

MOUNT LORETTE AND BEAVER MINES, ALBERTA, SPRING 2018
With notes on the Steeples, BC reconnaissance count

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Summary and highlights

Following a reconnaissance count at the site in 1992, this was the 26th consecutive year that a systematic spring count has been held at Mount Lorette. It is the 10th consecutive extended (as opposed to complete) count at the site and, as started in 2011, the count period was again March 1 to April 22.

All three counts were conducted this season in weather characterized throughout by temperatures that were significantly below seasonal normal and with higher than average snowfall but fewer strong winds as a La Niña oceanic cycle persisted for a second winter. At Mount Lorette the combined species count of 2715 was 16.4% below average, with the March total accounting for 73.1% of the final count but the April count of 731 was the second highest since 2002 and 9.5% above average. The Golden Eagle count was 2390 which was 18.4% below average, but the immature:adult ratio of 0.25 was the highest ever spring ratio at the site. The combined species median passage date was March 26 which was 4 days later than the long-term average and reflects the numerical dominance (88.1%) of Golden Eagles which moved 4 days later than average. The Golden Eagle count again remained close to average for counts conducted since 2003 and suggests that the population may have stabilized following a marginally significant decline in numbers between 1995 and 2002.

The third complete count at Beaver Mines produced a record 2340 raptors of 18 species that included record counts of Bald Eagles (355) and Golden Eagles (1533), but most other species occurred in significantly lower numbers. It still appears that the main movement of Golden Eagles is farther to the west in the spring.

The ninth reconnaissance count at the Steeples count on the western flanks of the Rocky Mountains near Cranbrook, BC was 40 days (178.5 hours) and produced a record Golden Eagle count of 620 and new high counts of a further 5 species.

Introduction

The Mount Lorette site is located in the Kananaskis Valley in the Front Ranges of the Rocky Mountains (50°58'N 115°8'W) 70 km due west of Calgary and immediately northeast of the Nakiska Ski Hill on Mount Allan. At this point the valley trends north-south and cuts obliquely

across the NW-SE oriented trend of the Front Ranges. To the east of the observation site the Fisher Range has an average elevation of about 2500m with Mount McDougall rising to 2726m. Mount Lorette itself is 2487m and is a geological continuation of the Fisher Range across the Kananaskis Valley to the NW. To the west the mountains of the Kananaskis Range are somewhat higher and include Mount Kidd (2958m), Mount Bogart (3144m) and Mount Allan (2819m). The observation site is in a cleared area on the valley floor known as the Hay Meadow at an elevation of 1433m. The site gives 360-degree views of the surrounding mountains and allows monitoring of raptors moving along the mountain ridges to the east and west, and especially those crossing the valley between the north end of the Fisher Range and Mount Lorette. The site is unique in that it allows observation of approximately the same high percentage of a population of migratory Golden Eagles both in spring and fall at exactly the same site, which has in the past been occupied for up to 190 days in a year. When downslope cloud obscures these mountains an alternate site at Lusk Creek, 13km NE of the Hay Meadow site, is used to observe birds moving along the westernmost foothills ridge that have been displaced to the east from the Front Ranges. Birds seen here when active observation is occurring at Hay Meadow are not included in the official count.

Migrating Golden Eagles were first seen moving over Mount Lorette on March 20, 1992, and the first extended (33 day, 280 hour) count was conducted the following fall and yielded 2661 migrant raptors of which 2044 were Golden Eagles¹. Until 2005, full-season spring counts were conducted annually at Mount Lorette, with an average time spent at the site of the 15 counts of 79.9 days (863.5 hours). From 2006 to 2009 the principal fall observation site was moved to the Piitaistakis-South Livingstone location close to the Municipality of Crowsnest Pass in SW Alberta, during which time extended comparison counts were conducted at Mount Lorette during the main period of Golden Eagle migration. The Lorette counts in 2006, 2007 and 2008 were conducted between March 01 and April 15 and comprised 44 days, 46 days and 48 days of active observation respectively. **Table 2** summarizes all the spring counts since 1992 conducted at Mount Lorette to date. It is clear that the counts conducted in 2008, 2009, 2010 and 2012 are anomalously low compared to other counts. The combined species count for the years 2008, 2009, 2010 and 2012 (with comparison for Golden Eagle in parentheses) are only 39% (39%), 30.5% (29.4%), 40% (43.7%) and 37.7% (33.3%) respectively of the average for the counts from 1993 to 2007 and 2011. By contrast the fifth lowest spring count at the site in 2007 is 68.2% (65.6%) of average. The anomalous nature of these four counts probably results from a combination of poor weather conditions and, in some cases, observer inexperience but, whatever the cause, it seems prudent at this time to exclude these counts from the statistical comparisons with subsequent counts.

The spring 2011 count was conducted between March 01 and April 22, one week longer than those from 2008-2010, and all subsequent counts have been conducted during the same time period. **Table 3A** summarizes all the counts conducted at Mount Lorette for the period March 1 to April 22 1973-2017. **Table 3B** excludes the anomalously low counts of 2008, 2009, 2010 and 2012 on which the data variances of the current count (number, median passage dates and age ratios) are based unless otherwise stated.

This report concerns the count at Mount Lorette, a count starting on February 25 at Beaver Mines in SW Alberta and a 40-day extended reconnaissance count conducted by Vance Mattson at the Steeples site on the western flank of the Rocky Mountains in British Columbia.

At Mount Lorette observers spent a total of 48 days (549 hours) of a possible 53 days at the site between March 1 and April 22, with above average inclement weather resulting in the days and hours being 3.7% and 1.1% below the average of valid counts since 1993 respectively. After reconnaissance counts were conducted by Peter Sherrington at Beaver Mines in 2014 and 2015, full counts were made in 2016 and 2017 and this year the count was 55 days (581.2 hours) of a possible 57 days between February 25 and April 22. The ninth consecutive Steeples reconnaissance count in BC conducted by Vance Mattson between March 1 and April 22 comprised 40 days (178.5 hours), the days and hours being 26% and 41.8% above the average of counts since 2010.

Mount Lorette, Alberta

Weather

Table 6 summarizes the weather data from this season's count. During the count 5 days (March 3, 15, 22, 30 and April 16) were completely lost to adverse weather (66.7% above the average of the last 7 years, all of which used the same count period), and a further 4 days (March 1, 2 and April 12, 21) were significantly curtailed because of weather (+86.7%). A total of 19 active days (45.2%) experienced precipitation (excluding days with occasional flurries or drizzle) which is only 3.2% above average. Snow fell on 18 active days (37.5%) which is 12.8% above average and rain only fell on 1 day (2.1%: 72.5% below average).

The highest maximum temperature was only 11°C on March 13 and April 20 and the lowest maximum was -9°C on March 4; the highest minimum temperature was 5°C on April 21 and the lowest minimum was -22°C on March 31. On 15 active days the temperature failed to rise above 0°C all day (101.1% above average).

The Environment Canada Nakiska Ridgetop weather station situated 4 km west of the Hay Meadow site on Olympic Summit (Mount Allan) at 2543 m was inoperative and ridge wind information had to be estimated by observers. It should be noted that experience has demonstrated that wind velocities tend to be underestimated by observers located in the valley. On cloudless days or when the ridges were cloaked in cloud estimating the wind direction and velocity was difficult, but reference to the weather station at Banff situated to the NW of the site provided information on general wind conditions on such days. Observers assessed ridge winds to be from the SSW-W 66.7% of the time, from the WNW-NW 0% from the NW-NE 16.7%, and from other directions and variable winds 16.7%. Compared to the average of the last seven years the prevailing SSW-W winds were 9.7% below average.

On active observation days ridge wind speeds were assessed as strong to very strong (40 km/h to >100 km/h) 13.7% of the time, moderate to strong (10 to 100 km/h) 14.6% of the time, moderate (10-40 km/h) 22.9%, light to moderate (1-40 km/h) 50.0% and light winds occurred 4.2% of the time. On 1 day (1.9%) winds varied from light to strong and on 1 day (1.9%) wind velocity could not be assessed. Compared to the average of the last 7 years, strong to very strong winds were 74.5% below average, moderate to strong winds were 54.6% below average, moderate winds were 30.0% above average, light to moderate winds were 133.0% below average and light winds were 43.4% below average.

Ten active days (20.8%) experienced cloud cover between 80 and 100% all day, and a total of 30 days (62.5 %) experienced 100% cloud for at least part of the day. The eastern ridge system (Fisher Range and Mounts Lorette and McDougall) was at least 10% obscured on 16 active days (33.3%), and 40-100% obscured on 10 active days (20.8%); the western ridge system (Mounts Kidd, Bogart, Allan and Collembola) was at least partly obscured on 30 active days (62.5%), and 40-100% obscured on 15 active days (31.25%). Severe daily occlusions (40-100%) of the eastern ridges on active days were 17.9% below average while the western ridges were occluded 9.5% below average.

After 5 years (2012-2016) under the influence of El Niño oceanic conditions which produced a succession of relatively mild springs, this year was the second of a La Niña cycle which produced a season that was significantly colder than average, precipitation was slightly above normal with snow days much more prevalent than rain days, ridge winds were predominantly SSW-W as usual but strong winds were significantly less and light-moderate and moderate winds significantly more than average; cloud cover was close to average but ridge occlusion was below average, especially on the eastern route that produces the bulk of the spring passage.

General flight dynamics March 1 to April 22

A total of 2715 migrant raptors of 15 species were counted on 47 of 48 active observation dates between March 1 and April 22 (**Table 1**). The combined species total was 7.1% below the long-term average of all counts for the period March 1 to April 22 at the site (**Table 3A**), but 16.4% below average when the anomalously low counts are excluded (**Table 3B**). A total of 13 active days (27.1%) had counts of 10 birds or less, that included the entire period between March 1 and March 8. There was no significant raptor movement until March 10 when 80 birds (63 Golden Eagles) were counted. Movement was fairly persistent throughout the rest of the month with a total of 1984 raptors of which 1794 were Golden Eagles counted in March which were 23.1% and 26.3% below the average of valid counts respectively (**Table 4B**). The highest single-day count was 313 (307 Golden Eagles) on March 25 followed by 216 (201 Golden Eagles) on March 21. Seven other days had 100+ combined species counts: 153 (March 16), 116 (March 19), 104 (March 20), 104 (March 23), 178 (March 26), 104 (March 28) and 199 (March 31). The high count of 313 is 22.8% below average. The March combined species total of 1984 represented 73.1% of the total spring 2018 count. Movement continued to be persistent in April, with a high combined species count of 84 on April 19. The April total of 731 is 9.5% above the long-term average of valid April counts (**Table 5B**).

Of the 15 species that regularly occur during the period (**Table 3B**) 6 species occurred in above average numbers of which Bald Eagle and Sharp-shinned Hawk were very close to average and only Gyrfalcon was significantly higher: Osprey 3 (+65.8%), Bald Eagle 183 (+0.3%), Sharp-shinned Hawk 25 (+2.5%), Broad-winged Hawk 3 (+950%) that equals last year's high count, American Kestrel 2 (+82.6%) and Gyrfalcon 7 (+444.4%) which is a new spring high count for the site. The other 9 species occurred in lower than average numbers: Northern Harrier 1 (-79.2%), Cooper's Hawk 2 (-70.8%), Northern Goshawk 11 (-52.6%), Red-tailed Hawk 30 (-1.7%), Rough-legged Hawk 16 (-18%), Golden Eagle 2390 (-18.4%), Merlin 3 (-56.6%), Peregrine Falcon 1 (-22.2%) and Prairie Falcon 2 (-4.5%). Three species, Turkey Vulture, Swainson's Hawk and Ferruginous Hawk, were not recorded this year.

The final count was Turkey Vulture 0, Osprey 3, Bald Eagle 183, Northern Harrier 1, Sharp-shinned Hawk 25, Cooper's Hawk 2, Northern Goshawk 11, *Accipiter* sp. 4, Broad-winged Hawk 3, Swainson's Hawk 0, Red-tailed Hawk 30, Ferruginous Hawk 0, Rough-legged Hawk

16, *Buteo* sp. 3, Golden Eagle 2390, eagle sp. 25, American Kestrel 2, Merlin 3, Gyrfalcon 7, Peregrine Falcon 1, Prairie Falcon 2, *Falco* sp. 0 and indeterminate raptor 4, for a total of 2715 migrant raptors of 15 species.

The combined species median passage date was March 26 which was 4 days later than the long-term average and reflects the numerical dominance (94.8%) of the two eagle species. Of the 6 species occurring in sufficient numbers to calculate median passage dates 3 were earlier than average (Bald Eagle 1 day, Northern Goshawk 12 days and Rough-legged Hawk 7 days), while 3 species were later than average (Sharp-shinned Hawk 2 days, Red-tailed Hawk 4 days and Golden Eagle (4 days) (**Table 11**).

Detailed daily summaries of weather and flight dynamics can be found on the spring 2014 blog on the RMERF website www.eaglewatch.ca

Golden Eagle

Observers counted a total of 2390 migrating Golden Eagles on 46 days between March 4 and April 22, with the highest single-day count of 307 occurring on March 26 (**Figure 1**). The number of days on which the species was recorded is 2.5% above average, the total is 18.4% below the long-term average and the high count is 22.8% below average. Seven other days also had counts of over 100 birds: March 21 (201), March 26 (174), March 31 (171), March 16 (150), March 19 (110), March 29 (109) and March 20 (101).

The March count of 1794 was 18.1% below the average of all counts at the site (**Table 4A**), but when the anomalously low counts are excluded the figure falls to -26.3% (**Table 4B**). The April count of 596 is 20.4% above the average excluding the anomalously low counts (**Table 5B**). The flight comprised 1463 adults, 132 subadults, 218 juveniles, 9 undifferentiated immature birds and 568 birds of unknown age yielding an immature:adult ratio of 0.25 which is 194.1% above the long-term average ratio and is the highest ever spring ratio at the site. The high ratio reflects the high fall 2017 ratio of 0.49 which was the second highest fall ratio ever.

The median passage date for the species was March 26 and March 25 for adult birds which were both 4 days later than average respectively. The median passage date for immature birds was April 9, which is 3 days later than average.

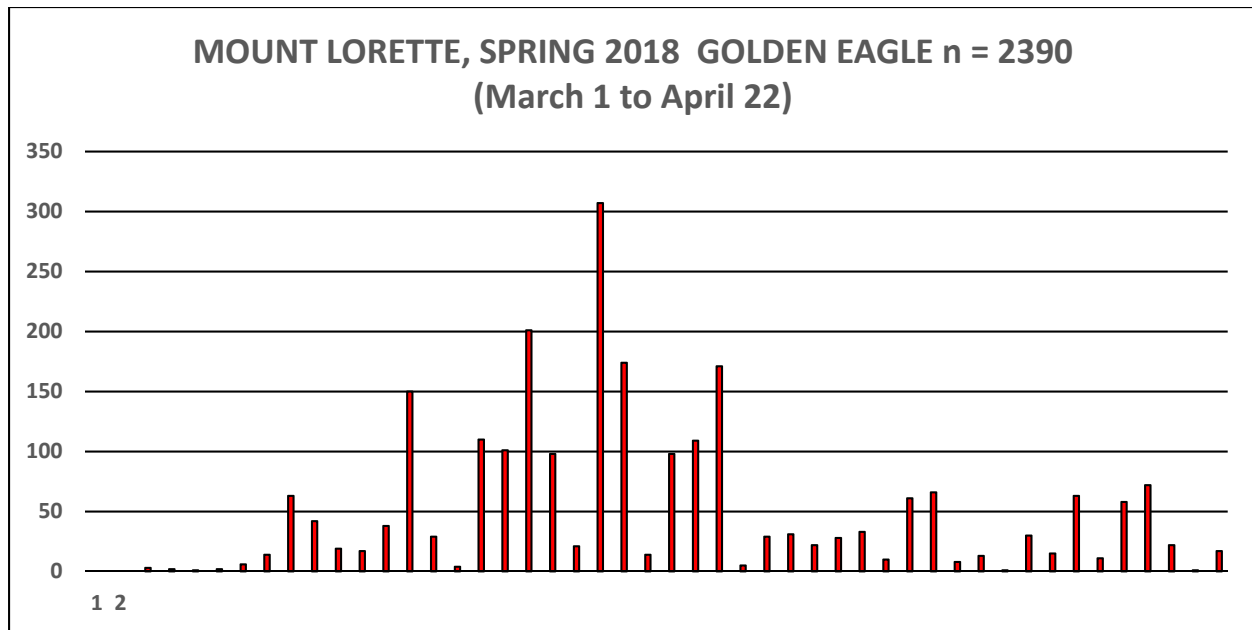


Figure 1

The pattern of the hourly cumulative counts (**Table 7, Figure 2A**) closely conforms to the long-term average (1993-2007) negatively-skewed normal distribution curve where hourly counts steadily increase throughout the day, peak around 1600 and fall thereafter (**Figure 2B**). This season's chart shows a steady build-up to 1200-1300, an anomalously low count of 236 1300-1400 before peaking at 360 between 1500 and 1600, before systematically diminishing thereafter. The only hour that registered a count above an average of one bird per minute was 78 between 1100 and 1200 on March 25. Only 1 migrant was counted before 0700 and a total of 5 were seen after 1900 (MST).

Spring Golden Eagle Trend

Figure 3A shows the trend of all Golden Eagle counts at the Mount Lorette site since 1993 for the period March 1 to April 22. As this period normally captures about 97% of the total Golden Eagle movement it is essentially identical to the trend derived from using data from complete counts. For reasons discussed in the Introduction, the years 2008, 2009, 2010 and 2012 that yielded anomalously very low counts have been omitted on **Figure 3B**.

The weather at the site since 2007 has generally been worse than average and birds may have been deflected to more easterly routes in greater numbers than usual, but the weather in 2011 was similar, as was the weather in 1997 and 1999 and all of these counts (2982, 2352 and 2565 respectively) were significantly higher than those of the period 2008-10. The linear trend line (**Figure 3A**) appears to show an overall decline and removal of the anomalous low counts (**Figure 3B**) only slightly tempers but does not change this overall trend, neither does the removal of the demonstrably weather-affected counts in 1997 and 1999. When only valid counts since 2003 are considered, however, (**Figure 3D**) the trend is almost horizontal suggesting that the population has remained stable over this 14-year period, following a marginally significant decline between 1995 and 2002⁶ (**Figure 3C**). The spring 2018 count does not significantly change any of these trend lines.

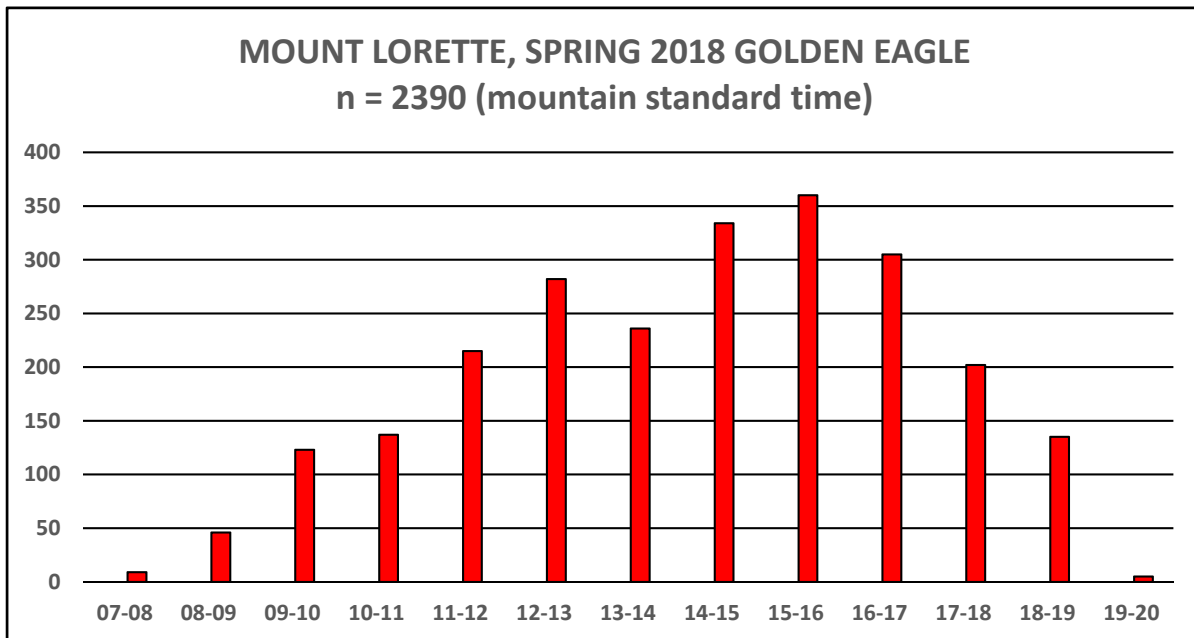


Figure 2A

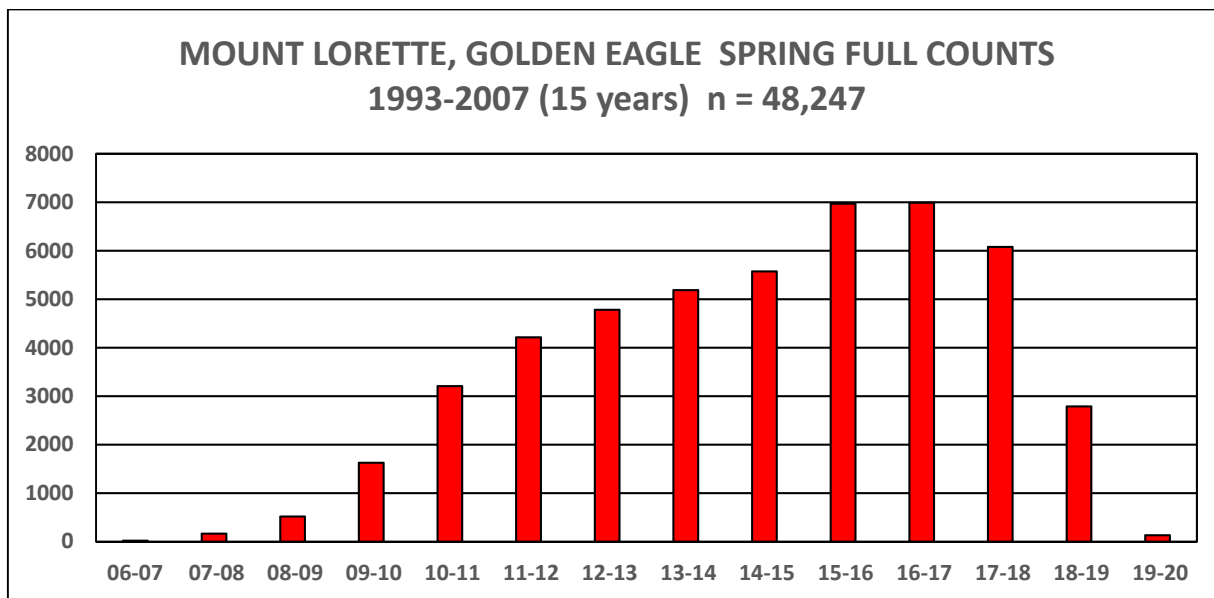


Figure 2B

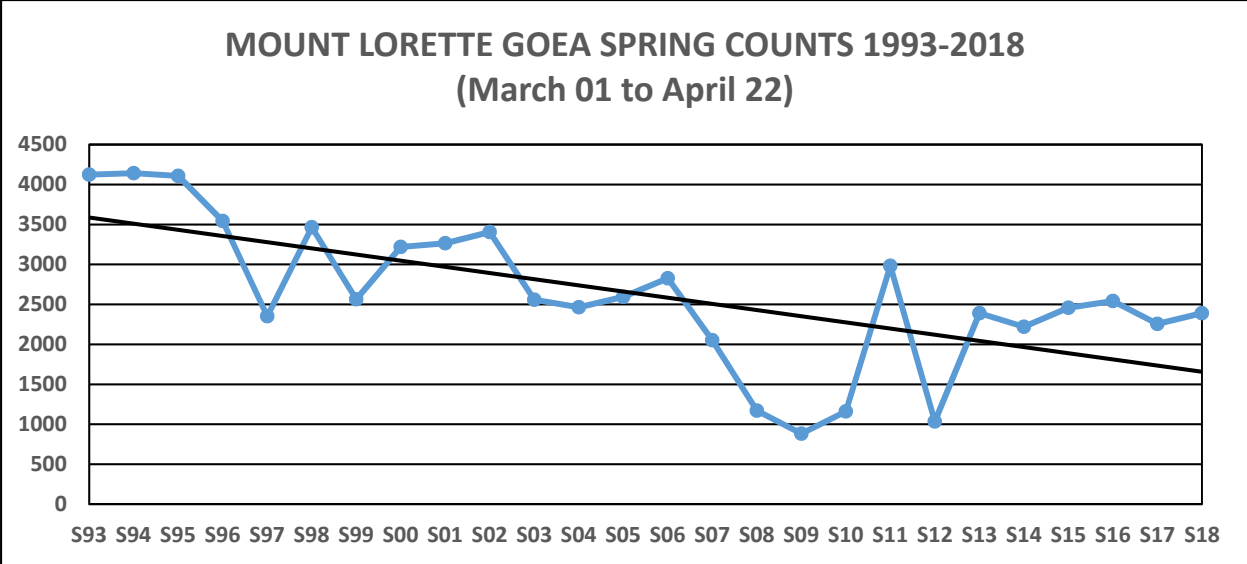


Figure 3A

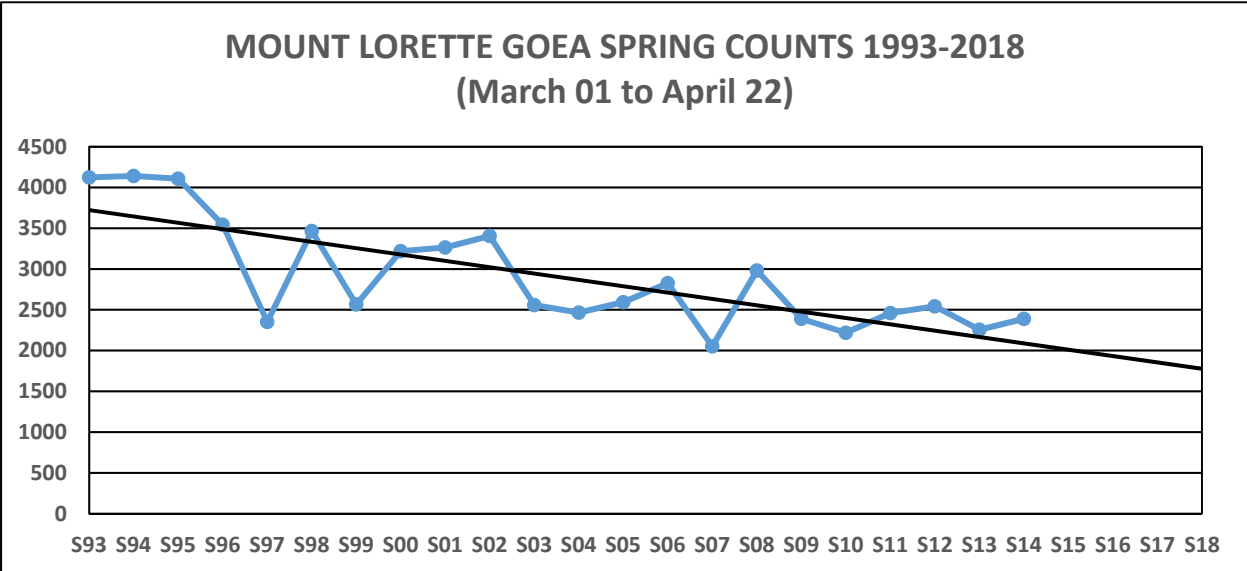


Figure 3B

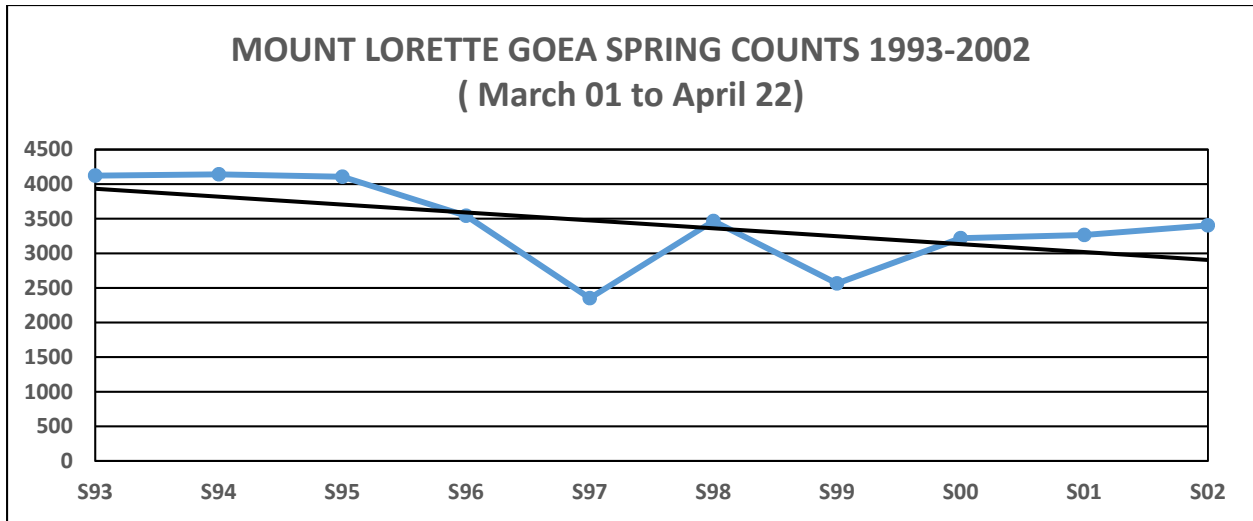


Figure 3C

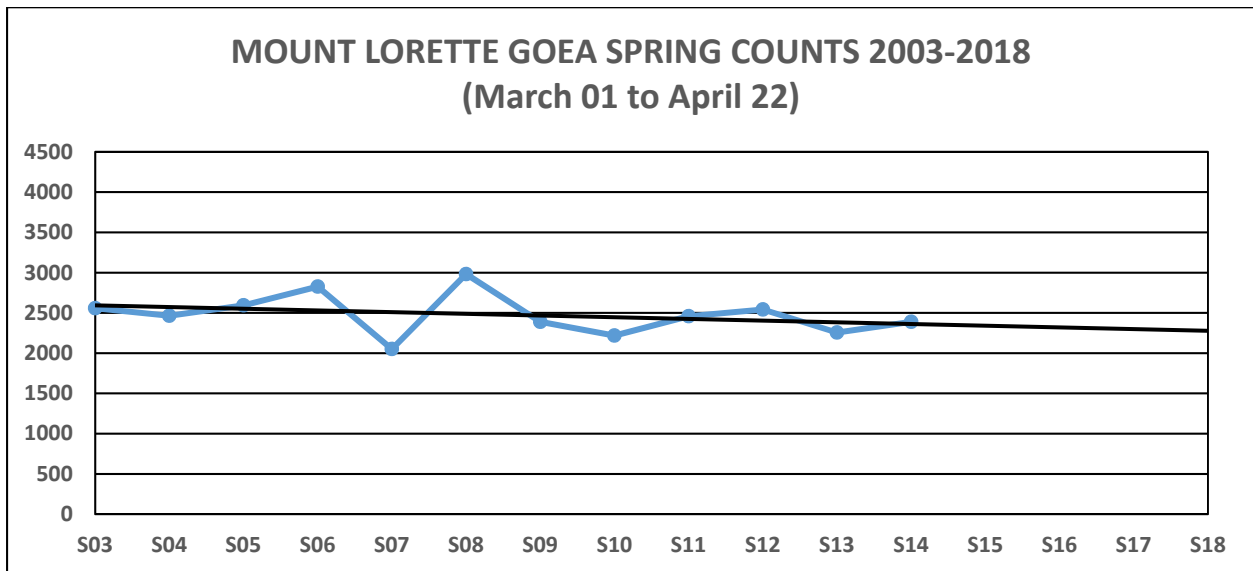


Figure 3D

Golden Eagle Age Analysis

Figure 4 shows the ratio of immature and adult Golden Eagles from 1994 to 2018. This is based on a combination of Mount Lorette and Piitaistakis-South Livingstone data as contemporaneous counts from both sites show a close correlation of ratios. The upper (blue) series show fall data, the lower (orange) series show spring data. The fall data points are plotted above the spring data points of the following year. Both data sets show a remarkable parallelism, with the spring data consistently showing a significant reduction from the previous fall. This probably reflects a combination of winter mortality and possibly a more diffuse migration pattern of young birds in the spring. It is also accentuated by the shorter count period which will miss juvenile birds that move after April 22. Despite these limitations the trends are consistent and almost certainly reflect the breeding cycles of the northern Snowshoe Hare population ^(1, 2, 3, and 5). This probably peaked around the time counts started at Mount Lorette in 1992, (although age data from the first two years are not reliable enough to be included) and fell to 1995 rising again to a second peak around 1999/2000, that then fell to 2002 before steadily rising to the next peak in 2007. The

current cycle probably peaked last summer which is reflected in the highest ever spring ratio of 0.25 recorded in the spring 2018 count. This would indicate that three eight to ten-year cycles have occurred during the life of the project so far. In some years many juvenile Golden Eagles move during the second half of April and during May which is why the age ratios from the shorter count are lower. It is very gratifying, however, to see that data from the period March 1 to April 22 closely follow the trend established from the full count data (see the 2012 spring report). This suggests that we can successfully continue to monitor these trends by counting from March 1 to April 22, although it is to be hoped that at some time we will be able to resume full counts at the site.

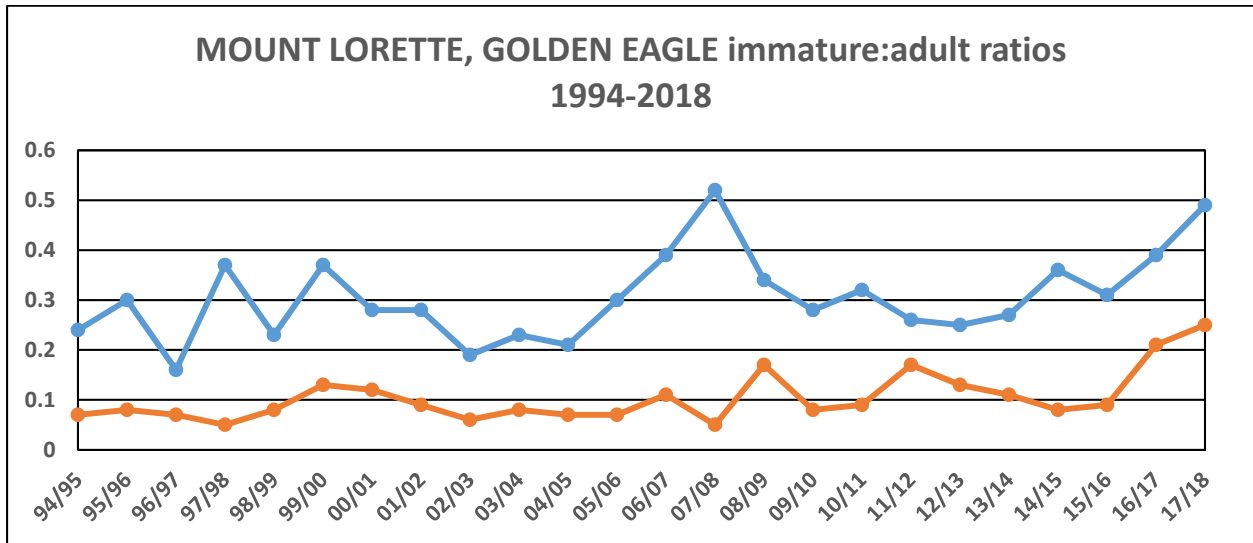


Figure 4

Bald Eagle

Observers counted 183 Bald Eagles on 40 days between March 4 and April 22 (**Figure 5**). The count is very close to average (+0.3%) and the number of days of occurrence is 6.5% above average. The highest daily count was 16 on March 31 which is 24.7% below the average high count for the period. The March count of 126 was 13.7% above average (**Table 4B**) and the April count of 57 was 20% below average (**Table 5B**). The flight comprised 127 adults, 17 subadults, 31 juveniles, 7 undifferentiated immature birds and 1 bird of indeterminate age giving an overall immature:adult ratio of 0.43 which is 26.8% above the long-term average ratio. The median passage date for the species was March 27, 1 day earlier than average; adult birds were 2 days earlier than average on March 24 and immature birds were coincident with the average passage date on March 31.

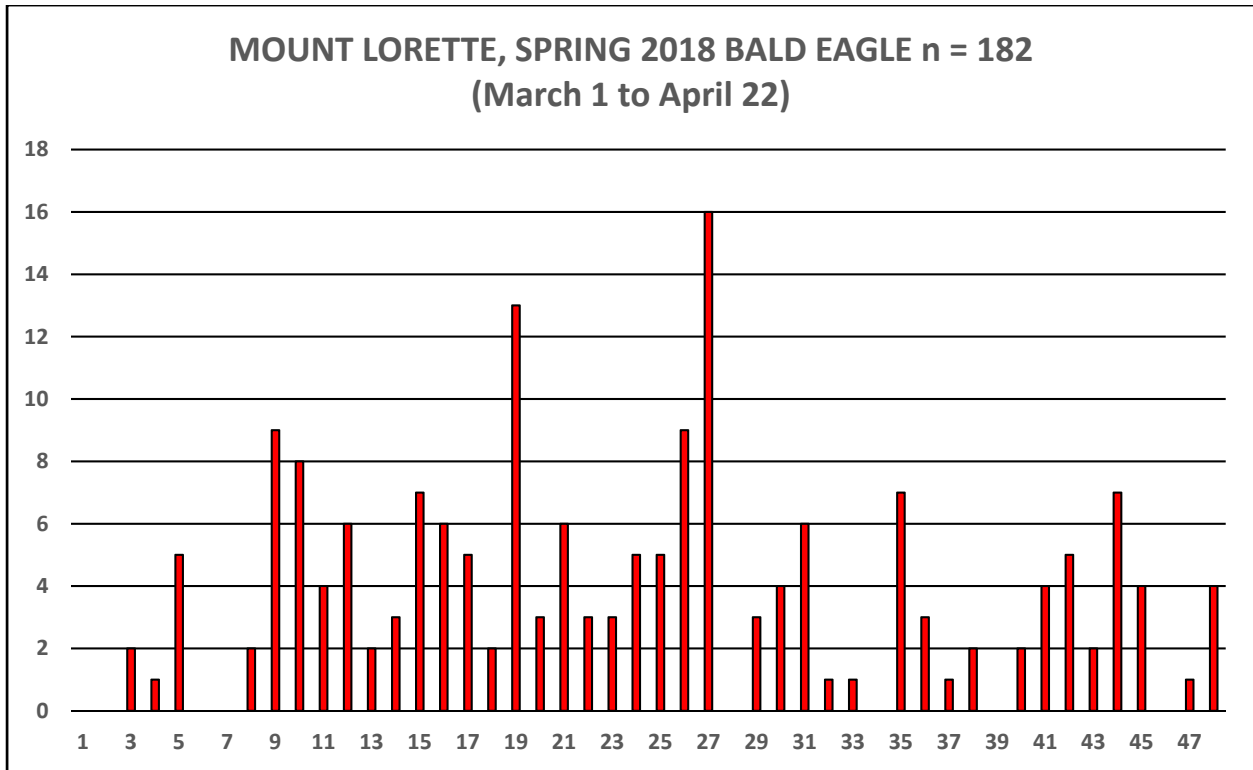


Figure 5

Other species

Turkey Vulture

Not recorded this season. The only previous records for the count period were single birds recorded on April 13, 1993, March 18, 2011 and March 31 2013, and 2 birds seen on April 10 2016.

Osprey

Three birds were recorded: 1 on April 13 and 2 on April 17. The total is 65.8% higher than average and the first arrival date is 4 days earlier than average.

Northern Harrier

Only 1 harrier was recorded, an adult female bird on April 14 which is 12 days later than the average arrival date. The total is 79.2% below average.

Sharp-shinned Hawk

After 5 years of low counts (15 to 18 birds) this spring saw a slight recovery in numbers with 25 birds recorded on 13 days between March 10 and April 22. The count is 2.5% above average, the days of occurrence is 5.4% above average and the first occurrence date is 13 days earlier than average. The highest daily count was 4 birds that occurred on April 15 and 19 which is 27% below the average high count. Seven birds were counted in March, which is 182.7% above average and equals the second highest March count (**Table 4B**), and 18 in April which is 18.0% below average (**Table 5B**). The flight comprised 4 adults and 21 unaged birds. The species median passage date of April 15 is 2 days later than average.

Cooper's Hawk

Single adult Cooper's Hawks were seen on April 18 and 22, a total that is 70.8% below average and equals the second lowest count at the site. The earliest occurrence was 17 days later than average.

Northern Goshawk

The total of 11 adult birds seen on 8 days between March 10 and April 14 was 52.6% below average and the occurrence days were 44.2% below average. The first occurrence was 2 days earlier than average. The highest daily count was 3 birds on March 10 which is 13.7% lower than the average single-day count. Nine birds moved in March (-20.3%) and 2 in April (-83%) (**Tables 4B and 5B**). The median passage date for the species and for adults was March 19, 12 and 9 days earlier than average respectively.

Broad-winged Hawk

Two light morph birds (1 adult and 1 juvenile) were seen on March 31 and a single light adult was seen on April 21. The total equals the high count of 3 seen on April 1 last year. This is only the fifth year that it has been recorded during the current count period, the other records for the period being single birds seen on April 21 1994, April 13 1996 and April 19 2015.

Swainson's Hawk

Not recorded this season. The only previous record for the count period was two adult birds (1 light morph and 1 rufous morph) seen on April 19 last year.

Red-tailed Hawk

The total of 30 birds counted on 14 days between March 21 and April 22, was close to average (-1.7%) as was the number of days on which it was seen (-3.6%). The first occurrence date was average. The highest daily count was 6 on April 14 which is 2.4% above the average high count. Seven birds moved in March (+50%) and 23 in April (-11%) (**Tables 4B and 5B**). The flight comprised 27 "Western Red-tailed Hawks" (*B.j.calurus*): 15 adults, 3 juveniles and 1 indeterminate light morph, 1 adult rufous (intermediate) morph and 6 adult and 1 juvenile dark morphs; 1 adult "Eastern Red-tailed Hawk" (*B.j.borealis*), 1 juvenile assigned to "Kridler's Hawk" (*B.j.borealis* var *krideri*), and 1 adult dark morph "Harlan's Hawk" (*B.j.harlani*). The overall immature:adult ratio was 0.02 which is 63.5% below average. The median passage date of the species and for adult birds was April 14, 4 and 6 days later than average respectively.

Ferruginous Hawk

Not recorded this season. Previous records for the period are 1 on April 9 1994, single birds on April 6 and 7 1995 and 1 on April 15 2001.

Rough-legged Hawk

A total of 16 birds were counted on 12 days between March 2 (the earliest ever recorded at the site and 18 days earlier than the average first occurrence) and April 21. The count is 18.0% lower than average. The highest single-day count was only 2 on three days, which is 65.9% below average and equals the second-lowest daily counts at the site. Nine birds moved in March (+76.6%) and 7 in April (-51%) (**Tables 4B and 5B**). The median passage date of March 31 was 7 days earlier than average. The flight comprised 12 light morphs, 2 dark morphs and 2 birds of indeterminate morph.

American Kestrel

Single birds of undetermined sex were seen on April 13 (2 days earlier than the average first occurrence) and 17. The total is 82.6% above average.

Merlin

Only 3 birds were recorded on 3 days between April 6 and 21 a total that is 56.6% below average and equals the 3rd lowest count for the site. One bird of indeterminate sex or age was of the race *F.c. columbarius* and the other two were of undetermined race, sex or age.

Gyr Falcon

The 7 Gyrfalcons recorded on 5 days between 6 and 24 March represent a new high spring count for the site. The total is 444.4% above average and the first occurrence is the earliest ever, 18 days earlier than average. The flight comprised 5 grey and 2 “black” morphs, and the median passage date was March 17, which is the first time the total has been sufficient to establish a date.

Peregrine Falcon

An adult bird on March 26 was the only record this season. The count is 22.2% below average and the bird occurred 9 days earlier than the average first occurrence of the species.

Prairie Falcon

Single birds were seen on March 14 and 23, a total that is 4.5% below average. The first bird was 14 days earlier than average.

Observers

Principal Observers: Blake Weis (20 days), Jim Davis (8 days), Caroline Lambert (7 days), Bill Wilson (7 days), George Halmazna (5.5 days), Dan Parliament (0.5 days).

Assistants: Cliff Hansen (9 days), Dan Parliament (8 days), Brian McBride (7 days), Rick Robb (7 days), Rosemary Power (6 days), Patrick Farley (4 days), Ruth Morrow (4 days), Alan Hingston (2 days), Caroline Lambert (2 days), Jose Sanchez (2 days), Lori Anderson (1 day), Fiona Boiselle (1 day), Ethan Denton (1 day), Patricia Farley (1 day), Chris Hunt (1 day), Cindy Parliament (1 day), Heinz Unger (1 day), Blake Weis (1 day).

It is with great sadness that we learned of the death of Jim Davis who died in the Foothills Hospital, Calgary on July 1, Canada Day, following a cycling accident. Jim had been a Principal Observer at Mount Lorette for a number of years and only the severest of weather conditions would lead him reluctantly to leave the site. His skill and dedication will be hard to replace. He is greatly missed.

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Beaver Mines, Alberta

Introduction

Beaver Mines is a small hamlet located about 20 km west of the town of Pincher Creek in southwestern Alberta. It is also where I have lived since 2007 after moving there in order to conduct counts at the Piitaistakis-South Livingstone site. My house is located in a valley on the alignment of the most easterly foothills ridge system that has a NW-SE orientation in this area. In the past I commented in the daily blog on individual days when I observed significant raptor movement from my house in both spring and fall at times when the mountain and foothill ridges to the west are obscured by cloud. During the spring of 2014 these conditions appeared to have prevailed for extended periods so I was able to conduct non-systematic counts on 17 days (78.1 hours) between March 18 and April 17. The count yielded a total of 1092 migrants of 10 species including 110 Bald Eagles and 853 Golden Eagles. In the spring of 2015 I spent a total of 39 days (209 hours) observing from my house and recorded a total of 1798 migrant raptors of 17 species. On only 2 active observation days were no migrants seen, and it appears that this route is an important spring raptor flyway and not just a poor weather displacement route from the west as I had previously believed. The highest single day count was 463 (including 429 Golden Eagles) on March 19, one day earlier than the maximum movement at Mount Lorette. In 2016 I conducted a full count of 52 days (401.3 hours) between March 1 and April 22 exclusively from my house in Beaver Mines and the count produced a total of 2038 migrant raptors of 17 species. Spring 2017 was the second consecutive full count conducted from my house on 56 days (510.1 hours) between February 25 and April 22. Because of its more southerly location about 200 km south of Mount Lorette I decided to start the count in late February to see if there was any early raptor movement and the last 4 days of February yielded 24 migrants of which 20 were Golden Eagles. A total of 1992 migrants of 18 species were counted, a total that was 3.9% higher than the average of the last 2 years. As with the last three years the count notably differed from that at Mount Lorette in the variety and numbers of non-eagle species (16 species) which comprised 31.1% (compared to 39% in 2016) of the total count at Beaver Mines compared to 7.5% (14 species) at Mount Lorette (**Table 10**).

Spring 2018 is the third consecutive complete count at the site that comprised 55 days (581.2 hours) between February 25 and April 22, the days and hours are 12.2% and 55.7% above the average of the previous 3 years respectively

Weather and General flight dynamics February 25-April 22

The weather is summarized in **Table 9**. Two full days, April 5 (snow all day) and April 12 (snow and fog all day) were lost to poor weather. In general temperatures were mainly above seasonal normal with the exception of March 31 to April 8 which were significantly below normal. This period was also characterised by a higher than normal percentage of unfavourable up-slope (E-ESE) winds, and most of the snowfall occurred during this period. The rest of the count, however, was dominated by favourable WSW-W winds that regularly gusted to 100 km/h and cloud conditions were generally favourable for observation. With the exception of March 6-10 when 82 migrants were counted and March 14 when 61 migrants passed, persistent movement did not start until March 19 when 159 migrants were seen and the next 2 days produced a further 325 birds. The cold and snowy weather from the end of March to early April slowed, but did not eliminate the flow and after April 9 movement was generally steady until the end of the count (**Figure 6**). The final count (with variance compared to the average of 2015-2017 in parenthesis and new high counts for the site in bold) was **2340** (+20.5%) of 18 species that comprised 1 Turkey Vulture (-25%), 3 Ospreys (-18.2%), **355 Bald Eagles** (+39.2%), 24 Northern Harriers (-

60%), 46 Sharp-shinned Hawks (-39.7%), 6 Cooper's Hawks (-61.7%), 27 Northern Goshawks (-56.7%), 0 *Accipiter* spp. (-100%), 13 Broad-winged Hawks (+56%), 2 Swainson's Hawks 2 (-33.3%), 155 Red-tailed Hawks (-31.2%), 6 Ferruginous Hawks (+12.5%), 101 Rough-legged Hawks (+13.5%), 15 *Buteo* spp. (+2.3%), **Golden Eagle 1533** (+43.7%), 3 eagle spp. (+28.6%), American Kestrel 10 (-6.2%), Merlin 14 (-10.6%), **Gyr Falcon 9** (+80%), Peregrine Falcon 10 (+25%), Prairie Falcon 3 (-60.9%), 1 *Falco* spp. (+200%) and 3 unidentified raptors (-10%). It is interesting that the record combined-species count resulted from record counts of the two eagle species with most of the other species lower (in many cases significantly lower) than last year's count (**Table 10**).

The combined species median passage date at both Beaver Mines and Mount Lorette was March 26 and **Table 11** compares the median passage dates of individual species at the two sites. It is still apparent that most of the Golden Eagle movement takes place on ridges to the west of Beaver Mines, but the numbers and variety of the other raptor migrants probably make the count worthwhile.

Golden Eagle A site record 1533 birds were counted on 42 days between February 26 and April 22, of which 13 occurred in February, 1092 in March and 428 in April. The total is 43.7% above the average of the last three years' counts. The highest single-day count was 156 on March 20 and other 100+ days were 152 on March 23, 135 on March 26 and 130 on March 19. The flight comprised 1300 adults, 52 subadults, 132 juveniles and 49 unaged birds, giving an immature:adult ratio of 0.14 which is significantly lower than the 0.25 recorded at Mount Lorette. The February count was 13 compared to 20 in 2017, the March count was 1092, 15.8% above the average of the last 3 years, and the April count of 428 was 265.8% above the average of the last 3 years. In general the flight dynamics of the last four years are similar and the relatively low percentage of the migratory Golden Eagle population seen probably makes the site less than ideal for long-term monitoring of the species. The median Passage dates for the species, adults and immature birds were March 25, March 24 and April 11 respectively, compared to very similar dates of March 25, March 25 and April 9 at Mount Lorette.

Bald Eagle The Bald Eagle count of 355 on 48 days between February 25 and April 22 was also a site record and was 39.2% higher than the average of the last 3 years. Thirteen birds were seen in February compared to 3 in 2017, the March count was 183 (+3.8%), and 159 moved in April (+104.7%) with a single-day high count of 48 on April 9. The flight comprised 282 adults, 30 subadults, 42 juveniles and 1 indeterminate bird that gives an immature:adult ratio of 0.26, which compares to the Mount Lorette ratio of 0.43. The median Passage dates for the species, adults and immature birds were March 29, March 25 and April 9 respectively, compared to March 27, March 24 and March 31 at Mount Lorette.

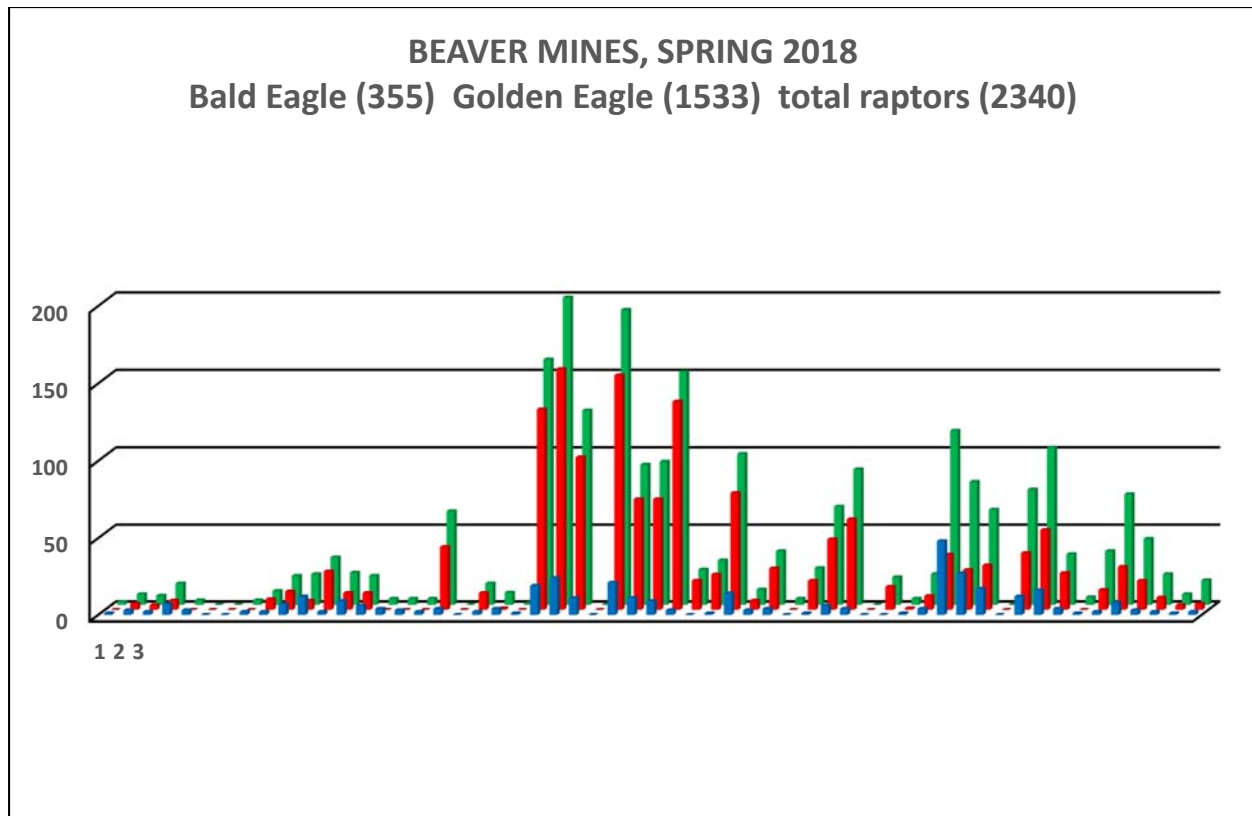


Figure 6

Turkey Vulture A single adult Turkey Vulture seen on April 17 was the only record this season.

Osprey A total of 3 birds were counted on 3 days between April 13 and April 17. The total is 18.2% below the average of the last 3 years.

Northern Harrier A total of 24 migrants were counted on 11 days between April 1 and 22, which is 60% below the average of the last 3 years. The highest single day count was 8 on April 19. No birds were seen in March compared to 16 in 2017. The flight comprised 16 males (15a and 1j), 7 females (6a and 1 indeterminate) and 1 bird of unknown sex or age. The median passage date for both the species and for adults was April 19.

Sharp-shinned Hawk A total of 46 birds were counted on 17 days between March 21 and April 22, with a single-day high count of 7 on April 14. The count is 39.7% below the average of the last three years. The flight comprised 31 adults, 1 juvenile and 14 unaged birds. Seven birds were seen in March and 39 in April. The median passage date for the species was April 13 and for adult birds was April 14.

Cooper's Hawk The count of 6 birds comprised 4 adults and 2 unaged birds. Birds occurred on 6 days between March 25 and April 21 and the count is 161.7% below the average of the last

three years. Two birds were seen in March and 4 in April. The median passage date for the species was April 14. Mount Lorette also had a poor year for the species recording only 2 birds.

Northern Goshawk A total of 27 Northern Goshawks were counted on 17 days between March 7 and April 19, with a single-day high counts of 3 on March 23 and April 19. The count is 56.7% below the average of the last three years. Fourteen birds moved in March and 13 in April. The flight comprised 26 adults and 1 juvenile, and the median passage dates of the species and adults were March 26 and March 25 respectively.

Broad-winged Hawk A total of 13 birds were counted on 8 days between April 3 and April 20. The count is 56% above the average of the last three years. The flight comprised 12 light morph birds (9 adults, 1 juvenile and 1 unaged) and 1 juvenile dark morph bird. The highest single day count was 4 on April 13, and the median passage date of the species was April 14, and for adult birds April 13.

Swainson's Hawk Two birds were seen on April 17: 1 adult light morph and 1 juvenile dark morph. The total is 33.3% lower than the average count for the last three years.

Red-tailed Hawk The total of 155 birds counted on 28 days between March 13 and April 22 was 31.2% below the average of the last three years. Thirty-five birds occurred in March and 120 in April, with a single-day high count of 18 on April 10. Thirty-five birds moved in March and 120 in April. The flight comprised 147 "Western" Red-tailed Hawks (*B.j.calurus*): 127 light morphs (119 adults, 1 juveniles, 7 indeterminate), 3 adult rufous morphs, and 17 dark morphs (25 adults, 1 juvenile, 1 indeterminate); 7 adult dark morph "Harlan's" Red-tailed Hawks (*B.j.harlani*); and 1 indeterminate bird. The overall immature:adult ratio was 0.01 and the median passage dates of the species and adults were both April 10. The median passage date for *calurus* was April 10 and *harlani* was 1 day earlier on April 9.

Ferruginous Hawk A total of 6 birds was counted on 6 days between March 23 and April 13, which is 12.5% above the average of the last three years. Three birds were seen in both March and April. The count comprised 3 light morphs (1 adult, 2 juveniles) and 3 dark morphs (2 adults, 1 juvenile). The median passage date for the species was March 31.

Rough-legged Hawk A total of 101 birds comprising 83 light morphs, 18 dark morphs gave a dark:light ratio of 0.22. The count is 13.5% above the average of the last three years. Birds occurred on 31 days between February 25 and April 19, with a highest single-day count of 16 on March 14. Sixty-eight birds moved in March and 30 in April, and the median passage date was March 21.

American Kestrel A total of 10 birds, 4 males, 4 females and 2 of indeterminate sex were recorded on 6 days between March 29 and April 22 when 3 of the birds were seen. The total is 6.2% below the average of the last three years. The median passage date was April 13.

Merlin A total of 14 Merlins were recorded, 12 of the race *F.c.columbarius* comprising 3 indeterminate males and 5 females (3 adults and 2 indeterminate) and 4 birds of undetermined age or sex; 1 female/juvenile bird of the race *F.c.richardsonii*, and 1 female/juvenile bird of the

race *F.c.suckleyi*. The total is 10.6% below the average of the last three years. The birds were counted on 11 days between March 23 and April 18. Five birds moved in March and 9 in April, and single day high counts of 2 birds occurred on 3 days. The median passage date for the species was April 4.

Gyrfalcon Nine birds were counted on 8 days between March 7 and April 18, with 2 birds occurring on March 24. Six birds were seen in March and 3 in April. The count is 80% above the average of the last three years and equals 2016 as the highest count at the site. The flight comprised 4 adult female grey morph birds, 4 indeterminate grey morph birds, and 1 adult white morph of uncertain sex on March 24.

Peregrine Falcon A total of 10 Peregrine Falcons were counted on 7 days between March 27 and April 20. The total is 25% above the average of the last three years. Two birds occurred on each of April 4 and 10. One bird occurred in March and 9 in April. The flight comprised 10 adults (7 males, 1 female) and 2 of indeterminate sex. The median passage date for the species was April 10 and for adults April 13.

Prairie Falcon Three birds were seen on 3 days between April 2 and April 14. The count is 60.9% below the average of the last three years.

Completing the count of 2340 birds were 15 unidentified *Buteos* (4 light, 8 dark and 3 indeterminate), 3 unidentified eagles, 1 unidentified large falcon and 3 unidentified raptors.

Table 11 summarizes the median passage data for both the Mount Lorette and Beaver Mines sites, and **Table 15** compares the proportions of the raptor groups and passage rates at the three sites.

Further details of this count can be found on the spring 2018 blog on our website: www.eaglewatch.ca.

Acknowledgements All counts were conducted by Peter Sherrington usually assisted by Hilary Atkinson, except for March 3 when the count was conducted by Denise Cocciolone-Amatto and Raymond Toal after 1200, March 12 when Gord Petersen took over at 1700 and March 24 when Denise Cocciolone-Amatto took over at 1700. Assistance was also provided on other occasions by Phil Hazelton (4 days), Gord Petersen (4 days), Denise Cocciolone-Amatto (3 days), Doug and Teresa Dolmen (2 days), Monica Bartha (1 day), Fred Calverley (1 day), Pat Lucas (1 day), Carl Simmons (1 day), Connie Simmons (1 day) and Raymond Toal (1 day).

Steeple Ridge extended reconnaissance count, British Columbia

Introduction

In the fall of 2009, Vance Mattson conducted the first extended reconnaissance count at or near the Steeples Ridge which is located on the east side of the Kootenay Valley (Rocky Mountain Trench) 25 km NE of Cranbrook, British Columbia. Three sites were used to monitor raptor movement along, or just north of, the NNW-SSE oriented Steeples Ridge which forms the southern part of the Hughes Range on the western flank of the Rocky Mountains. Of significance is that it is located about 80 km almost due west of the Piitaistakis-South Livingstone and Vicki Ridge/Beaver Mines sites giving the possibility of simultaneously monitoring movement along the eastern and western flanks of the Rocky Mountains at the same latitude. Vance spent 41 partial days (148 hours) at 3 sites between September 18 and November 12, 2009, with 95% of the time being spent between 1300 and 1800 and recorded 453 migrant raptors of 12 species. An extended spring reconnaissance count was conducted at the site for the first time in 2010, and 2018 is the ninth spring count there (**Table 13**).

During the spring 2018 season a total of 40 days (178.5 hours) was spent in the field. All the observation was conducted at the Bill Nye site with the exception of April 2 and 8 when low cloud resulted in observation being conducted in the valley at Wasa Lake. The number of days is 26% above the 2010-2017 average and is the second highest in the history of the count tied with 2014; the hours are 41.8% above average and are also the second highest ever.

The Bill Nye (Scarface) site is located at 49° 45' 11.10"N, 115° 38' 49.14"W at 1041 metres is named after a prominent 'scar' on the face of the mountain and is a convenient viewing option from Wasa Lake. Following Lazy Lake Road east toward Lazy Lake, the site is located south of an unmarked back road approximately 10 km from the Lazy Lake Road turn off on Wasa Lake Park Drive on the southern edge of Wasa Lake. The site is located about 5 km southeast from the back road turnoff, although it may require detailed instructions to arrive there. The site offers views of the birds as they pass over, or in front of, the ridge. 'Scarface Peak' (2400 m) is the most westerly and visibly craggy peak of Mount Bill Nye (2600 m).

Weather and General flight dynamics

A total of 11 days were lost to inclement weather and a further 2 to previous commitments. On 20 active days observation commenced after 1500 because of work commitments. Hourly weather data were not gathered but daily weather summaries were produced. (**Table 14**). Despite the days lost to inclement weather, observation was fairly steady and there were no prolonged periods that in the past have delayed raptor movement for several days (**Figure 7**). Most of the movement occurred between March 10 and March 25 when 614 birds were counted comprising 68.9% of the total count. The highest daily counts were March 16 (117) and March 17 (128) with lesser peaks on March 10 and 11 each with 68 migrants. The April count, although more sporadic involved 248 migrants (+241.5%) including 62 Bald Eagles (+155.7%) and 97 Golden Eagles (+241.9%), although these totals were enhanced by more observation time with days and hours during April being 54.5% and 81.8% above average respectively. The main peak in April occurred on April 8 when heavily shrouded mountains resulted in observation being conducted in the valley near Wasa Lake when 58 migrants, including 21 Bald Eagles and 16 Golden Eagles moved north over Wasa and the Kootenay River.

Count Summary

The season produced a record count for the site of 891 migrants of 10 species which is 97.9% above the average of the previous 8 years. The count was 19 Turkey Vultures (+137.5% and a

new site record), 3 Osprey (+140%, equaling the previous high count), 181 Bald Eagles (+39.5% and the second highest count), Sharp-shinned Hawk 19 (+347.1% and a new site record), Northern Goshawk 3 (+50%), Red-tailed Hawk 31 (+230.7% and a new site record), Rough-legged Hawk 7 (+124%, equaling 2 previous high counts), Golden Eagle 620 (+99.3% and a new site record), American Kestrel 3 (+200% and the second highest count), Peregrine Falcon 3 (+380% and a new site record) and 2 unidentified eagles. Species seen on previous counts but absent this year were Northern Harrier and Merlin, while Cooper’s Hawk, Broad-winged Hawk, Swainson’s Hawk, Ferruginous Hawk, Gyrfalcon and Prairie Falcon have never been recorded at the site in the spring (**Table 13**).

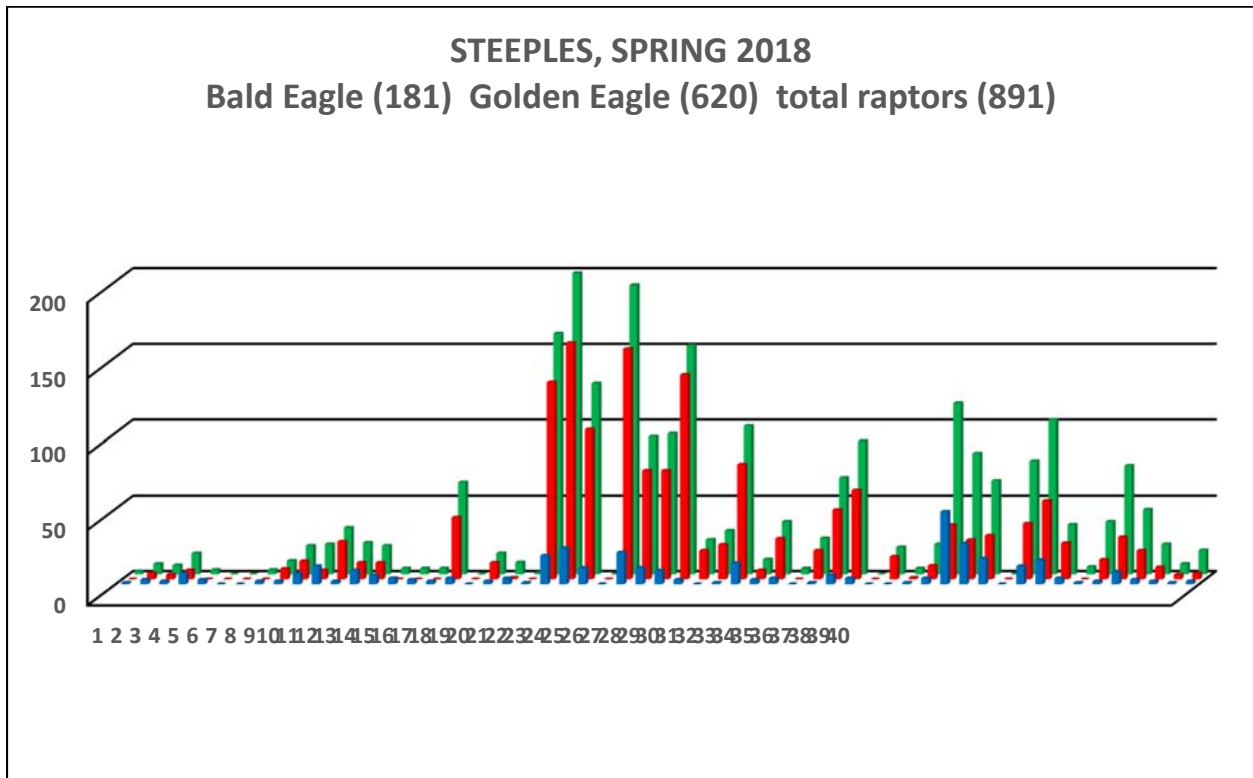


Figure 7

Bald Eagle

A total of 181 Bald Eagles was recorded on 27 active days with a single-day high count of 24 on March 11, and 5 other days had double-digit counts. The total is 39.5% above the 2010-2017 average and is the highest spring count for the site. The flight comprised 86 adults, 11 subadults and 84 juveniles, giving an immature:adult ratio of 1.1 which, as usual, is much higher than the ratios of 0.43 at Mount Lorette and 0.26 at Beaver Mines.

Golden Eagle

The 620 migrant Golden Eagles were recorded on 30 of a possible 40 active field days (75%) with a highest single day count of 119 on March 17 and a second highest count of 101 on March 18. The total is 99.3% above the 2010-2017 average and is the highest spring count for the site. Fifteen days had double-digit counts this season. The flight comprised 522 adults, 11 subadults, 81 juveniles and 6 birds of unknown age giving an immature:adult ratio of 0.18, which compares to a ratio of 0.25 at Mount Lorette and of 0.14 at Beaver Mines.

Other Species

Turkey Vulture A record 19 birds (3 adults, 16 unaged) were counted on 5 days between April 8 and 22. The highest daily count was 8 on April 22. The total is 137.5% above average and is the highest ever spring total for the site.

Osprey Three birds were seen on April 22, the last day of the count. The total is 140% above average and equals the previous high count of 2014.

Northern Harrier Not recorded this year but seen on 5 previous counts.

Sharp-shinned Hawk A total of 19 birds were counted on 7 days between April 11 and 22, with a single-day high count of 5 on April 22. The total is 347.1% above average and is a new high spring count for the site. The count comprised 12 adults, 1 juvenile and 6 birds of unknown age.

Northern Goshawk Single birds (2 adults, 1 unaged) were seen on March 18, April 8 and April 22. The count is 50% above average and is the second highest ever but well behind the high count of 8 in 2010.

Red-tailed Hawk A record 31 birds were counted on 8 days between April 3 and 22. The count is 230.7% above average. The flight comprised 29 “Western Red-tailed Hawks” (*B.j.calurus*): 19 adult and 2 juvenile light morphs, 1 adult rufous (intermediate) morph and 4 adult and 1 juvenile dark morphs, and 2 adult dark morph “Harlan’s Hawk” (*B.j.harlani*). The overall immature:adult ratio was 0.11 compared to 0.02 at Mount Lorette and 0.01 at Beaver Mines.

Rough-legged Hawk A total of 7 birds (5 light, 2 dark) were counted on 4 days between April 8 (when 3 birds occurred) and April 22. The count is 124% above average and equals previous high counts in 2010 and 2012.

American Kestrel Two birds (1 adult female and 1 of unknown age or sex) were seen on April 8 and another adult female on April 22. The count is 200% above average and is the second highest at the site behind the 4 counted in 2014.

Merlin Not recorded, the only previous record being a single bird seen in 2017.

Peregrine Falcon Two adults were recorded on April 18 and a third on April 22. The count is a spring record for the site and 380% above average.

Completing the count of 891 birds were 2 unidentified eagles.

Principal Observer at Steeples

All counts were conducted by Vance Mattson, assisted by Virginia Rasch on March 11 and 31.

Comparison of three sites by raptor categories

Percentage of raptor categories at the three sites spring, 2018			
	Mount Lorette	Steeples	Beaver Mines
Turkey Vulture	0	2.1	0.04
Osprey	0.1	0.3	0.13
Northern Harrier	0.1	0	1.03
Eagles	95.7	90.1	80.8
<i>Accipiters</i>	1.5	2.5	3.4
<i>Buteos</i>	1.9	4.3	8.6
Falcons	0.6	0.7	2.0

It is again interesting to note how closely the Mount Lorette and Steeples sites compare in percentage occurrence of raptor categories, both having an overwhelming dominance of eagle species. At Beaver Mines, although eagles are the

most significant element of the migration, harriers, falcons, and especially *Accipiters* and *Buteos* also occur in significant numbers. This results from the fact that at both Mount Lorette and Steeples the birds are migrating above high mountain ridges, whereas at Beaver Mines they are moving along a foothills ridge just east of the mountains.

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Table 15 comparison of raptor groups at all three sites, spring 2018



.....*AND STILL COUNTING!*