

**Completion Report
2019 Hebgen and Earthquake Lakes Bald Eagle Nest and
Productivity Monitoring**

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Background

Condition 12 of Appendix B of the FERC Order Issuing New License (issued September 27, 2000) required the permit holder to file a comprehensive bald eagle habitat protection and enhancement plan that included monitoring of bald eagles throughout the term of the license. Components of the plan were to include (but not be limited to) annual surveys to include incubation and activity/occupation associated with existing nest territories, productivity, distribution of nesting pairs, and annual counts of breeding, wintering, and migrating eagles. In addition, under Article 421 of the Updated Five Year (2018 thru 2022) Madison and Missouri River Wildlife and Terrestrial Habitat Plan per Project 2188 License Articles 411, 418, 421, 423, and 424, Northwestern Energy (NWE) committed to continuing to support monitoring of nesting and migrant bald eagles in cooperation with state and federal agencies. If effects become present, NWE committed to focusing attention on these threats through adaptive management.

The bald eagle population around Hebgen Lake and Quake Lake is unique to the Gallatin National Forest; it represents the only breeding population of eagles on the Forest. Local residents and recreationists alike value this population and are concerned over its health and persistence. The long term dataset recording occupancy and productivity of these eagles is invaluable to ongoing management and education efforts regarding bald eagles and their habitat. Baseline monitoring data is the foundation for determining trends and informing management activities in this area. Without baseline data, it would be impossible to evaluate the effects of human activities on wildlife and make informed decisions regarding conservation of the species.

Objective

Monitoring efforts would be focused on two specific objectives: 1) determine productivity and distribution of bald eagle breeding territories on Hebgen Lake, Earthquake Lake, and the Madison River between the lakes; 2) search for new bald eagle territories.

Methods

Monitor Known Nests

In 2019, all known nests in the project area (Hebgen and Earthquake Lakes and the Madison River between the two lakes) were monitored for bald eagle breeding activity.

New Nest Searches

Efforts to locate new nest territories were focused on areas of suspected eagle nesting activity, as determined by observation of adult eagles or reports from the public. Ground observations of bald eagles were performed with a spotting scope and binoculars, and their travels were followed to potential nest areas. A spotting scope and binoculars were also used to conduct searches of suitable habitat for nest structures.

Productivity

Activity at nests was observed from remote vantage points so as to avoid affecting eagle behavior by observer presence.

Each nest was monitored during the four stages of the nesting period, unless it was determined that a nest was not occupied or that breeding failed at some point during the cycle:

1. Courtship and Occupancy (2/1 - 3/31)
2. Activity (4/1 – 4/30)
3. Nestling (5/1 – 5/31)
4. Fledgling (6/1 – 7/15)

To quantify productivity, the number of hatchlings and fledglings was recorded during each observation from the first sign of being hatched to fledging.

Results

Because bald eagle nest locations can be sensitive, no map was prepared for this document. All of the territories monitored for this project are located around Hebgen and Earthquake Lakes or along the stretch of the Madison River between the lakes.

Bald eagle monitoring began on Hebgen Lake in 1977, when the Horse Butte nest was discovered. Since that time, the area has been monitored for bald eagle activity on annual basis. New territories have been discovered over time, and we know of approximately 14 total territories, with 13 that currently have usable nests (i.e., nests that have not fallen or been blown out of trees).

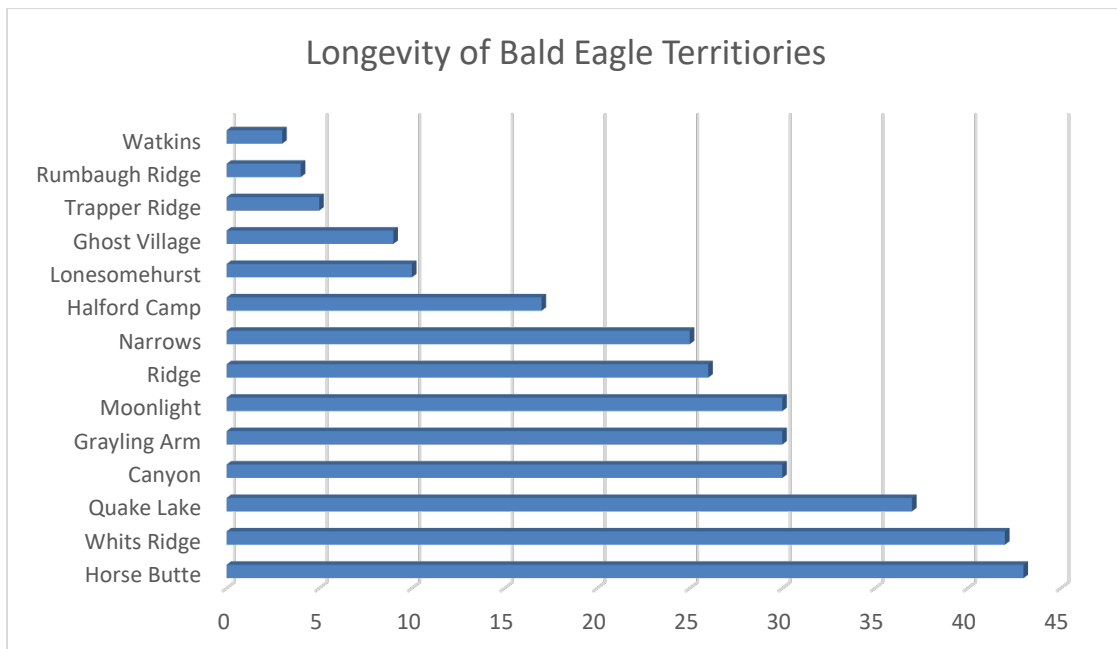


Figure 1 Time span that each territory has been present

Figure 1 depicts the number of years that each territory has been considered “present”. For a territory to be considered “present”, it must contain at least one usable nest. The Grayling Arm no longer has a nest and is, therefore, no longer considered present. The Horse Butte territory has the longest history in this study area, with the nest having been known to exist since 1977 (43 years). No new nests were discovered during the 2019 field season.

Table 1 lists each territory and associated nests monitored in 2019 and their final status for the year.

Table 1 Territory and Nest Status for 2018

Territory	Status - 2019	Nest	Year Discovered	Status
Canyon	Unoccupied	Canyon	1990	No nesting attempt
Ghost Village	Unoccupied	Ghost Village	2011	Nest fell out of tree
		Talbot	2014	Unoccupied
Halford Camp	2 Fledged	Halford Camp	2003	Nest fell out of tree
		Beaver Creek Delta	2014	Occupied, 2 Fledged
Horse Butte	Occupied	Horse Butte – 01	1977	Nest tree fell down
		Horse Butte – 02	2010	Failed
Lonesomehurst	Unoccupied	Lonesomehurst	2010	No nesting attempt
Moonlight	Unoccupied	Moonlight – 01	1990	No longer exists
		Moonlight – 02	2009	No nesting attempt
Narrows	Occupied	Narrows – 01	1995	No longer exists
		Narrows – 02	2012	Failed
Quake Lake	Unoccupied	Quake Lake – 01	1983	No nesting attempt
Ridge	Occupied	Ridge – 01	1994	Failed
Rumbaugh Ridge	Occupied	Rumbaugh Ridge – 01	2014	Failed
Trapper Ridge	Occupied	Trapper Ridge – 01	2014	Failed
Whits Ridge	Unoccupied	Whits Ridge	1978	Nest fell out of tree
		Parade Rest	2014	Unoccupied; nest partially collapsed
Watkins	1 Fledged	Watkins	2017	1 Fledged

For the rest of this report, data for all monitored territories for all years will be presented.

Table 2 summarizes annual productivity data for each territory, and these data are subsequently depicted in the Figures below.

Table 2 Occupancy and productivity of territories over time

Territory	# Years Present	# Years Occupied	% of Years Occupied	# Years Successful	% Success of Years Occupied	% Success of Years Present	Total # of Chicks Fledged	# Chicks Fledged/Year of Years Occupied	# Chicks Fledged/Year of Years Present
Canyon	30	22	73%	13	59%	43%	23	1.05	0.77
Ghost Village	9	2	22%	0	0%	0%	0	0.00	0.00
Halford Camp	17	12	71%	6	50%	35%	12	1.00	0.71
Horse Butte	43	42	98%	18	43%	42%	25	0.60	0.58
Lonesomehurst	10	8	80%	7	88%	70%	9	1.13	0.90
Moonlight	30	25	83%	22	88%	73%	35	1.40	1.17
Narrows	25	25	100%	15	60%	60%	24	0.96	0.96
Quake Lake	37	34	92%	23	68%	62%	43	1.26	1.16
Ridge	26	24	92%	13	54%	50%	19	0.79	0.73
Rumbaugh Ridge	4	2	50%	1	50%	25%	1	0.50	0.25
Trapper Ridge	5	5	100%	2	40%	40%	3	0.60	0.60
Whits Ridge	16	11	69%	6	55%	38%	12	1.09	0.75
Watkins	3	3	100%	3	100%	100%	3	1.00	1.00
Average	19.57	15.79	0.76	9.43	57%	47%	15.21	0.86	0.70

Figure 2 shows the number of occupied territories per year since 1977. Overall, this has been an increasing trend, with 7 territories occupied in 2019.

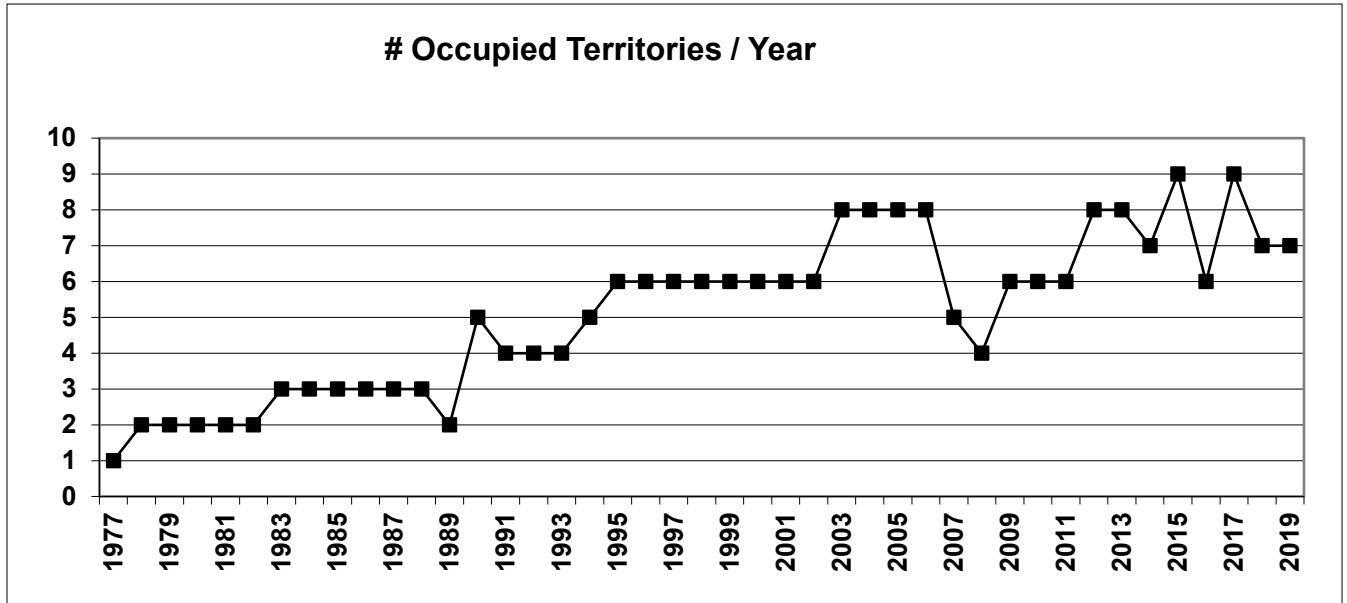


Figure 2 Number of occupied territories per year in the Hebgen Basin

Figure 3 shows the total number of chicks fledged per year since 1977. The total number of chicks fledged in the basin has had a slight upward trend over time. This trend has begun to level off in recent years, indicating that the Basin may be reaching some carrying capacity for what it is able to produce. Three chicks were fledged in 2019 in the Basin, which is the lowest level in the last ten years.

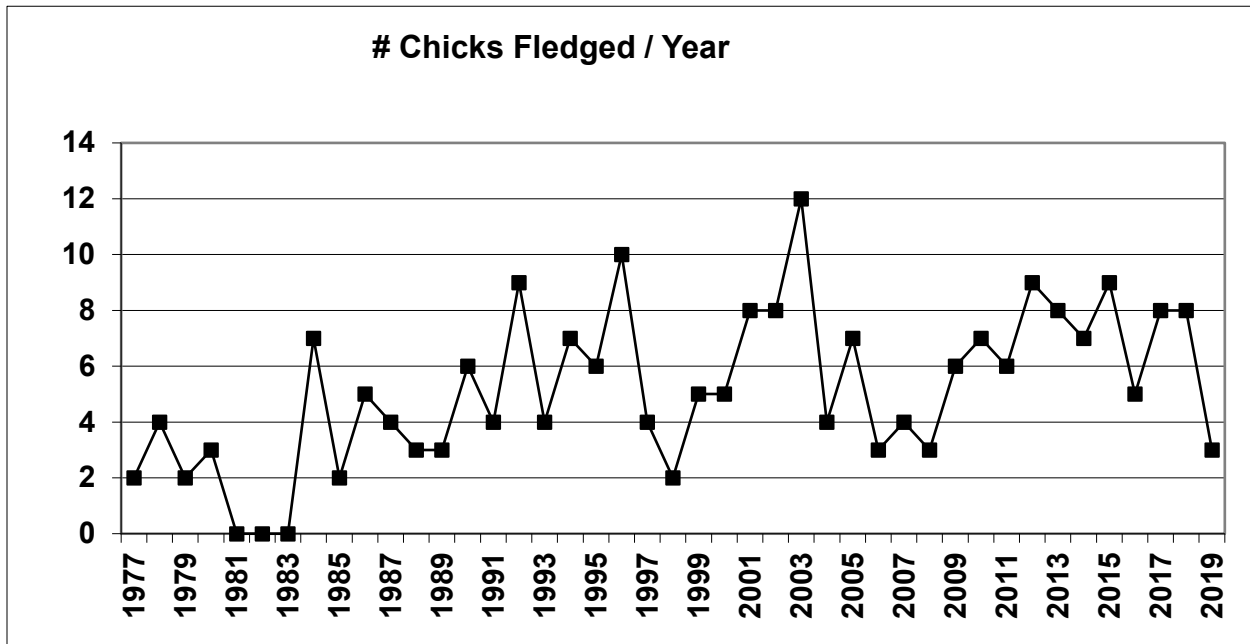


Figure 3 Total number of chicks fledged per year at all territories in the Hebgen Basin

Figure 4 shows the number of chicks fledged per occupied nest over time, a trend that has been slightly decreasing. This also suggests that the basin has the capacity to support a given number of chicks, despite an increasing number of breeding pairs. The relatively high number of occupied nests early in the breeding season and the low number of fledglings produced resulted in the low level observed in 2019.

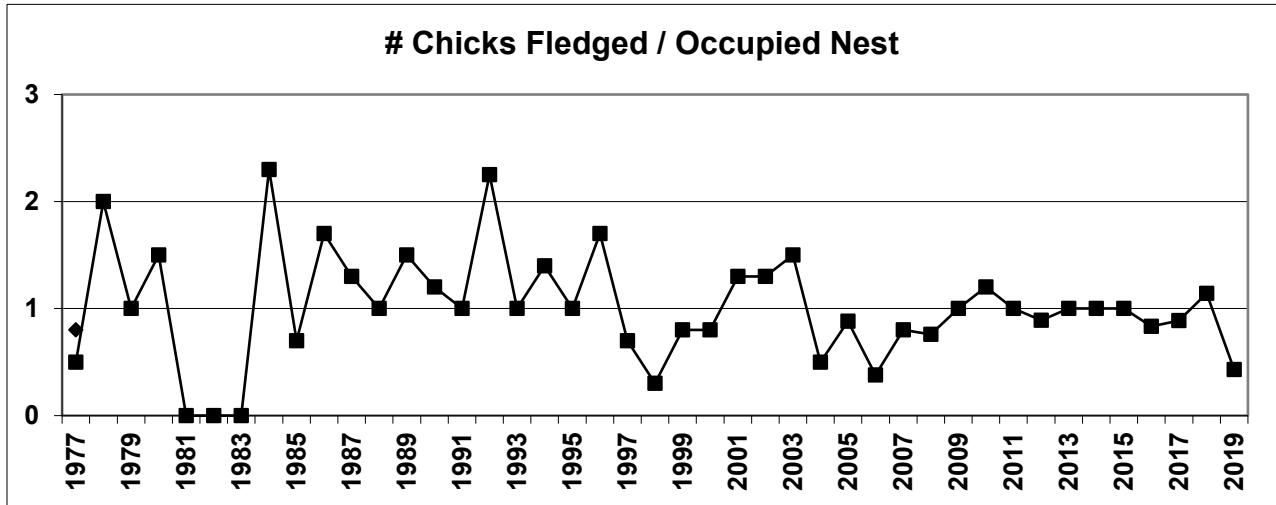


Figure 4 Number of chicks fledged per occupied nest over time

Conclusions

The once-growing bald eagle population in the Hebgen Basin appears to be leveling off somewhat in recent years. Although pairs are tending to produce fewer chicks per nest each year, the total number of chicks being produced continues to exhibit an increasing trend, but the rate of increase also appears to be leveling off.

This season's relatively low productivity in the Basin is suspected to be the result of a very wet and cool spring and early summer season. There have also been new activities occurring in the Basin that may be having unknown effects on eagles and their productivity. These included low level flight seeing tours in the canyon and around Horse Butte. Future monitoring will attempt to ascertain whether these activities, as well as proposed vegetation management, are affecting bald eagles in the Basin.

Funding

Funding for this project in 2019 was as follows:

Category	Funder			Total
	NWE	USFS	Volunteer (In-Kind)	
Direct Labor	\$2,750	\$2,200	\$700	\$5,650
Materials	\$0	\$200	\$0	\$200
Vehicle	\$0	\$550	\$100	\$650
Total	\$2,750	\$2,950	\$800	\$6,500