed up to 11 immature red-tails fighting over a single prey.

The Ferruginous Hawk (*Buteo regalis*) was the next most frequently sighted raptor, averaging 31.4 birds/survey (Table 1) with a range of 7 - 67. Most Ferruginous Hawks sighted were also in immature plumage. Except for 2 birds perched on the edge of a clear-cut in 1983, all Ferruginous Hawks were sighted on the main flats. The observation bluff was a particularly good concentration spot, with less vegetation, allowing excellent views from ground level.

Ferruginous Hawks have been known to move to Henrys Lake Flats from the Raft River Valley along the Utah-Idaho border, about 250 km to the southeast (Thurrow et al. 1980. Raptor Ecology of Raft River Valley, Idaho, E.G. and G., Inc., Idaho Falls, Idaho, and pers. obs.). In late summer food availability becomes limited in Raft River Valley since Black-tailed Jackrabbits (*Lepus californicus*) become less diurnal to avoid heat (Thurrow et al. 1980). The Ferruginous Hawks apparently respond by drifting on pre-

vailing wind currents, which move primarily towards the Henrys Lake area.

The Swainson's Hawk (*Buteo swainsoni*) sightings averaged 13.2 birds/survey for the 10-yr period (Table 1) with a peak of 34 in 1980. Unidentified buteos and 9 other diurnal raptors sighted accounted for an average of 23.9 more sightings/survey.

The heavy concentration of raptors at Henrys Lake Flats is probably due to the abundance of Richardson's Ground Squirrels (*Spermophilus richardsoni*). Ground squirrels at lower elevations are known to estivate in late summer and fall, when hot, dry weather eliminates or drastically reduces succulent vegetation (Ingles, L.G. 1965. Mammals of the Pacific States. Stanford University Press, California). The high elevation of Henrys Lake Flats keeps vegetation green, and the ground squirrels are active and available as prey. There may be a general tendency for raptors to move up-slope as ground squirrels estivate and rabbits become more nocturnal. We have observed similar concentrations of buteos in early fall from 2,000 to 3,000 m elevation on Steens Mountain in south-east Oregon, where Belding's Ground Squirrels (*Spermophilus beldingi*) were still active. In addition to an abundant food supply, the Henrys Lake area lies just west of the Continental Divide and may act as a corridor for migrating birds in general (Larrison, E. 1981. Birds of the Pacific Northwest: Washington, Oregon, Idaho and British Columbia. University Press of Idaho, Moscow).

Our automobile surveys indicate that high mountain meadows are important late summer concentration areas for buteos, especially those in immature plumage. The Henrys Lake Flats and other high meadows of the intermountain west have become increasingly popular recreation areas. Recreation and other forms of land use may affect high meadow ground squirrel populations, which in turn may affect raptor concentrations in those areas.

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