Bald Eagle Wintering Activity
Rocky Reach Reservoir

2014 - 2015

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INTRODUCTION

The Public Utility District No. 1 of Chelan County (Chelan PUD) owns and operates the Rocky Reach Hydroelectric Project along the Columbia River in central Washington. This project operates under Federal Energy Regulatory Commission (FERC) license #2145-060. Rocky Reach Dam was licensed in 1957 and began generating electricity in 1961. The operating license was renewed in 2009. As prescribed in the Rocky Reach Wildlife Habitat Management Plan required by Article 403 of the Rocky Reach license, Chelan PUD continues to monitor numbers of wintering eagles along Rocky Reach Reservoir (Chelan PUD 2010). This annual report summarizes data collected on wintering bald eagles for the winter of 2014-15.

HISTORY

From 1975 – 1984, the United States Fish and Wildlife Service (USFWS) conducted monthly aerial surveys for wintering bald eagles along the mid-Columbia River, including Rocky Reach Reservoir (Fielder and Starkey 1980). In 1988, Chelan PUD began regularly monitoring eagles during the winter months along Rocky Reach Reservoir.

The bald eagle was delisted from the Endangered Species Act (ESA) on 9 August 2007. As a result, Chelan PUD reduced the monitoring effort from bi-weekly to monthly during the winter months (November – March) beginning in the winter of 2007-08. The frequency of monitoring exceeded the level suggested in the bald eagle post-delisting monitoring plan (USFWS 2009) and provided sufficient trend information. Winter surveys allow Chelan PUD to determine distribution of wintering eagles along the Reservoir and to determine the age ratio of sub-adults: adults.

In 2006, Chelan PUD began monitoring bald eagle nests along Rocky Reach Reservoir. At that time only 3 nesting territories were monitored. In 2015, Chelan PUD will monitor 7 active bald eagle nests that were confirmed during our March 2015 survey for wintering bald eagles. With the number of nesting eagles increasing, the number of "wintering" bald eagles observed during the March surveys is confounded to some extent by a number of resident nesting bald eagles along the Rocky Reach Reservoir.

STUDY AREA

Rocky Reach Dam is located approximately 7 miles north of the city of Wenatchee, Washington along the Columbia River at river mile 473.5. The pool behind the dam (Reservoir) extends 42 river miles north to Wells Dam (operated by Douglas County PUD) at river mile 515.5. Chelan and Douglas counties border the west and east shores of the reservoir, respectively.

The Reservoir is considered run-of-river with relatively limited water storage capability and active river currents, particularly in the deep main channel of the Columbia River. The Reservoir also has a combination of shallow bays, islands and island complexes, parks, residential, agricultural and natural habitats. Where natural habitat exists, steep cobble or dirt banks comprise much of the reservoir shoreline. Shrub steppe vegetation, fruit orchards, and residential or industrial areas occupy areas up-slope from the riparian edge of the river. Shrub steppe habitat of central Washington is dominated by big sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus* spp.), and bluebunch wheatgrass (*Pseudoroegneria spicata*) and is interspersed with pines such as ponderosa pines (*Pinus ponderosa*) and Douglas-fir (*Psedotsuga menzesii*), especially along the hills to the west that comprise the

Eastern Cascades Physiographic province (Franklin and Dyrness 1973). Cottonwoods (*Populus balsamifera* ssp. *trichocarpa*) of differing age groups can also be found along the shores of the river.

SURVEY METHODS

Since golden eagles are a sensitive species in Washington State, both bald and golden eagles are documented during winter surveys. Eagle surveys were conducted by boat monthly from November 2014 – March 2015, with the exception of the month of December, which was canceled due to mechanical problems with the boat used to conduct this survey work. A minimum of 2 observers were used on each survey. Surveyors on each side (port and starboard) of the boat monitored the respective shoreline (i.e., Chelan or Douglas) and both shorelines were surveyed concurrently while traveling upriver along Rocky Reach Reservoir.

Eagles are identified to species (bald or golden) and age class (adult or sub-adult) whenever possible. Bald eagles were classified as an adult if they exhibited an all-white head or as a sub-adult in any other color phase. Golden eagles were also aged based on plumage characteristics as described in Wheeler & Clark (1995). If age or species of eagles could not be identified, they were recorded as unknown species and/or unclassified age. The location of eagles observed was recorded to the $1/10^{th}$ river mile as well as bank (Chelan or Douglas) and the perch substrate.

Monthly eagle surveys begin at the Lincoln Rock State Park boat launch and proceeded along the Douglas County shoreline downriver to Rocky Reach Dam, then across the Reservoir to the Chelan County side and upriver along the Chelan County Shore to the upriver end of Turtle Rock Island (river mile 476). At this point the route crosses back over the main channel and downriver along the west side of Turtle Rock Island. At the downriver end of Turtle Rock Island the boat traveled back upriver, along the east shoreline of Turtle Rock Island and the Douglas County shoreline. From the upriver end of Turtle Rock Island, the survey route then continued upriver to the tailrace at Wells Dam. The river just below Wells Dam is quite wide, making it difficult for surveyors to see adequately from the middle of the river. Therefore, the boat cruised near the Douglas County shore beginning at river mile 515.0. Surveyors focused solely on the Douglas County shoreline at this point, continuing upriver to a safe distance below Wells Dam. After the tailrace area was thoroughly surveyed, the Chelan County shoreline was surveyed downriver to river mile 514.9 where the survey then terminated.

RESULTS

During the 2014-15 winter period (November – March), a total of 4 surveys were completed. The December survey was canceled due to significant mechanical problems with boat used to conduct this survey. A total of 118 eagles were observed along Rocky Reach Reservoir throughout the survey season. Of these, 100 were bald eagles, 17 were golden eagles, and 1 eagle was unidentified. Peak numbers of eagles were observed during February 2015, when a total of 54 eagles (44 bald and 10 golden) were observed (Table 1).

Age Ratios

Knowing age ratios of wintering bald eagle populations is important because wintering areas with high proportions of sub-adult bald eagles often indicate an easily available food source which improves the survival chances of younger eagles (Stalmaster 1980, Fitzner et al. 1980, Fielder 1982,

Bennetts and McClelland 1991). The maximum number of sub-adult bald eagles (19) observed occurred during the February survey. The minimum number of sub-adults (3) occurred during the March survey. The average age ratio of bald eagles wintering along the Reservoir for all surveys was 0.5 sub-adults per adult (Table 2). Bald eagle observations by age class are represented in Figure 1.

Perch Sites and Distribution

Perch substrate was recorded for all eagles observed. Eagles were most commonly observed perched in cottonwoods, Douglas-fir, or ponderosa pines during surveys (Table 3). Eagles were distributed fairly evenly along much of the Reservoir. On average, eagles were more frequently observed in the area upstream of Turtle Rock Island between Tenas George Canyon and the Ribbon Cliff vicinity, in the Stayman Flats area, and also in the Howard Flats vicinity (Corral Creek to Wells Dam) (Figure 2).

National Mid-Winter Bald Eagle Surveys

The 9 January 2015 survey was conducted during the National Mid-Winter Bald Eagle Survey timeframe. The National Mid-Winter Bald Eagle survey is overseen by the United States Geological Survey (USGS) and in coordination with the United States Army Corps of Engineers (ACOE). Data for the survey was submitted via mail to Sarah Wilkinson, ACOE, Washington State coordinator for the national counts. A total of 25 bald eagles, 2 golden eagles, and 1 unidentified eagle were observed during this survey. Chelan PUD has regularly participated in the mid-winter bald eagle counting effort.

Long-term Summary

Over a period of 27 years, (winter of 1988-89 to winter of 2014-15) the average numbers of bald eagles observed wintering along Rocky Reach Reservoir has increased from and average of 16.1 bald eagles/survey (1988-89) to 29.5 bald eagles per survey (2014-15). This increasing trend is shown in Figure 4. The average number of bald eagles observed over this 27 year period is 19.3 bald eagles per survey. The maximum number of wintering bald eagles is typically observed during the month of January or February, with much lower maximum numbers in November, December, and March (Figure 5). Since the winter of 1988-89, the maximum count by month for wintering bald eagles has occurred during January in 11 years (40.7%), during February 11 years (40.7%), and the same high count was observed during both months in 5 years (18.5%). No maximum counts occurred during November, December or March during the last 27 years. For the 27 year period, the month of January has the highest average number of wintering bald eagles observed with 32.4 bald eagles per survey followed closely by February with 31.8 bald eagles per survey.

DISCUSSION

The average number of all eagles (bald, golden, and unidentified) observed per survey during the winter of 2014-15 was 29.5. This is higher than the long-term average (1988 - 2014) of 21.7 eagles per survey. The average number of bald eagles observed per survey during 2014-15 was 25.0. The average number of golden eagles observed per survey was 4.3. The ratio of sub-adult: adult bald eagles observed for the 2014-15 winter period (n = 0.5) was near the long-term average of 0.56 sub-adults per adult. The total number of wintering bald eagles (n = 100) observed during the 2014-15 winter is lower than the long-term annual average (AVG = 149) observed since surveys began in 1988-89 (Figure 3). However, fewer surveys (n = 4) were conducted during the 2014-15 season due to resource limitations. Additionally, the mild winter may have contributed to fewer numbers of

eagles foraging along the Reservoir. The maximum number of all eagles observed during any survey during the winter of 2014-15 (MAX = 54) was slightly above the average maximum number (AVG MAX = 40) observed during any survey to date.

In consultation with the Rocky Reach Wildlife Forum, Chelan PUD reduced its wintering bald eagle effort following the delisting of the bald eagle from the ESA in 2007. This change was to continue winter monitoring with reduced effort during the 5-year period following delisting of the bald eagle. Survey effort during the winter months (November – March) was reduced from bi-weekly to monthly. As the 5-year period following delisting has passed and wintering bald eagle numbers continue to increase, along with increasing numbers of nesting bald eagles along Rocky Reach Reservoir (Chelan PUD 2013), Chelan PUD recommends reducing the number of wintering surveys from once monthly to once per winter. It is proposed that the single winter count shall coincide with the National Mid-Winter Bald Eagle survey. Chelan PUD has submitted January survey data annually since 2008 for Rocky Reach Reservoir in conjunction with the National Mid-Winter survey effort. The January effort will ensure the peak of the winter season is surveyed and the data set will continue to be shared with the National Mid-Winter Bald Eagle survey coordinators.

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TABLES AND FIGURES

Table 1. Rocky Reach Reservoir bald eagle surveys, winter of 2014 – 2015.

	Bald eagles			Golden eagles				Unknown			
Date	**Adult**	**Subad**	**Total**	**Adult**	**Subad**	**Unkn**	**Total**	**Eagle**	**All Total**	**subs/adult**	**adults/sub**
20-Nov-14	9	4	13	0	0	0	0	0	13	0.4	2.3
No December survey											
9-Jan-15	17	8	25	2	0	0	2	1	28	0.5	2.1
10-Feb-15	25	19	44	5	5	0	10	0	54	0.8	1.3
24-Mar-15	15	3	18	5	0	0	5	0	23	0.2	5.0
Total	**66**	**34**	**100**	**12**	**5**	**0**	**17**	**1**	**118**	0.5	1.9
AVG	**16.5**	**8.5**	**25.0**	**3.0**	**0.0**	**0.0**	**4.3**	**0.3**	**29.5**	**0.5**	**1.9**

Table 2. Age ratios of sub-adult to adult bald eagles during the winter of 2014 – 15. Golden and unknown eagles and were excluded from analysis.

Bald eagles

Date	Adults	Sub-adults	Total	Sub-adults per adult
20-Nov-14	9	4	13	0.4
9-Jan-15	17	8	25	0.5
10-Feb-15	25	19	44	0.8
24-Mar-15	15	3	18	0.2
Total	**66**	**34**	**100**	**0.5**
AVG	**16.5**	**8.5**	**25**	**0.5**

Table 3. Perch detail for all eagles observed along Rocky Reach Reservoir, 2014 – 2015.

Perch detail	Total
Cottonwood	57
Ponderosa pine	26
Flying (not perched)	24
Douglas-fir	8
Nest	6
Siberian elm	5
Russian olive	3
Willow	3
Cedar	2
Rock	2
Tree of Heaven	1
Utility pole	1
Total	**138**

Figure 1. Age classifications of bald eagles along Rocky Reach Reservoir during the winter of 2014 – 15. Golden and unknown eagles and were excluded from analysis.

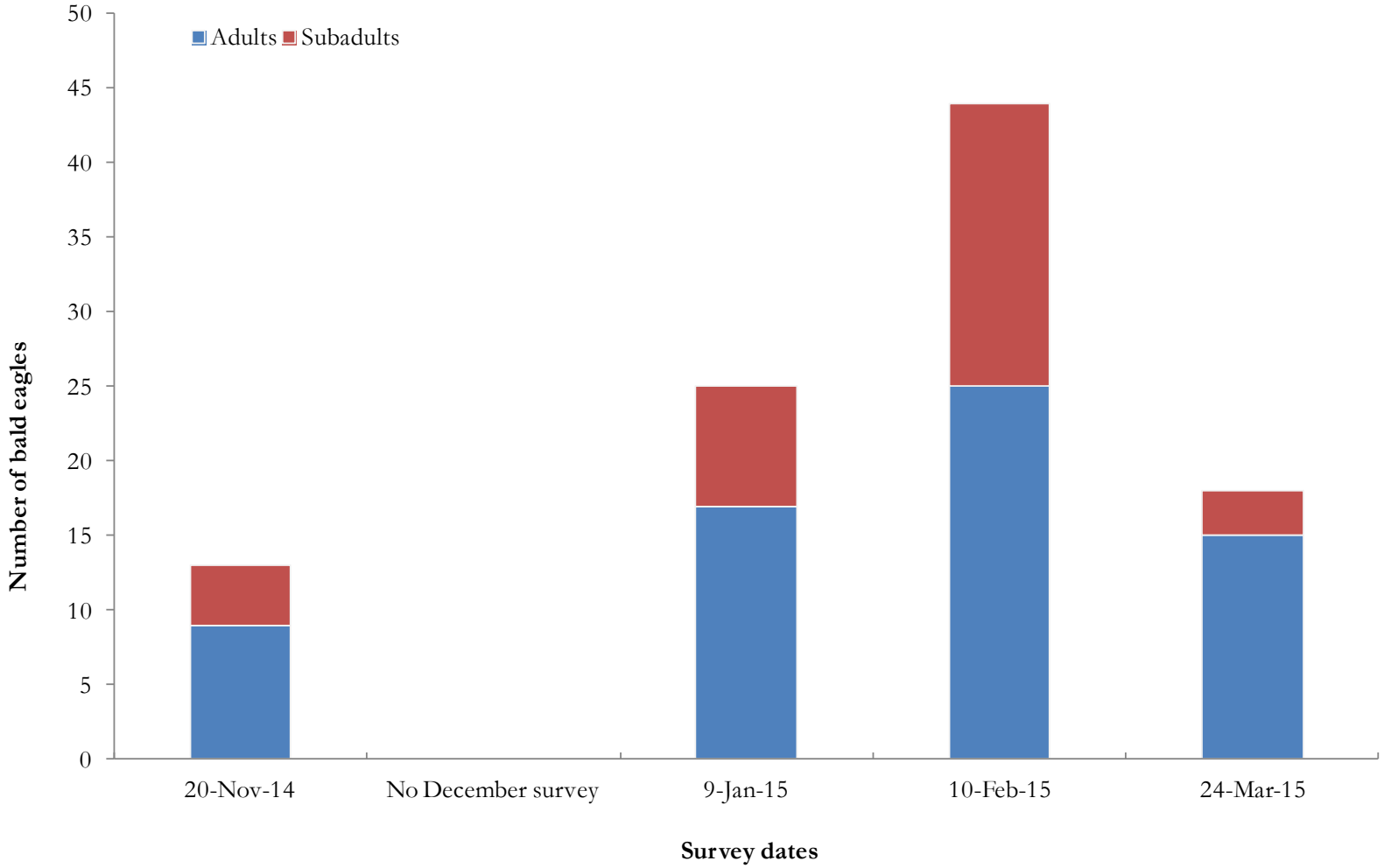

Figure 2. Average number of all eagle observations by river mile along Rocky Reach Reservoir during the winter of 2014 – 15.

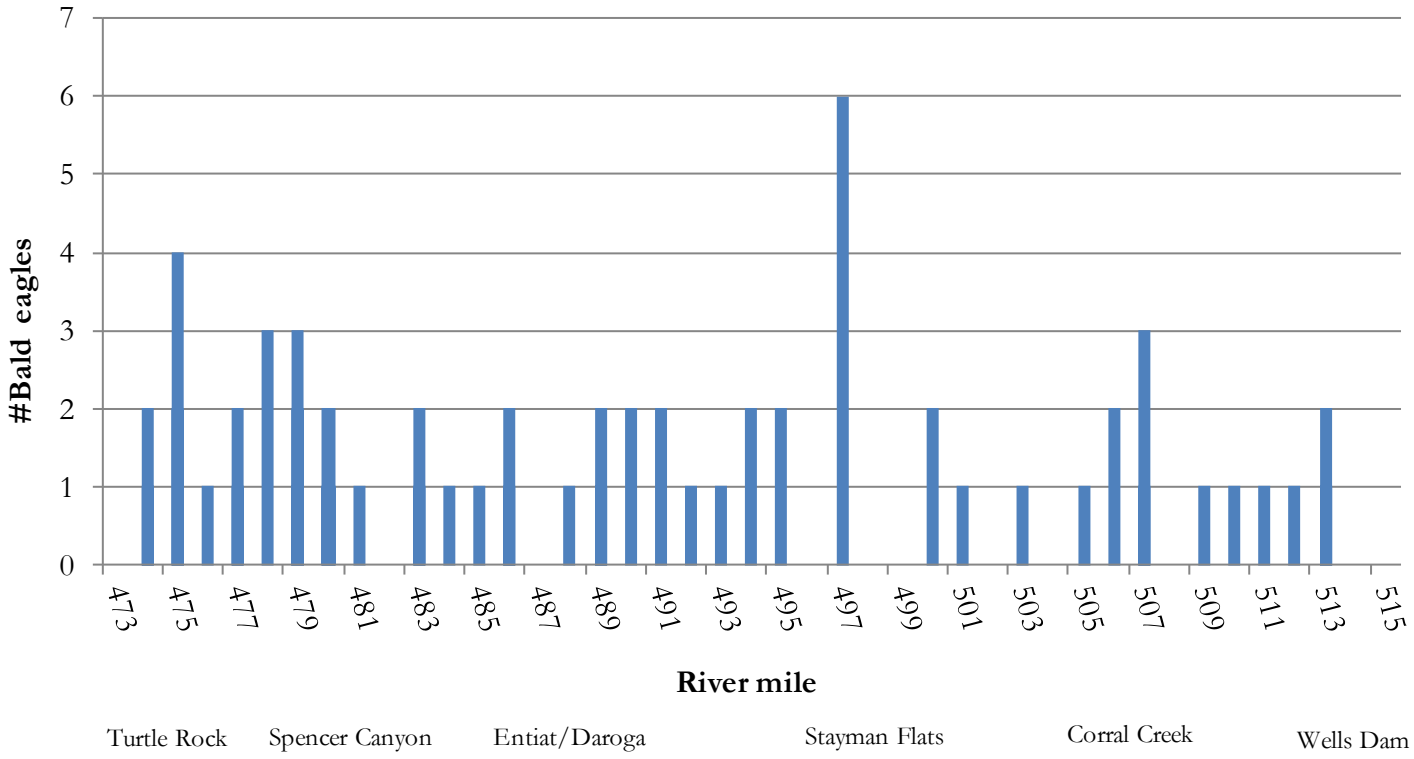

Figure 3. Cumulative observations of bald eagles per survey season along Rocky Reach Reservoir, 1988 – 2014. The long-term average is 149 bald eagles per winter along the Reservoir. Golden and unknown eagles and were excluded from analysis.

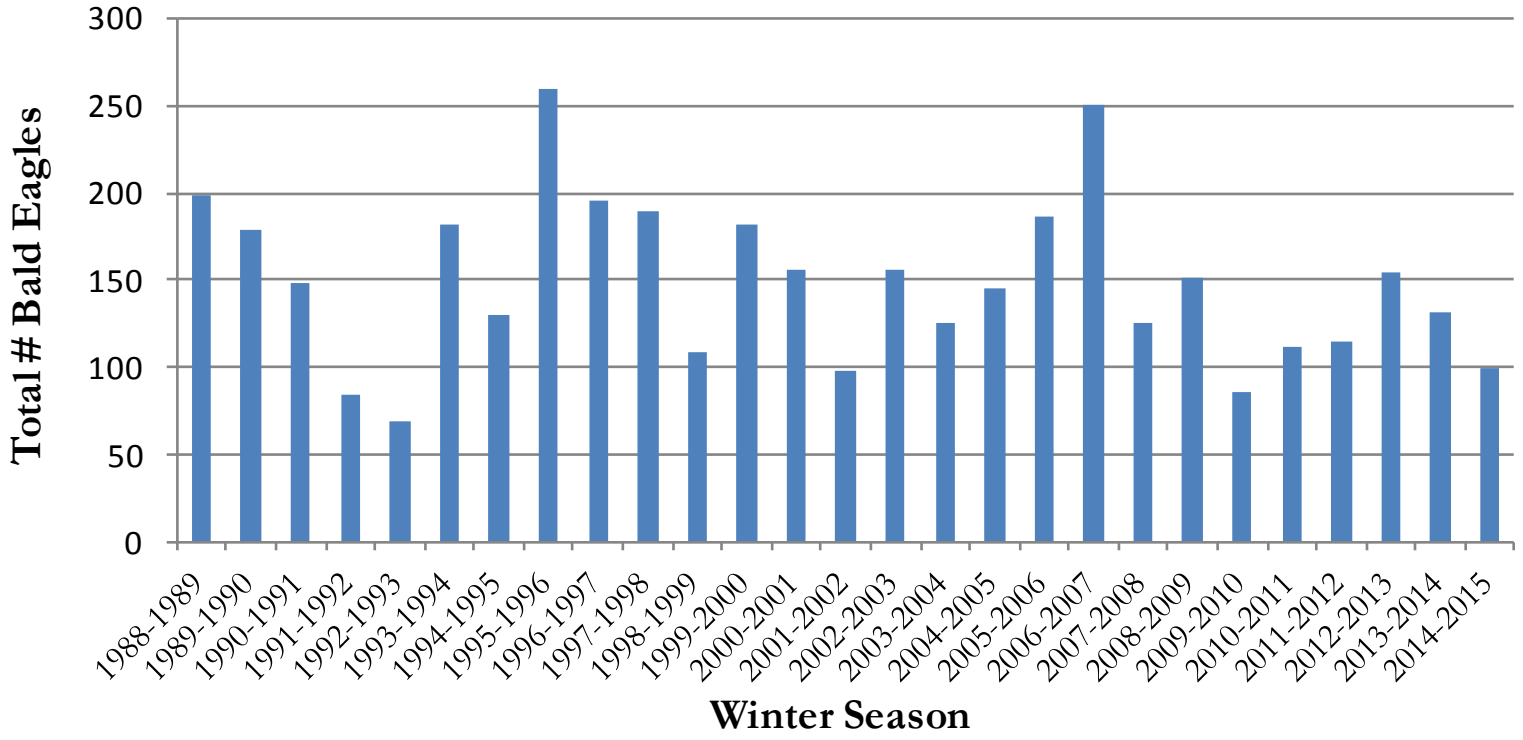

Figure 4. The average number of wintering bald eagles observed along Rocky Reach Reservoir from 1988 – 2015 and the long term linear average showing the increase over the 27 year period.

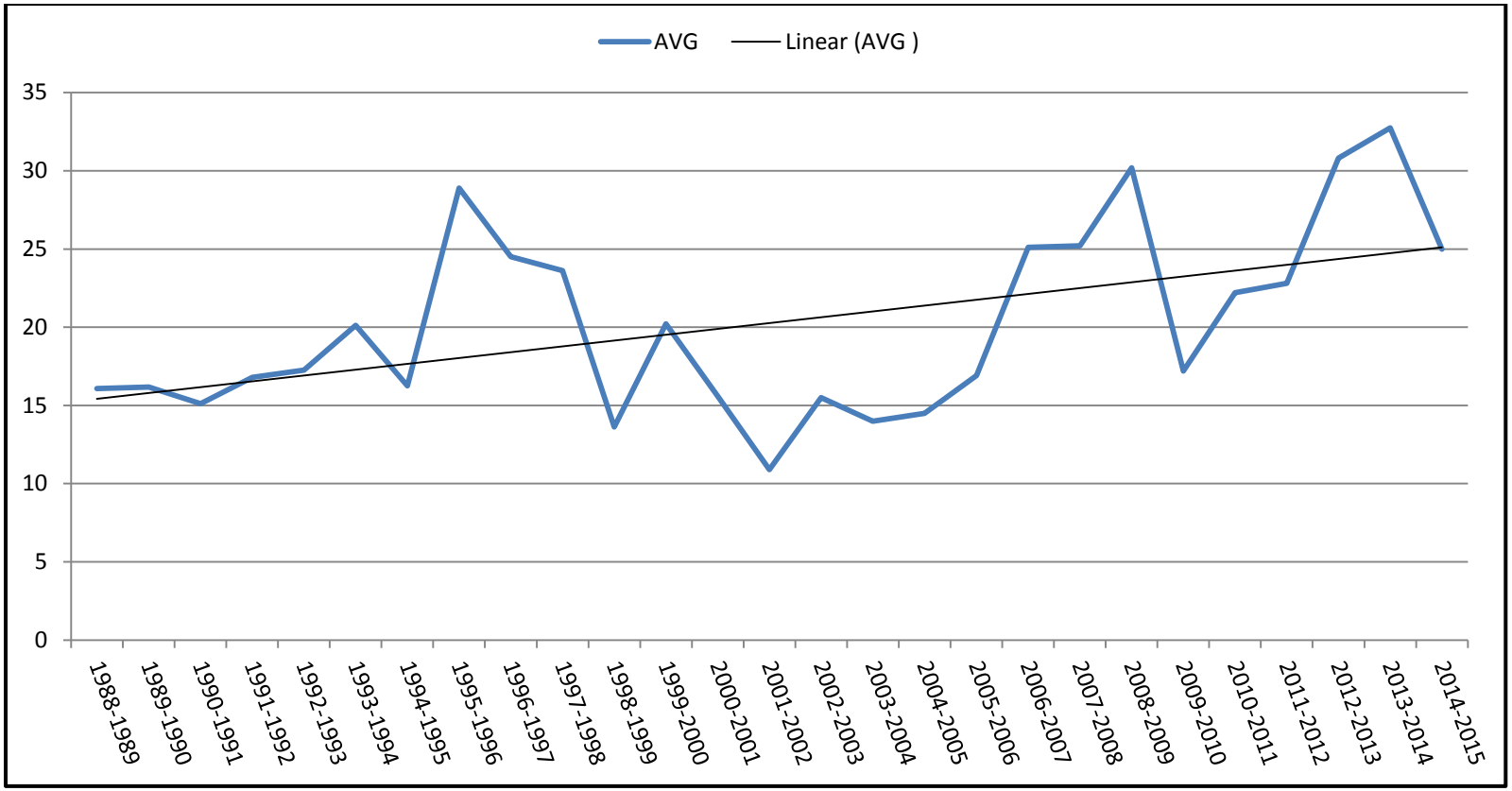

Figure 5. Average maximum number of bald eagles by month along Rocky Reach Reservoir, 1988 – 2015.