

MOUNT LORETTE AND BEAVER MINES, ALBERTA, SPRING 2016

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 24th consecutive year that a systematic spring count has been held at Mount Lorette. It is the 8th 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 above seasonal normals.

At Mount Lorette the combined species count of 2866 was 13.1% below average, with the March total accounting for 87.2% of the final count. The Golden Eagle count was 2542 which was 14.9% below average, but included the second earliest 100+ count of 134 on March 7. The season was characterized by early movement which is reflected in the earlier than average median passage dates for most species. Counts of Northern Harrier, Northern Goshawk, Red-tailed Hawk and Rough-legged Hawk were significantly above average.

The Golden Eagle count is close to average for counts conducted since 2003 and suggests that the population has stabilized following a significant decline in numbers between 1995 and 2002.

The count at Beaver Mines was extended to 52 days and produced 2038 raptors of 17 species, but a total of only 963 Golden Eagles indicates that the main movement of this species is farther to the west in the spring.

The seventh reconnaissance count at the Steeples count on the western flanks of the Rocky Mountains near Cranbrook, BC produced a count of 372 birds including 233 Golden Eagles. The passage rate of 2.5/hour was 34.7% below average.

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 north-east 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 1973-2016. **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.

Once again no count was held this season at the Piitaistakis-South Livingstone site, and so this report concerns only the count at Mount Lorette, a count over the same period at Beaver Mines in SW Alberta and the 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 52 days (635hours) of a possible 53 days at the site between March 01 and April 22, the days and hours being 4.7% and 15.5% above the average of valid counts respectively.

The reconnaissance count that was first conducted by Peter Sherrington at Beaver Mines last year was extended this year to a 52 day (401.3 hours) count of a possible 53 days between March 01 and April 22. At the Steeples reconnaissance count in BC Vance Mattson spent 34 days (151.5 hours) of a possible 53 days at the site between March 1 and April 22. This is the seventh consecutive spring season that this count has been held.

Mount Lorette, Alberta

Weather

Table 6 summarizes the weather data from this season's count. During the count only 1 day (March 28) was completely lost to adverse weather (72.2% below the average of the last 5 years, all of which used the same count period), and no other day was significantly shortened because of the weather. A total of 15 days (28.8%) experienced precipitation (excluding days with occasional flurries or drizzle) which is 33.9% below average. Snow fell on 7 days 13.5%; 61.3% below average) and rain on 8 days (15.4%: 245.3% above average).

The highest maximum temperature was 22°C on April 18 and the lowest maximum was 1°C on March 17; the highest minimum temperature was 3°C on March 21 and the lowest minimum was -14°C on March 18. For the first time on a spring count the temperature rose above freezing on all 52 active observation days.

Regrettably, once again 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 75.0% of the time, from the NW-NE 17.3%, and from the SW-NW 7.7%. Compared to the average of the last five years the prevailing SSW-W winds were close to average (+5.4%)

On active observation days ridge wind speeds were assessed as strong to very strong (>41 km/h to >100 km/h) 5.8% of the time, moderate to strong (11 to 41+ km/h) 30.8% of the time, moderate (11-40 km/h) 28.8%, light to moderate (1-40 km/h) 26.9% and light winds occurred 5.8% of the time. On 1 day (1.9%) winds varied from light to strong. Compared to average, strong to very strong winds were 69.7% below average and moderate to strong winds were 6.6% below average; moderate winds were 114.9% above average, light to moderate winds were 25% above average and light winds were 15.5% below average.

Seven active days (13.5%) experienced cloud cover between 80 and 100% all day. A total of 31 days (59.6 %) experienced 100% cloud for at least part of the day. The eastern ridge system (Fisher Range and Mounts Lorette and McDougall) was at least partly obscured on 18 active days (34.6%), and 40-100% obscured on only 5 active days (9.6%); the western ridge system (Mounts Kidd, Bogart, Allan and Collembola) was at least partly obscured on 26 active days (50.0%), and 40-100% obscured on 9 active days 17.3%). Severe daily occlusions (40-100%) of the eastern ridges on active days were 27.6% below average while the western ridges were occluded 18.1% below average.

In summary the season was, like last year, significantly warmer than normal, precipitation was significantly less than normal with rain days slightly more prevalent than snow days, ridge winds were predominantly SSW-W as usual but strong winds were significantly less and moderate winds significantly more than average, and cloud cover and ridge occlusion were also significantly below average. In general the weather was conducive both for raptor movement and for observation.

General flight dynamics March 1 to April 22

A total of 2866 migrant raptors of 14 species were counted on all 52 active observation dates between March 1 and April 22 (**Table 1**). The combined species total was just 2.4% below the long-term average of all counts for the period March 1 to April 22 at the site (**Table 3A**), but 13.1% below average when the anomalously low counts are excluded (**Table 3B**). A total of 18 days (34%) had counts of 10 birds or less. Unlike last year raptor movement started early with a significant movement of 61 birds on March 6 followed by 144 on the following day that included the second earliest ever 100+ movement of Golden Eagles at the site (138). With the exception of the last few days of the month movement was sustained throughout March with the 2500 raptors counted being just 4% lower than the average of the valid counts (**Table 4B**). Nine days in the month saw passage of more than 100 raptors but the highest single-day count of 319 on March 12 was 25.1% below average. The March combined species total of 2500 represented 87.2% of the total spring 2015 count. Movement continued to be persistent, but more sporadic in April, with a high combined species count of 55 on April 10. Counts on 11 days (April 1-3, 8-10 and 15-19) accounted for 304 birds that comprised 83.1% of the month's total of 366 which is 47.4% lower than the long-term average of valid April counts (**Table 5B**).

Of the 14 species that regularly occur during the period (**Table 3B**) 4 species were significantly above average: Northern Harrier 11 (+145.9%) which is the highest ever spring count for the species, Northern Goshawk 35 (+56.5%), Red-tailed Hawk 37 (+31.6%), Rough-legged Hawk 39 (+81.0%). Turkey Vulture 2 (+1167%), Osprey 2 (+5.6%) and Peregrine Falcon 2 (+81.0%) were non-significantly above average. Six species were significantly lower than average: Bald Eagle 155 (-14.9%), Sharp-shinned Hawk 17 (-32.6%), Cooper's Hawk 5 (-26.9%), Golden Eagle 2542 (-14.9%), Merlin 2 (-71.2%), Gyrfalcon 1 (-7.3%) and Prairie Falcon 2 (-7.3%). Broad-winged Hawk (recorded on 3 previous counts), Ferruginous Hawk (recorded on 3 previous counts) and American Kestrel (recorded on 11 previous counts) were not recorded this year, while Swainson's Hawk has never been recorded at the site during the current count period.

The final count was Turkey Vulture 2, Osprey 2, Bald Eagle 155, Northern Harrier 11, Sharp-shinned Hawk 17, Cooper's Hawk 5, Northern Goshawk 35, *Accipiter* sp. 2, Broad-winged Hawk 0, Swainson's Hawk 0, Red-tailed Hawk 37, Ferruginous Hawk 0, Rough-legged Hawk 39, *Buteo* sp. 1, Golden Eagle 2542, eagle sp. 6, American Kestrel 0, Merlin 2, Gyrfalcon 1, Peregrine Falcon 2, Prairie Falcon 2, *Falco* sp. 2 and indeterminate raptor 3, for a total of 2866 migrant raptors of 14 species.

The combined species median passage date was March 18 which was 5 days earlier than the long-term average. Of the 8 species occurring in sufficient numbers to calculate median passage dates, 7 were earlier than average (Rough-legged Hawk 18 days, Sharp-shinned Hawk 6 days, Bald Eagle 5 days, Northern Harrier, Northern Goshawk and Golden Eagle 4 days, and Cooper's Hawk 3 days. Only Red-tailed Hawk was later than average: 7 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 2542 migrating Golden Eagles on 48 days between March 1 and April 21, with the highest single-day count of 296 occurring on March 12 (**Figure 1**). The number of days on which the species was recorded is 7.4% above average, the total is 14.9% below the long-term average and the high count is 26.9% below average and is the second lowest spring maximum for valid counts at the site and only the second below 300. Eight other days also had counts of over 100 birds: March 7 (138), which was the second earliest 100+ Golden Eagle day ever at the site behind the 134 counted on March 6 2006, March 9 (140), March 13 (208), March 18 (235), March 19 (204), March 20 (212), March 26 (108) and March 27 (158).

The March count of 2339 was 6.78% above the average of all counts at the site (**Table 4A**), but when the anomalously low counts are excluded the figure falls to -5.0% (**Table 4B**). The April count of 203 is 61.2% below the average excluding the anomalously low counts (**Table 5B**). The flight comprised 1926 adults, 67 subadults, 103 juveniles and 446 birds of unknown age yielding an immature:adult ratio of 0.09 which coincides with the long-term average.

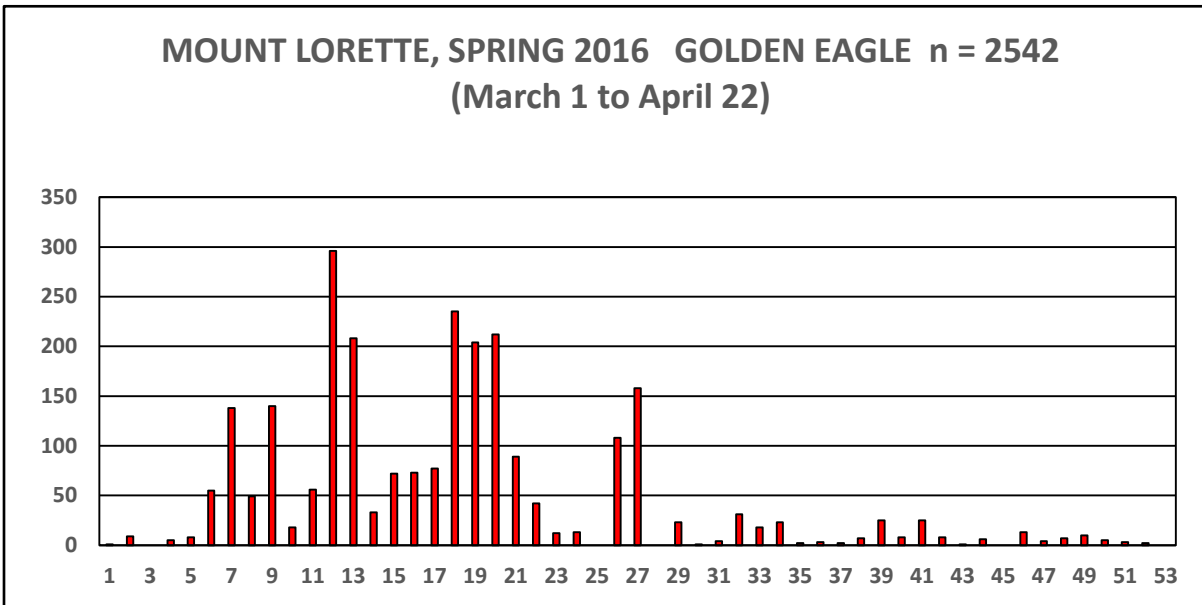


Figure 1

The pattern of the hourly cumulative counts (**Table 7, Figure 2A**) generally 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 slow build-up to 1100-1200 followed by an anomalously high count of 287 birds between 1200 and 1300. Subsequently there is steady systematic increase in numbers that peak at 439 between 1700-1800, 1 hour later than average, and rapidly diminishing thereafter. The only day with a significant early movement was March 12 when 64 birds moved between 1000 and 1100. The highest single-hour count was 80 between 1700 and 1800 (MST) on March 7, and the only other hours that registered counts above an average of one bird per minute were on March 12 when both 1000-1100 and 1200-1300 saw a passage of 64 birds. Three birds moved before 0700 and 2 after 1900 (MST).

The median passage date for the species and for adult birds was March 20, which were 3 and 2 days earlier than average respectively. The median passage date for immature birds was April 22 which is 17 days earlier than average reflecting the anomalously low count of young birds in April. It is possible that the main immature movement occurred after the end of the count on April 22.

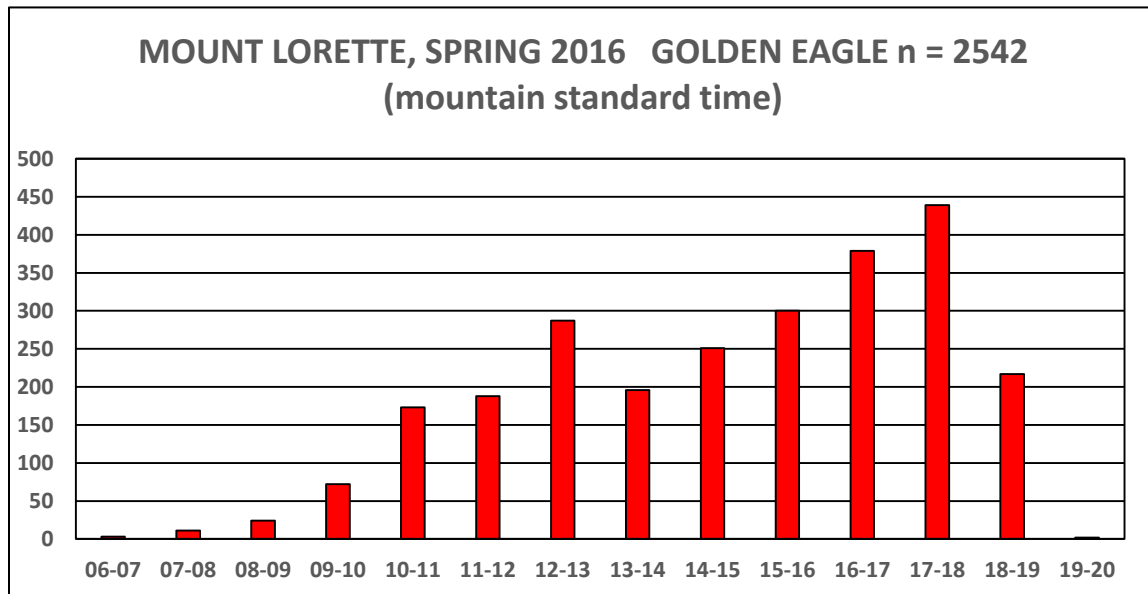


Figure 2A

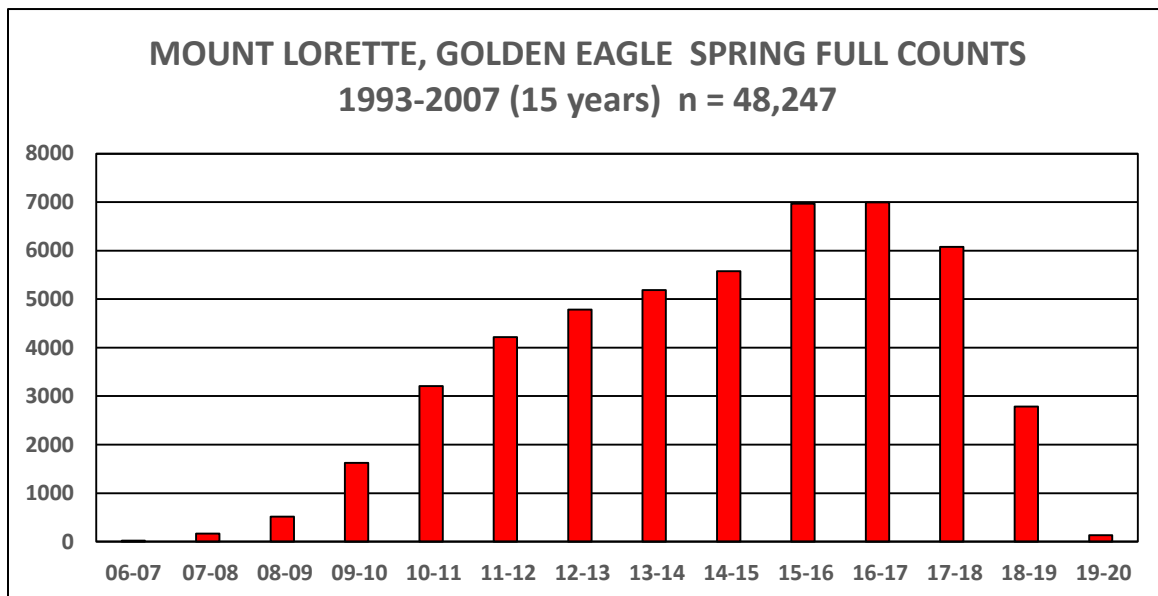


Figure 2B

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**.

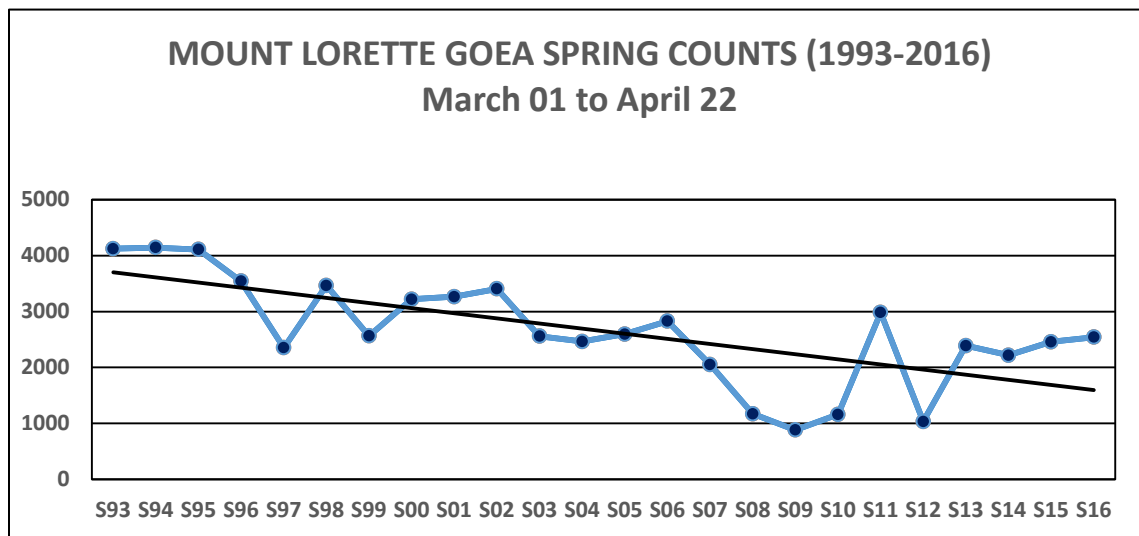


Figure 3A

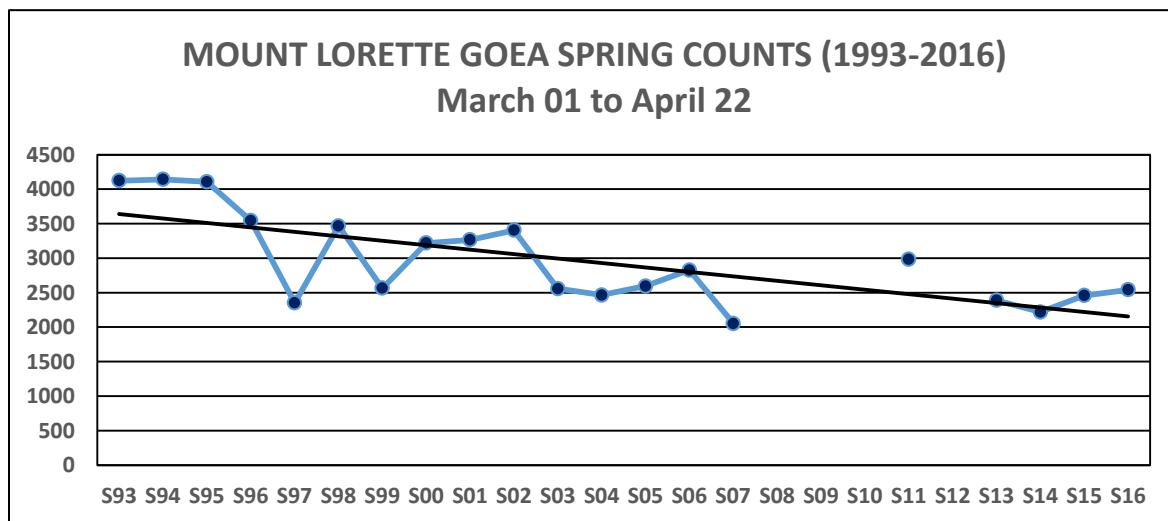


Figure 3B

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 a significant decline over the last 20 years (and especially since 1995) and removal of the recent 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 3C**) the trend is almost horizontal suggesting that the population has remained stable over this 14 year period, following a significant decline between 1995 and 2002.

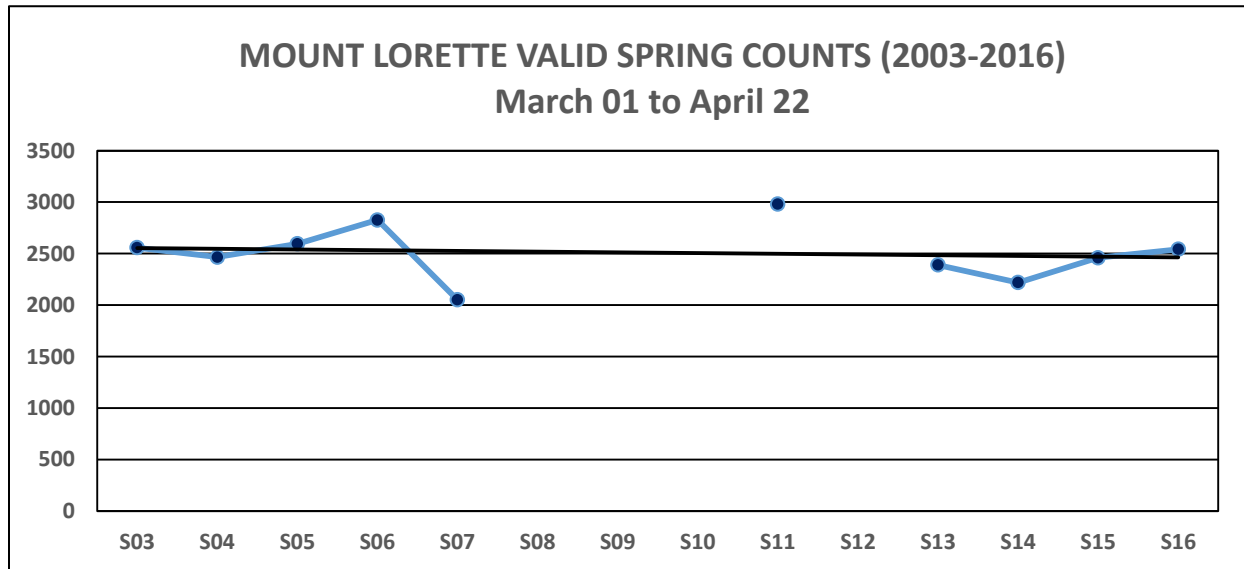


Figure 3C

Golden Eagle Age Analysis

Figure 4 shows the ratio of immature and adult Golden Eagles from 1994 to 2014. 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 (red) 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 generally under-counts the number of juvenile birds, many of which 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). 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 2000/01, that then fell to 2003 before rising to the latest peak in 2008 with the ratio falling over the next two years. This would indicate that two, more or less, eight-year cycles have occurred during the life of the project so far. Many immature Golden Eagles (subadults and juveniles) move north in 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. The age ratio from the fall 2013 and 2014 counts suggest that breeding success is beginning to increase again with numbers beginning to rise towards the next peak which is expected be around 2016. Reports from the Yukon⁵ suggest that 2013 saw a significant rise in the number of Snowshoe Hares, and this should be reflected in the number of juvenile birds recorded on the fall count for the next few years. The spring 2016 age ratio of 0.09, however represents a slight upswing in the trend contrasting with the anomalous downswing in the trend seen in the fall of 2015.

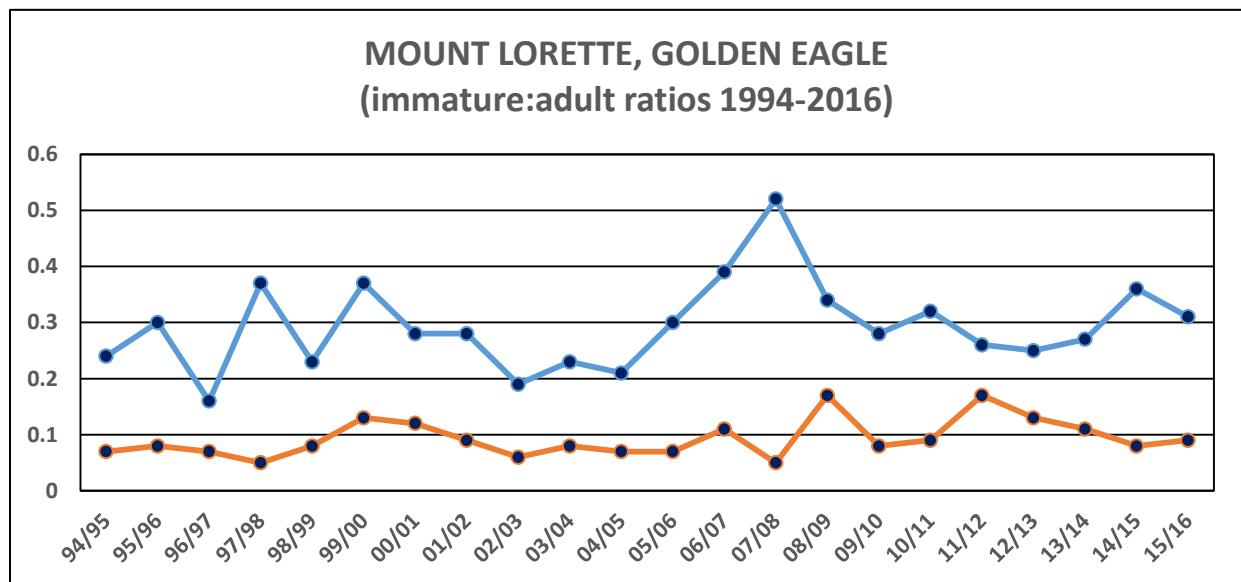


Figure 4

Bald Eagle

Observers counted 129 Bald Eagles on 32 days between March 1 and April 18 (**Figure 5**). This was highest count since 2011, but is 22.8% below the long-term average of all counts, and 30.3% below the average excluding 2008-10 and 2012. The highest daily count was 18 on March 21 which is 11.9% below the average high count (excluding low counts) for the period. The March count of 98 was 8.5% below average and the April count of 31 was 58.8% below average. The flight comprised 92 adults, 14 subadults and 18 juveniles, 2 undifferentiated immature birds and 3 of indeterminate age giving an overall immature:adult ratio of 0.26 which is 23% below the long-term average ratio. The median passage date for the species was March 22, 6 days earlier than average; adult birds were 5 days earlier than average on March 22 and immature birds were 7 days early on March 25.

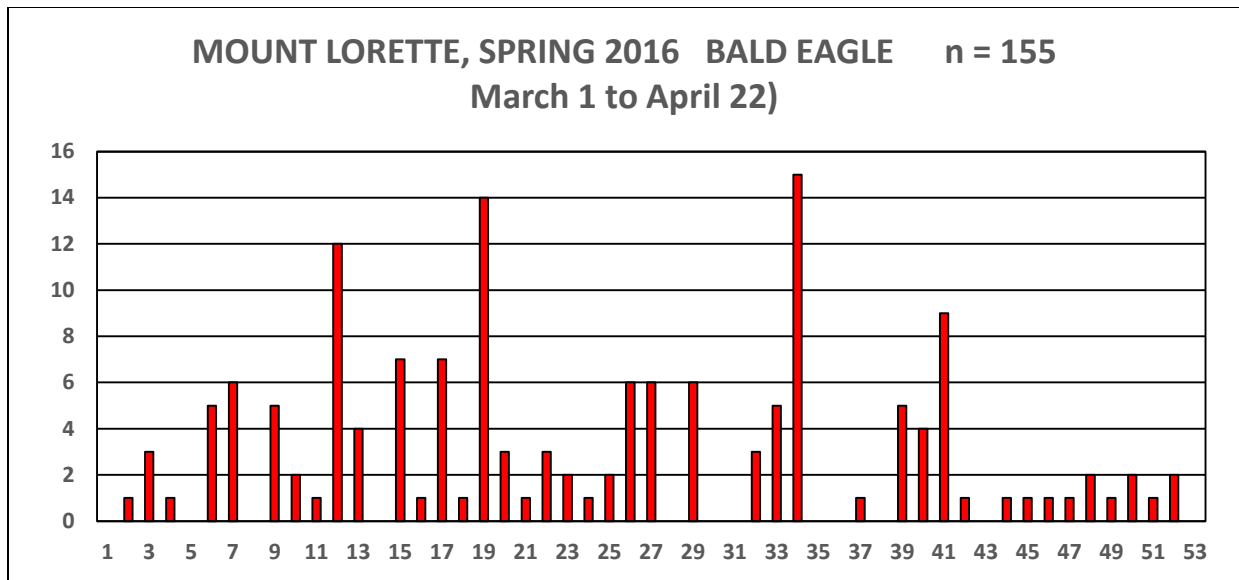


Figure 5

Other species

Turkey Vulture

Two adult birds were recorded on April 10. The only previous records for the count period were single birds recorded on April 13, 1993, March 18, 2011 and March 31 2013.

Osprey

Single birds were seen on April 15 and 20; the total of 2 birds is close to average (+5.6%).

Northern Harrier

The total of 11 birds (4 adult males, 4 adult females, 1 undifferentiated female/juvenile and 1 indeterminate bird) was a new high count, one more than the 10 birds recorded in 1994 and 1999. The total is 145.9% above average. Birds moved on 9 days between March 5 (the second earliest ever record behind March 3, 2011 and 30 days earlier than the average first occurrence) and April 20. Two birds were recorded on March 5 and April 9. The median passage date for the species was April 9, 4 days later than average.

Sharp-shinned Hawk

For the fourth successive year it was another low count for the species with only 17 birds counted on 12 days between the relatively early date of March 12 and April 22: the total is 32.6% below average. The highest daily count was only 2 birds that occurred on 5 days, which is 67.3% below the average high count. Four birds were counted in March, which is 65.2% above average, and 13 in April which is 43% below average. The flight comprised 7 adults, 1 juvenile and 9 unaged birds giving an immature:adult ratio of 0.14. The species median passage date of

April 16 is 6 days earlier than average, while the adult median of April 19 is 5 days later than average.

Cooper's Hawk

A total of 5 Cooper's Hawks occurred on 4 days between April 9 and April 21, a total that is 26.9% below average. Two birds were seen on April 10. The flight comprised 3 adults, 1 juvenile and 1 bird of indeterminate age, giving an age ratio of 0.33. The median passage date for the species was April 13, 3 days earlier than average.

Northern Goshawk

The total of 35 birds seen on 18 days between March 1 and April 20 was the highest count since 2005 and 56.5% above average. Five of the birds occurred on March 20 which is 46.2% higher than the average single-day count. The flight comprised 28 adults, 5 juveniles and 2 birds of unknown age giving an age ratio of 0.18 which is 21.3% above average. The median passage dates for the species was March 26, 4 days earlier than average, and for adults was March 20, 8 days earlier than average.

Broad-winged Hawk

The species was not recorded this season. The only previous records for the period were single birds seen on April 21 1994, April 13 1996 and April 19 2015.

Swainson's Hawk

This late migrant has never been recorded during this count period.

Red-tailed Hawk

The total of 37 birds counted on 13 days between March 15 and April 22, was 31.6% above average and the fifth highest spring count for the site. The highest daily count was 9 on April 18 which is 83.9% above the average high count and is the highest ever single-day spring count at the site. The flight comprised 32 "Western Red-tailed Hawks" (*B.j.calurus*): 26 adult and 2 juvenile light morphs and 4 adult dark morphs; 3 adult "Kridler's Hawk" (*B.j.borealis* var *kridleri*); 1 dark morph juvenile "Harlan's Hawk" (*B.j.harlani*), and 1 indeterminate dark morph bird. The overall immature:adult ratio was 0.09. The median passage dates of the species and for adults was April 16, 7 days and 8 days later than average respectively. Red-tailed Hawk was the only species with a later-than-average median passage date this season.

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 39 birds were counted on 15 days between March 12 (9 days earlier than the average first occurrence) and April 21. The count is 112.9% higher than average and is only 1 short of the highest spring count for the site of 40 in 2011. The highest single-day count was 6 on March 12 and 22, which is close to average (+3.6%). The median passage date of March 22 was 18 days earlier than average. The flight comprised 30 light morphs, 7 dark morphs and 2 birds of indeterminate morph.

American Kestrel

No birds were recorded this year. It has occurred on 11 previous years.

Merlin

Only 2 birds were recorded: 1 on April 16 and 1 on April 19. The total is the second lowest ever and is 71.2% below average. One bird was an adult of the race *columbarius*, and 1 bird was of indeterminate race, age and sex.

Gyr Falcon

A single grey morph bird was recorded on March 17.

Peregrine Falcon

An adult bird recorded on March 19 was the second earliest ever at the site and 18 days earlier than the average first occurrence, and a juvenile bird was seen on April 9. The total is 81 % above the average count.

Prairie Falcon

A single bird was seen on March 24 and April 11, a total that is close to average (-7.3%).

Observers

Principal Observers: Joel Duncan (11 days), Brian McBride (8.5 days), Jim Davis (8 days), Bill Wilson (8 days), Terry Waters (7 days), George Halmazna (5 days), Cliff Hansen (2.5 days), Peter Sherrington (2 days)

Assistants: Cliff Hansen (11 days), Patrick Farley (7 days), Ruth Morrow (6 days), Dan Parliament (6 days), Jennifer Waters (5 days), Rosemary Power (4 days), Heinz Unger (4 days), Joel Duncan (3 days), Kevin Barker (3 days), Chris Hunt (2 days), Gord Petersen (2 days), Patricia Farley (1 day), Dawn Hall (1 day), Brian McBride (1), Tina & Ken Moore (1 day), Diane Stinson (1 day), Michael Woertman (1 day).

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⁵ *Snowshoe hare on rebound in Yukon as cycle continues* CBC News website, posted Aug 6 2004

Beaver Mines extended reconnaissance count, 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 have commented in the daily blog on individual days when I have 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 were recorded 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 the main spring raptor flyway and not 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.

This spring I conducted a full count comprising 52 days (401.34 hours) between March 1 and April 22 exclusively from my house in Beaver Mines. The number of days and hours are 33.3% and 92.3% higher than 2015 respectively. The count produced a total of 2038 migrant raptors of 17 species (**Table 9**), which is 13.3% higher than in 2015 (**Table 10**). As would be expected from the extended coverage, most species occurred in higher numbers compared to 2015, the exceptions being Osprey, which was the only species not recorded, Golden Eagle which was 17.6% lower than last year and American Kestrel which was 38% lower. The combined species median passage date was March 23 compared to March 18 at Mount Lorette.

The weather is summarized in **Table 9**. Only one day, March 22, was lost to poor weather. The season was again characterized by significantly higher than normal temperatures throughout the count, but especially in April, a prevalence again of moderate to strong WSW-SW winds, and high cloudy skies that favoured detection and identification of high flying migrants. As with last year the count notably differs from that at Mount Lorette in the variety and numbers of non-eagle species which comprised 39% of the total count (15 species) at Beaver Mines compared to 5.7% (12 species) at Mount Lorette.

Golden Eagle A total of 963 birds were counted on 45 days between March 1 and April 22, of which 83 occurred in March and 132 in April. The total is 17.62% below last year's count. The highest single-day count was 106 on March 8 and no other daily count exceeded 100 birds. The flight comprised 831 adults, 67 subadults, 41 juveniles and 24 unaged birds, giving an immature:adult ratio of 0.13 which is much higher than the 0.09 recorded at Mount Lorette. The March movement was 831 compared to 1070 last year, indicating that more birds moved west of the site than last year. As most of the birds moving in March are adults, the low count in March increases the relative percentage of immature birds. The median Passage dates for the species,

adults and immature birds were March 15, March 14 and April 4 respectively, compared to March 18, March 17 and March 27 at Mount Lorette.

Bald Eagle The Bald Eagle count of 276 on 43 days between March 1 and April 22 was significantly higher (+59.1%) than last year's total. The March count was 159, and 119 moved in April with a single-day high count of 33 on April 2. The flight comprised 219 adults, 16 subadults and 42 juveniles with an immature:adult ratio of 0.26, which is much lower than the Mount Lorette ratio of 0.48. The median Passage dates for the species, adults and immature birds were March 26, March 25 and April 1 respectively, compared to March 23, March 20 and March 26 at Mount Lorette.

Turkey Vulture Two adult Turkey Vultures were seen at 1830 on March 16 which is a first March record for the area and the earliest by far on a raptor count in SW Alberta. The earliest records for the species on the three Piitaistakis-South Livingstone spring counts were April 9 (2008), April 22 (2009) and April 23 (2010). At Steeples in the Rocky Mountain Trench, where the species is common and widespread, the earliest recorded migrant was March 27, 2015 (which is their only March record to date) and the average first occurrence date (2008-2015) is April 10.

Osprey This was the only species not recorded on the count, but the species was seen in the area as early as April 10 and several nests were occupied before the end of the count period.

Northern Harrier A total of 68 migrants were counted on 29 days between March 9 and April 22 comprising 23 males (17a, 5j, 1u), 43 females (26a, 10j, 7u) and 2 birds of unknown sex or age, giving an age ratio of 0.35. The highest single-day count was 8 on April 4. The count is 61.8% higher than last year's total.

Sharp-shinned Hawk A total of 98 birds were counted on 25 days between March 8 and April 22, with a single-day high count of 14 on April 8. The count is 63.3% higher than in 2015. The flight comprised 36 adults, 1 juveniles and 61 unaged birds. Nine birds were seen in March and 89 in April. The median passage date for both the species and for adult birds was April 8.

Cooper's Hawk The count of 18 birds comprised 13 adults, 2 juveniles and 3 unaged birds. Birds occurred on 12 days between April 2 and April 21 with a single-day high count of 4 on April 11. The count is 20% higher than in 2015. The median passage date for both the species and for adult birds was April 11.

Northern Goshawk A total of 60 Northern Goshawks were counted on 25 days between March 6 and April 18, with a single-day high count of 6 on March 23. The count is 7.1% higher than that of last year. Unlike the other two *Accipiter* species 45 (75%) goshawks moved in March and only 15 in April. The flight comprised 42 adults, 8 juveniles and 10 unaged birds giving an age ratio of 0.19, and the median passage dates of the species, adults and juvenile birds were March 21, March 15 and April 6 respectively.

Broad-winged Hawk A total of 9 birds were counted on 5 days between April 10 and April 22, on which day 5 birds were seen. The count is 800% higher than last year's count of one bird. The flight comprised 4 adults (3 light and 1 dark), 1 indeterminate light bird and 4 birds of indeterminate morph or age. The median passage date of the species was April 22.

Swainson's Hawk Five light morph birds (4 adults and 1 indeterminate) were counted on 3 days between April 9 and 22, on which day 3 birds were seen. The total is 400% higher than last year's count. By contrast the species has never been recorded at Mount Lorette during the present count period.

Red-tailed Hawk The total of 301 birds counted on 36 days between March 5 and April 22 was 87% higher than the count in 2015. Sixty-five birds occurred in March and 236 (78.4%) in April, with a single-day high count of 43 on April 6. The five-day period April 4-8 saw the passage of 138 Red-tailed Hawk that comprised 45.8% of the total count. The flight comprised 289 "Western" Red-tailed Hawks (*B.j.calurus*): 246 light morphs (206 adults, 18 juveniles, 22 indeterminate); 2 rufous morphs (1 adult, 1 juvenile) and 41 dark morphs (31 adults, 1 juvenile, 9 indeterminate); 11 adult dark morph "Harlan's" Red-tailed Hawks (*B.j.harlani*); and 1 indeterminate dark morph bird. The overall immature:adult ratio was 0.08 and the median passage dates of the species, adults and juvenile birds were April 5, April 5 and April 18 respectively. The median passage date for *harlani* was one day later than for *calurus* on April 6.

Ferruginous Hawk Six adult birds were counted on 4 days between April 13 and 26. The count is double that of last year. The flight comprised 4 light morph and 2 dark morph birds, and 2 birds occurred on both April 21 and 26. The median passage date was March 21.

Rough-legged Hawk A total of 148 birds comprising 123 light morphs, 24 dark morphs and 1 unknown morph gave a dark:light ratio of 0.2. Birds occurred on 40 days between March 1 and April 22, with a highest single-day count of 11 on March 11. One hundred birds moved in March and 48 in April, and the median passage date was March 20.

American Kestrel A total of 10 adult birds, 1 male, 7 females and 2 of indeterminate sex were recorded on 7 days between March 21 and April 11. Two birds occurred on both March 21 and April 6 and the median passage date was March 31. The total is 38% below last year's count.

Merlin All of the 16 Merlins recorded were the race *F.c.columbarius* and comprised 12 males (10 adults, 2 indeterminate), 3 females (1 adult, 2 indeterminate) and 1 bird of undetermined race, age or sex. The birds were counted on 12 days between March 14 and April 22, with 4 occurring on April 6. The median passage date for the species was April 4 and for adult birds April 2. The count is 23.1% higher than that of 2015.

Gyr Falcon A remarkable total of 9 birds were counted on 8 days between March 15 and April 7, with 2 birds occurring on March 26, which was also the median passage date of the species. The count is 800% higher than last year's count of one bird. The flight comprised 7 Grey morph birds (2 adult females, 1 juvenile of unknown age and 4 indeterminate birds), 1 indeterminate black morph and 1 adult male white morph that flew north on April 15.

Peregrine Falcon Also remarkable were the 11 Peregrine Falcons that were counted on 8 days between March 24 and April 21, a total that is 450% above last year's count of 2 birds. Two birds occurred on each of April 4, 5 and 21. The flight comprised 10 adults (7 males, 3 females) and 1 indeterminate bird. The median passage date for the species was April 5 and for adults April 4.

Prairie Falcon Nine birds were seen on 8 days between March 9, when 2 birds occurred, and April 14. The median passage date for the species was March 23.

Completing the count of 2038 birds were 4 small unidentified *Accipiters* (3 small, 1u), 14 unidentified *Buteos* (1 light, 5 dark, 8u), 3 unidentified eagles and 6 small unidentified raptors.

Table 11 summarizes the median passage data for both the Mount Lorette and Beaver Mines sites.

Details of this count and other single day counts in the area can be found on the spring 2015 blog on our website: www.eaglewatch.ca.

Acknowledgements All counts were conducted by Peter Sherrington except for March 17 (Denise Cocciolone-Amatto, assisted by Nel van Kamer, Keith Linton, and Karen and Doug Nicholson); March 18 (Denise Cocciolone-Amatto, assisted by Nel van Kamer, Chip Reed and Pat Lucas) and March 30 (Denise Cocciolone-Amatto, assisted by Nel van Kamer). Assistance was also provided on other occasions by Nel van Kamer (4 days), Denise Cocciolone-Amatto (2 days), Doug and Teresa Dolmen, Klaus Exner, Dawn Hall and Pat Lucas (each 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 Steeple 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 Steeple 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 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 2016 was the sixth spring count there (**Table 13**).

During the spring 2016 season Vance conducted a 34-day (151.5 hour) extended reconnaissance count out of a possible 53 days between March 1 and April 22 (**Table 12**). Most observation (29 days) was conducted at the Bill Nye site, 4 days March 3, 4, and April 3 and 8 were at the Lakit Lake site and the last day, April 22, was spent at the South Lakit site. Between 3 and 6.5 hours at an average of 4.46 hours a day were spent at the sites with most observations conducted between 1300 and sundown.

Details of the sites are as follows:

Bill Nye (Scarface) (49° 45' 11.10''N, 115° 38' 49.14''W, 1041m)

The Scarface site (named due to a prominent 'scar' on the face of the mountain), is a convenient 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' (2400m) is the most westerly and visibly craggy peak of Mount Bill Nye (2600m).

South Lakit (49° 35' 45.45''N, 115° 35' 30.50''W, 1080m)

The South Lakit Site is located approximately 6km north on the Fort Steele-Wildhorse Forest Service Road and is accessed from Wardner-Fort Steele Road. The Wardner-Fort Steele Road joins Highway 93 near Wardner in the southeast to Highway 93 near Fort Steele in the northwest. This road also runs along the east side of the Kootenay River with the Steeple Ridge (the location of the Steeple Site) immediately to the east. The Wildhorse Forest Service road is located just east of the Fort Steele Gas Station at the junction of Highway 93. The site itself is located off the Wildhorse Road, and sits at the southern base of the Lakit Range, with Lone Peak to the SSE and the Steeple Range commencing just beyond this point.

Lakit Lake

The site is situated about midway between the Bill Nye and South Lakit sites, but access is difficult and is not recommended.

Weather

Only 3 days (March 1, 6 and 27) were completely lost to adverse weather conditions when the ridges were obscured on heavily overcast days, and a further 16 days were missed owing to work commitments. Hourly weather data were not gathered but daily weather summaries were produced. (**Table 14**).

The temperature high for the count was 25°C on April 21 and the lowest maximum daily temperature was 6°C on March 13 and 17. Average high temperatures on active observation days in March were 9.8°C (range 6°C to 17°C) and 18.7°C in April (range 12°C to 25°C).

Temperatures, especially in April, were generally well above seasonal normals.

The most common ridge wind directions were S-W (50% of active days), followed by S-E (14.7%), and all other directions and calm days comprised 35.3%, so wind direction was more variable than normal. Wind velocities were assessed as strong on 32.4% of active days, moderate to strong 14.7%, moderate 14.7%, calm-light 32.4% and variable 5.9%. The 3 highest daily counts were 63 on March 11, 60 on March 19 and 42 on March 22, the first two being calm days and the third calm to moderate. Conditions were generally cloudy with 55.9% of active days experiencing 70-100% cloud cover, 23.5% between 20 and 60% and 20.6% with cloud cover 0-10%.

General flight dynamics

The highest count day was 63, including 60 Golden Eagles, on March 11, but the highest sustained movement was March 17 to 22 when 173 raptors were counted, that constituted 46.5% of the total count. This period saw 25% of the Golden Eagle movement and, more significantly, 42% of the Bald Eagle movement. This period roughly coincides with the peak movements in 2014 and 2015. The March count of 341 was 91.67% of the total count and April only produced 31 birds (8.33%) with a high count of only 11 on April 21. The overall passage rate of 2.46 raptors/hour is the second lowest ever at the site (after 2.31 the previous year) and is 34.7% below the average spring rate for the site (**Table 13**)

Count Summary

The count produced a total of 372 migrant raptors of 9 species (**Table 12**). Of this total 233 (62.6%) were Golden Eagles and 117 (31.5%) were Bald Eagles. Eagle species together comprised 94.6% of the total flight which is almost identical to the 94.3% of eagles recorded at Mount Lorette, although there Golden Eagles (2442) greatly outnumbered Bald Eagles (155). Other migrants at Steeples were scarce and comprised 2 adult Turkey Vultures, 2 Ospreys, 1a female Northern Harrier, 4 Sharp-shinned Hawks (1a, 3u), 2 adult Northern Goshawks, 8 light morph *calurus* Red-tailed Hawks (6a, 1j, 1u), 1 dark morph Rough-legged Hawk and 2

unidentified eagles. The results of all seven spring counts at the site are summarized on **Table 13**.

Golden and Bald Eagles

The 233 migrant Golden Eagles were recorded on 21 of a possible 34 active field days (61.8%) with a highest single day count of 60 on March 11 and with the second highest count of 44 on March 19. This is the third lowest spring count for the species at the site. Seven days (20.6%) had double-digit counts this season. The flight comprised 220 adults, 2 subadults, 11 juveniles giving an immature:adult ratio of 0.06, which compares to a ratio of 0.09 at Mount Lorette and of 0.13 at Beaver Mines.

The total of 117 Bald Eagles were recorded on 20 days (58.8%) with a single day high count of 19 on March 22 and 5 other days had double-digit counts, all between March 17 and 25 which produced 83 birds or 70.9% of the total count. The flight comprised 67 adults, 11 subadults and 39 juveniles, giving an immature:adult ratio of 0.75 which is much higher than the ratios of 0.48 at Mount Lorette and 0.26 at Beaver Mines.

Principal Observer at Steeples

All counts were conducted by Vance Mattson, assisted by Virginia Rasch on March 13 and 22, and by Daryl Calder on March 18.

Site Comparisons

It is interesting to note how closely the Mount Lorette and Steeples sites compare in percentage occurrence of raptor categories, both with 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 occurred 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.

Percentage of raptor categories at the three sites spring, 2016

	Mount Lorette	Steeples	Beaver Mines
Turkey Vultures	0.07	0.54	0.1
Ospreys	0.07	0.54	0
Northern Harrier	0.38	0.27	3.34
Eagles	94.3	94.1	60.89
<i>Accipiters</i>	2.05	1.61	8.83
<i>Buteos</i>	2.69	2.42	23.7
Falcons	0.31	0	2.7

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TABLE 1

Mount Lorette, Alberta, spring 2016																												
March 01-April 22 (52 days, 635 hours)																												
#	Date	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL	Principal Observer(s)	Assistant(s)
1	2016-03-01	10.5	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	BmB	ChA
2	2016-03-02	9	0	0	1	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	10	JDu	RR
3	2016-03-03	11	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	ChA	KB
4	2016-03-04	12	0	0	1	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	6	GH	BWe
5	2016-03-05	11.25	0	0	0	2	0	0	3	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	13	ChA	LA
6	2016-03-06	12	0	0	5	0	0	0	0	0	0	0	0	0	55	0	0	0	0	0	0	0	1	0	0	61	BWi	BWe, ChA, KS
7	2016-03-07	11	0	0	6	0	0	0	0	0	0	0	0	0	138	0	0	0	0	0	0	0	0	0	0	144	TW	PF
8	2016-03-08	12	0	0	0	0	0	0	2	0	0	0	0	0	49	0	0	0	0	0	0	0	0	0	0	51	BmB	ChA
9	2016-03-09	11.67	0	0	5	0	0	0	0	0	0	0	0	0	140	0	0	0	0	0	0	0	0	0	0	145	ChA	KB
10	2016-03-10	9.25	0	0	2	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	20	JDa	RR
11	2016-03-11	11	0	0	1	0	0	0	0	0	0	0	0	0	56	0	0	0	0	0	0	0	0	0	0	57	JDu	BWe
12	2016-03-12	11.75	0	0	12	0	2	0	2	0	0	0	0	6	296	0	0	0	0	0	0	1	0	0	0	319	ChA	LA, ChA
13	2016-03-13	12.5	0	0	4	0	0	0	1	0	0	0	0	0	208	0	0	0	0	0	0	0	0	0	0	213	BWi	BWe, ChA
14	2016-03-14	11	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0	0	33	TW	P&PF,ChA
15	2016-03-15	12.16	0	0	7	0	0	0	1	0	0	1	0	4	72	0	1	0	0	0	0	0	0	0	0	86	JDa	PQ,ChA
16	2016-03-16	10.25	0	0	1	0	0	0	0	0	0	0	0	1	73	0	0	0	0	0	0	0	0	0	0	75	JDu	RR, ChA, KB
17	2016-03-17	10.25	0	0	7	0	0	0	0	0	0	0	0	0	77	0	0	1	0	0	0	0	0	0	0	85	JDa	ChU, K&JM
18	2016-03-18	13	0	0	1	0	0	0	1	0	0	0	0	0	235	0	0	0	0	0	0	0	0	0	0	237	GH	DP,BWe
19	2016-03-19	12.33	0	0	14	1	1	0	0	0	0	0	0	1	204	0	0	0	1	0	0	0	1	0	0	223	JDa	DP, ChA
20	2016-03-20	13.67	0	0	3	0	0	0	5	0	0	0	0	0	212	0	0	0	0	0	0	0	0	0	1	221	BWi	BWe, FW, KS, JS
21	2016-03-21	11.25	0	0	1	0	0	0	0	0	0	0	0	0	89	0	0	0	0	0	0	0	0	0	0	90	TW	PF, DS
22	2016-03-22	11.5	0	0	3	0	0	0	0	0	0	0	0	6	42	0	0	0	0	0	0	0	0	0	0	51	JDa	ChA
23	2016-03-23	11.5	0	0	2	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	14	JDu	RR
24	2016-03-24	12.45	0	0	1	0	0	0	0	0	0	0	0	0	13	0	0	0	0	1	0	0	0	0	0	15	GH	RP
25	2016-03-25	12.25	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	GH	BWe
26	2016-03-26	13.25	0	0	6	0	1	0	3	0	0	0	0	1	108	0	0	0	0	0	0	0	1	0	0	120	ChA, JDa	KS, LA
27	2016-03-27	13.83	0	0	6	0	0	0	0	0	0	2	0	0	158	0	0	0	0	0	0	0	0	0	0	166	BWi	BWe
2016-03-28		NO OBSERVATION																										
28	2016-03-29	13	0	0	6	0	0	0	1	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	30	BmB	ChA, JA
29	2016-03-30	9.25	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2	JDu	RR
30	2016-03-31	13	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	0	0	5	ChA	KB
March		348.9	0	0	100	3	4	0	20	0	0	3	0	19	2339	0	2	1	1	1	0	0	4	1	2	2500		
31	2016-04-01	13.83	0	0	3	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	34	GH	DP
32	2016-04-02	13.25	0	0	5	0	1	0	2	0	0	0	0	5	18	0	0	0	0	0	0	1	0	0	0	32	JDa	LA
33	2016-04-03	14.08	0	0	15	1	0	0	4	0	0	0	0	0	23	0	0	0	0	1	0	0	0	0	1	45	BWi	BWe, KS
34	2016-04-04	10.5	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	TW	JW
35	2016-04-05	14	0	0	0	0	0	0	1	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	5	BmB	ChA
36	2016-04-06	13.75	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	JDu	RR
37	2016-04-07	13	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7	ChA	KB, ED
38	2016-04-08	14.5	0	0	5	1	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	1	0	0	0	32	BWi	DP
39	2016-04-09	13.67	0	0	4	2	2	1	0	0	0	2	0	3	8	0	0	0	1	0	0	0	0	0	0	23	JDa	LA
40	2016-04-10	13	2	0	9	0	2	2	4	0	0	4	0	4	25	0	0	0	0	0	2	1	0	0	0	55	ChA	BWe
41	2016-04-11	11.5	0	0	1	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	9	TW	DS, JW
42	2016-04-12	13	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	BmB	ChA
43	2016-04-13	13	0	0	1	0	0	0	1	0	0	5	0	1	6	0	0	0	0	0	0	0	0	0	0	14	GH	BWe
44	2016-04-14	11	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	ChA	KB
45	2016-04-15	13.25	0	1	1	1	0	1	0	0	0	1	0	0	13	0	0	0	0	0	0	0	0	0	0	18	GH	DP
46	2016-04-16	12.75	0	0	1	1	1	0	1	0	0	7	0	1	4	0	0	0	0	0	0	0	0	0	0	16	JDa	LA
47	2016-04-17	14.58	0	0	2	1	1	0	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0	1	0	13	BWi	BWe
48	2016-04-18	13	0	0	1	0	1	0	1	0	0	9	0	0	10	0	0	0	0	0	0	0	0	0	0	22	JDa	HU
49	2016-04-19	14	0	0	2	0	2	0	0	0	0	3	0	2	5	0	0	0	0	0	0	0	0	0	0	14	BmB	ChA
50	2016-04-20	13.5	0	1	1	1	0	0	1	0	0	1	0	1	3	0	0	0	0	0	0	0	0	0	0	9	GH	DP
51	2016-04-21	13	0	0	2	0	2	1	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	9	ChA	KB, ChU
52	2016-04-22	10	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	GH	DP
April		286.2	2	2	55	8	13	5	15	0	0	34	0	20	203	0	0	0	1	1	2	1	2	1	1	366		
Total		635	2	2	155	11	17	5	35	0	0	37	0	39	2542	0	2	1	2	2	2	1	6	2	3	2866		
	Date	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL		

TABLE 2

MOUNT LORETTE, SPRING COUNTS 1992-2016

YEAR	DAYS	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL
1992	8	53	0	0	20	0	0	7	4	0	0	4	0	0	389	0	0	2	0	1	0	0	0	0	0	427
1993	48	392.7	1	5	169	4	39	19	54	0	0	34	0	4	4140	0	9	0	3	4	0	1	0	3	0	4489
1994	70	648.7	0	7	229	12	62	23	44	2	0	50	1	22	4213	2	2	3	0	14	2	1	0	0	0	4689
1995	65	582	0	10	176	9	73	11	46	1	0	43	2	25	4143	5	17	1	6	6	0	0	0	0	0	4574
1996	80	728.3	0	12	266	13	106	20	25	3	3	23	0	15	3671	7	8	1	4	4	3	2	0	0	0	4186
1997	75	680.6	1	7	224	7	53	12	21	1	0	35	0	15	2461	9	9	1	1	3	2	4	0	4	0	2870
1998	72	650.4	0	8	164	16	40	10	9	2	1	34	0	30	3613	6	7	1	1	2	1	4	0	2	0	3951
1999	90	907	1	8	210	17	155	44	14	5	2	82	1	18	2817	16	8	0	1	4	2	1	0	0	3	3409
2000	85	933.4	1	21	237	14	74	21	11	0	2	30	1	26	3436	13	11	1	1	2	0	4	3	0	8	3917
2001	90	1037	0	6	276	9	56	18	32	4	0	50	2	26	3525	6	12	3	4	0	5	2	4	0	2	4042
2002	82	914.1	0	12	265	7	77	8	33	0	0	32	0	21	3518	8	11	4	2	2	3	1	1	2	5	4012
2003	86	939.2	2	6	209	12	39	9	12	4	0	34	1	17	2591	7	9	2	2	0	5	2	1	0	6	2970
2004	86	1068	0	7	200	8	58	12	23	0	0	39	0	11	2539	2	8	0	3	3	1	1	2	2	6	2925
2005	94	1238	1	28	235	10	82	25	57	2	1	28	2	28	2667	9	10	3	3	2	3	3	6	1	7	3213
2006	93	1214	2	11	234	7	61	18	27	1	1	28	0	26	2918	4	16	1	2	0	9	3	8	0	3	3380
2007	83	1019	4	8	212	6	62	18	27	1	1	70	0	17	2141	9	20	3	2	5	8	0	0	1	6	2621
2008	44	493.3	0	0	86	1	1	1	2	0	0	3	0	1	1171	0	2	0	1	0	3	2	3	2	3	1282
2009	40	450	0	0	76	0	6	5	7	0	0	6	0	3	882	0	1	0	0	1	4	1	5	1	1	999
2010	46	519	0	0	88	1	1	0	21	0	0	14	0	7	1160	0	1	1	0	1	1	2	13	0	1	1312
2011	48	556.1	1	1	192	5	41	8	17	0	0	45	0	40	2982	1	4	1	2	2	1	6	13	0	0	3362
2012	48	495.4	0	1	91	2	25	6	16	0	0	52	0	7	1034	2	5	1	3	1	7	3	4	0	0	1260
2013	49	537.4	1	0	104	2	17	1	13	0	0	18	0	27	2389	0	7	0	1	1	10	10	4	1	1	2607
2014	49	526.3	0	3	106	2	15	5	11	0	0	24	0	18	2219	2	3	0	2	1	3	3	7	2	0	2426
2015	52	604.2	0	1	129	6	18	6	20	1	0	39	0	29	2459	0	9	1	2	1	2	2	15	2	3	2745
2016	52	635	2	2	155	11	17	5	35	0	0	37	0	39	2542	0	2	1	2	2	2	1	6	2	3	2866
TOTALS	1627	17769	17	164	4353	181	1178	312	581	27	11	854	10	472	65620	108	191	31	48	62	77	59	95	25	58	74534

TABLE 3A

SPRING SUMMARY TOTALS, MOUNT LORETTE 1993-2016 (all counts)

YEAR	DAYS	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL
1993	43	369.4	1	3	167	3	37	19	51	0	0	31	0	4	4124	0	8	0	3	4	0	1	0	3	0	4459
1994	52	495.9	0	4	218	10	45	18	41	1	0	36	1	20	4142	0	1	3	0	11	2	1	0	0	0	4554
1995	46	459.6	0	4	164	1	31	6	44	0	0	32	2	18	4108	1	11	0	3	6	0	0	0	0	0	4431
1996	50	492.5	0	4	238	8	28	4	20	1	0	18	0	11	3543	0	5	0	1	3	3	1	0	0	0	3888
1997	48	460.3	0	2	212	4	16	5	16	0	0	21	0	12	2352	2	7	1	0	2	2	1	0	1	0	2656
1998	52	458.5	0	0	149	6	20	4	7	0	0	21	0	29	3466	0	7	1	1	2	0	1	0	2	0	3716
1999	50	529.4	0	0	184	10	9	6	9	0	0	46	0	15	2565	1	6	0	0	2	1	1	0	0	1	2856
2000	48	554.6	0	1	204	5	28	7	9	0	0	14	0	24	3219	5	5	1	0	1	0	3	3	0	4	3533
2001	50	586.8	0	1	237	4	29	7	25	0	0	30	1	21	3265	2	8	3	1	0	0	0	4	0	2	3640
2002	52	587.6	0	1	240	4	32	5	25	0	0	25	0	9	3405	2	7	3	0	1	3	1	0	2	5	3770
2003	49	569.8	0	1	184	5	10	4	12	0	0	24	0	14	2558	1	5	2	0	0	5	1	1	0	3	2830
2004	51	646.9	0	6	173	1	24	7	20	0	0	32	0	11	2465	1	8	0	3	2	0	1	2	2	4	2762
2005	53	697.4	0	1	182	2	16	2	44	0	0	15	0	8	2594	0	6	3	0	0	1	1	6	0	4	2885
2006	53	694.3	0	2	190	4	31	10	22	0	0	18	0	24	2826	0	12	1	1	0	5	3	8	0	3	3160
2007	50	622.6	0	1	189	3	32	6	19	0	0	45	0	14	2051	1	13	3	1	2	1	0	0	0	3	2384
2008	44	493.3	0	0	86	1	1	1	2	0	0	3	0	1	1171	0	2	0	1	0	3	2	3	2	3	1282
2009	40	450	0	0	76	0	6	5	7	0	0	6	0	3	882	0	1	0	0	1	4	1	5	1	1	999
2010	46	519	0	0	88	1	1	0	21	0	0	14	0	7	1160	0	1	1	0	1	1	2	13	0	1	1312
2011	48	556.1	1	1	192	5	41	8	17	0	0	45	0	40	2982	1	4	1	2	2	1	6	13	0	0	3362
2012	48	495.4	0	1	91	2	25	6	16	0	0	52	0	7	1034	2	5	1	3	1	7	3	4	0	0	1260
2013	49	537.4	1	0	104	2	17	1	13	0	0	18	0	27	2389	0	7	0	1	1	10	10	4	1	1	2607
2014	48	526.3	0	3	106	2	15	5	11	0	0	24	0	18	2219	2	3	0	2	1	3	3	7	2	0	2426
2015	52	604.2	0	1	129	6	18	6	20	1	0	39	0	29	2459	0	9	1	2	1	2	2	15	2	3	2745
2016	52	635	2	2	154	11	17	5	35	0	0	37	0	39	2542	0	2	1	2	2	2	1	6	2	3	2865
T 93-16	1174	13042	5	39	3957	100	529	147	506	3	0	646	4	405	63521	21	143	26	27	46	56	46	94	20	41	70382
Av 93-15	48.8	539.4	0.1	1.6	165.3	3.9	22.3	6.2	20.5	0.1	0.0	26.5	0.2	15.9	2651.3	0.9	6.1	1.1	1.1	1.9	2.3	2.0	3.8	0.8	1.7	2935.5
16 cf Av	6.6	17.7	1433	24.3	-6.9	184.3	-23.6	-19.0	70.9	-100		39.7	-100	145.1	-4.1	-100	-67.4	-8.0	84.0	4.5	-14.8	-48.9	56.8	155.6	81.6	-2.4

TABLE 3B

SPRING SUMMARY TOTALS, MOUNT LORETTE 1993-2016 (excluding 2008-2010 and 2012)

YEAR	DAYS	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL
1993	43	369.4	1	3	167	3	37	19	51	0	0	31	0	4	4124	0	8	0	3	4	0	1	0	3	0	4459
1994	52	495.9	0	4	218	10	45	18	41	1	0	36	1	20	4142	0	1	3	0	11	2	1	0	0	0	4554
1995	46	459.6	0	4	164	1	31	6	44	0	0	32	2	18	4108	1	11	0	3	6	0	0	0	0	0	4431
1996	50	492.5	0	4	238	8	28	4	20	1	0	18	0	11	3543	0	5	0	1	3	3	1	0	0	0	3888
1997	48	460.3	0	2	212	4	16	5	16	0	0	21	0	12	2352	2	7	1	0	2	2	1	0	1	0	2656
1998	52	458.5	0	0	149	6	20	4	7	0	0	21	0	29	3466	0	7	1	1	2	0	1	0	2	0	3716
1999	50	529.4	0	0	184	10	9	6	9	0	0	46	0	15	2565	1	6	0	0	2	1	1	0	0	1	2856
2000	48	554.6	0	1	204	5	28	7	9	0	0	14	0	24	3219	5	5	1	0	1	0	3	3	0	4	3533
2001	50	586.8	0	1	237	4	29	7	25	0	0	30	1	21	3265	2	8	3	1	0	0	0	4	0	2	3640
2002	52	587.6	0	1	240	4	32	5	25	0	0	25	0	9	3405	2	7	3	0	1	3	1	0	2	5	3770
2003	49	569.8	0	1	184	5	10	4	12	0	0	24	0	14	2558	1	5	2	0	0	5	1	1	0	3	2830
2004	51	646.9	0	6	173	1	24	7	20	0	0	32	0	11	2465	1	8	0	3	2	0	1	2	2	4	2762
2005	53	697.4	0	1	182	2	16	2	44	0	0	15	0	8	2594	0	6	3	0	0	1	1	6	0	4	2885
2006	53	694.3	0	2	190	4	31	10	22	0	0	18	0	24	2826	0	12	1	1	0	5	3	8	0	3	3160
2007	50	622.6	0	1	189	3	32	6	19	0	0	45	0	14	2051	1	13	3	1	2	1	0	0	0	3	2384
2008																										
2009																										
2010																										
2011	48	556.1	1	1	192	5	41	8	17	0	0	45	0	40	2982	1	4	1	2	2	1	6	13	0	0	3362
2012																										
2013	49	537.4	1	0	104	2	17	1	13	0	0	18	0	27	2389	0	7	0	1	1	10	10	4	1	1	2607
2014	48	526.3	0	3	106	2	15	5	11	0	0	24	0	18	2219	2	3	0	2	1	3	3	7	2	0	2426
2015	52	604.2	0	1	129	6	18	6	20	1	0	39	0	29	2459	0	9	1	2	1	2	2	15	2	3	2745
2016	52	635	2	2	155	11	17	5	35	0	0	37	0	39	2542	0	2	1	2	2	2	1	6	2	3	2866
T 93-16	996	11085	5	38	3617	96	496	135	460	3	0	571	4	387	59274	19	134	24	23	43	41	38	69	17	36	65530
Av 93-15	49.7	550.0	0.2	1.9	182.2	4.5	25.2	6.8	22.4	0.2	0.0	28.1	0.2	18.3	2985.9	1.0	6.9	1.2	1.1	2.2	2.1	1.9	3.3	0.8	1.7	3298.1
16 cf Av	4.7	15.5	1167	5.6	-14.9	145.9	-32.6	-26.9	56.5	-100		31.6	-100	112.9	-14.9	-100	-71.2	-17.4	81.0	-7.3	-2.6	-48.6	81.0	153.3	72.7	-13.1

TABLE 4A

MARCH SUMMARY TOTALS, MOUNT LORETTE 1993-2016 (all counts)

	days	hrs.	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ME	GY	PG	PR	UA	UB	UE	UF	UU	T
1993	23	180	0	0	107	2	7	2	20	0	0	7	0	2	3176	0	4	0	1	0	0	1	0	1	0	3330
1994	30	281	0	0	154	2	1	3	21	0	0	7	0	0	3356	0	1	2	0	7	0	0	0	0	0	3554
1995	28	264.7	0	0	92	1	1	1	34	0	0	5	0	7	3618	0	4	0	0	2	0	0	0	0	0	3765
1996	29	254.6	0	0	110	1	3	1	11	0	0	1	0	3	2370	0	1	0	0	2	0	0	0	0	0	2503
1997	26	250.5	0	0	109	0	1	0	5	0	0	4	0	1	2118	0	2	1	0	1	0	0	0	0	0	2242
1998	30	255.5	0	0	79	1	3	0	2	0	0	1	0	3	2895	0	3	1	0	1	0	0	0	0	0	2989
1999	29	305.6	0	0	124	1	2	4	6	0	0	2	0	1	2320	0	3	0	0	1	0	0	0	0	1	2465
2000	27	305.6	0	0	141	0	0	0	4	0	0	5	0	1	2751	0	0	0	0	1	0	1	2	0	1	2907
2001	31	363.7	0	0	137	0	0	1	8	0	0	3	0	1	2694	0	5	2	0	0	0	0	3	0	1	2855
2002	30	310.3	0	0	119	0	0	0	6	0	0	2	0	0	1950	0	3	1	0	0	0	0	0	1	1	2083
2003	28	311.4	0	0	118	0	2	0	6	0	0	1	0	4	2055	0	2	0	0	0	1	0	0	0	0	2189
2004	30	369.7	0	0	126	0	2	0	12	0	0	12	0	6	2300	0	1	0	1	1	0	0	1	1	2	2465
2005	31	387.8	0	0	121	0	4	1	26	0	0	3	0	1	2319	0	3	3	0	0	0	0	5	0	1	2487
2006	31	393.9	0	0	101	1	1	0	9	0	0	8	0	2	2544	0	2	1	0	0	0	0	1	0	0	2670
2007	31	385.3	0	0	91	0	0	0	6	0	0	8	0	1	1782	0	1	2	0	1	0	0	0	0	1	1893
2008	31	342.3	0	0	73	1	0	0	2	0	0	1	0	1	1093	0	2	0	0	0	2	1	3	0	2	1181
2009	27	289.4	0	0	36	0	5	0	5	0	0	0	0	2	684	0	0	0	0	1	3	0	5	1	1	743
2010	31	347.1	0	0	64	1	0	0	17	0	0	6	0	6	1051	0	0	1	0	0	1	2	10	0	1	1160
2011	27	305.4	1	0	124	2	5	1	9	0	0	2	0	9	2554	0	0	1	1	1	0	4	10	0	0	2724
2012	28	270.8	0	0	42	0	3	1	1	0	0	1	0	5	771	0	1	0	0	0	1	1	1	0	0	828
2013	29	308.8	1	0	74	0	9	0	10	0	0	8	0	4	2216	0	3	0	1	0	8	7	4	1	0	2346
2014	28	290.8	0	0	52	0	0	0	2	0	0	4	0	2	1468	0	2	0	0	0	0	0	3	0	0	1533
2015	30	344.7	0	0	98	1	5	1	10	0	0	2	0	19	2294	0	6	0	1	0	1	1	12	2	2	2455
2016	30	348.9	0	0	100	3	4	0	20	0	0	3	0	19	2339	0	2	1	1	1	0	0	4	1	2	2500
TOTAL	695	7468	2	0	2392	17	58	16	252	0	0	96	0	100	52718	0	51	16	6	20	17	18	64	8	16	55867
Av 93-15	28.91	309.5	0.087	0	99.7	0.61	2.35	0.7	10.1	0	0	4.04	0	3.52	2190.4	0	2.13	0.65	0.22	0.83	0.74	0.78	2.61	0.3	0.61	2320
16 cf Av	3.76	12.71	-100		0.35	393	70.37	-100	98.3			-25.8		439.5	6.78		-6.12	53.3	360.0	21.1	-100	-100	53.33	228.6	228.6	7.74

TABLE 4B

MARCH SUMMARY TOTALS, MOUNT LORETTE 1993-2016 (excluding 2008-2010 and 2012)

	days	hrs.	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ME	GY	PG	PR	UA	UB	UE	UF	UU	T
1993	23	180	0	0	107	2	7	2	20	0	0	7	0	2	3176	0	4	0	1	0	0	1	0	1	0	3330
1994	30	281	0	0	154	2	1	3	21	0	0	7	0	0	3356	0	1	2	0	7	0	0	0	0	0	3554
1995	28	264.7	0	0	92	1	1	1	34	0	0	5	0	7	3618	0	4	0	0	2	0	0	0	0	0	3765
1996	29	254.6	0	0	110	1	3	1	11	0	0	1	0	3	2370	0	1	0	0	2	0	0	0	0	0	2503
1997	26	250.5	0	0	109	0	1	0	5	0	0	4	0	1	2118	0	2	1	0	1	0	0	0	0	0	2242
1998	30	255.5	0	0	79	1	3	0	2	0	0	1	0	3	2895	0	3	1	0	1	0	0	0	0	0	2989
1999	29	305.6	0	0	124	1	2	4	6	0	0	2	0	1	2320	0	3	0	0	1	0	0	0	0	1	2465
2000	27	305.6	0	0	141	0	0	0	4	0	0	5	0	1	2751	0	0	0	0	1	0	1	2	0	1	2907
2001	31	363.7	0	0	137	0	0	1	8	0	0	3	0	1	2694	0	5	2	0	0	0	0	3	0	1	2855
2002	30	310.3	0	0	119	0	0	0	6	0	0	2	0	0	1950	0	3	1	0	0	0	0	0	1	1	2083
2003	28	311.4	0	0	118	0	2	0	6	0	0	1	0	4	2055	0	2	0	0	0	1	0	0	0	0	2189
2004	30	369.7	0	0	126	0	2	0	12	0	0	12	0	6	2300	0	1	0	1	1	0	0	1	1	2	2465
2005	31	387.8	0	0	121	0	4	1	26	0	0	3	0	1	2319	0	3	3	0	0	0	0	5	0	1	2487
2006	31	393.9	0	0	101	1	1	0	9	0	0	8	0	2	2544	0	2	1	0	0	0	0	1	0	0	2670
2007	31	385.3	0	0	91	0	0	0	6	0	0	8	0	1	1782	0	1	2	0	1	0	0	0	0	1	1893
2008																										0
2009																										0
2010																										0
2011	27	305.4	1	0	124	2	5	1	9	0	0	2	0	9	2564	0	0	1	1	1	0	4	10	0	0	2734
2012																										
2013	29	308.8	1	0	74	0	9	0	10	0	0	8	0	4	2216	0	3	0	1	0	8	7	4	1	0	2346
2014	28	290.8	0	0	52	0	0	0	2	0	0	4	0	2	1468	0	2	0	0	0	0	0	3	0	0	1533
2015	30	344.7	0	0	98	1	5	1	10	0	0	2	0	19	2294	0	6	0	1	0	1	1	12	2	2	2455
2016	30	348.9	0	0	100	3	4	0	20	0	0	3	0	19	2339	0	2	1	1	1	0	0	4	1	2	2500
TOTAL	578	6218	2	0	2177	15	50	15	227	0	0	88	0	86	49129	0	48	15	6	19	10	14	45	7	12	51965
Av 93-15	28.8	308.9	0.1	0.0	109.3	0.6	2.4	0.8	10.9	0.0	0.0	4.5	0.0	3.5	2462.6	0.0	2.4	0.7	0.3	0.9	0.5	0.7	2.2	0.3	0.5	2603.4
16 cf Av	4.0	12.9	-100		-8.5	375	65.2	-100	83.6			-32.9		438.8	-5.0		-17.4	35.7	280.0	5.6	-100	-100	85.4	216.7	280.0	-4.0

TABLE 5A

APRIL 1-22 SUMMARY TOTALS, MOUNT LORETTE 1993-2016 (all counts)

	days	hrs.	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ME	GY	PG	PR	UA	UB	UE	UF	UU	T
1993	21	189.5	1	3	60	1	30	17	31	0	0	24	0	2	948	0	4	0	2	4	0	0	0	2	0	1129
1994	22	215	0	4	64	8	44	15	20	1	0	29	1	20	786	0	0	1	0	4	2	1	0	0	0	1000
1995	20	194.9	0	4	72	0	30	5	10	0	0	27	2	11	490	1	7	0	3	4	0	0	0	0	0	666
1996	22	237.9	0	4	128	7	25	3	9	1	0	17	0	8	1173	0	4	0	1	1	3	1	0	0	0	1385
1997	22	209.8	0	2	103	4	15	5	11	0	0	17	0	11	234	2	5	0	0	1	2	1	0	1	0	414
1998	22	203	0	0	70	5	17	4	5	0	0	20	0	25	571	0	4	0	1	1	0	1	0	2	0	726
1999	21	223.8	0	0	60	9	7	2	3	0	0	44	0	14	245	1	3	0	0	1	1	1	0	0	0	391
2000	21	249	0	1	63	5	28	7	5	0	0	9	0	23	468	5	5	1	0	0	0	2	1	0	3	626
2001	19	223.1	0	1	100	4	29	6	17	0	0	27	1	20	571	2	3	1	1	0	0	0	1	0	1	785
2002	22	277.3	0	1	121	4	32	5	19	0	0	23	0	9	1455	2	4	2	0	1	3	1	0	1	4	1687
2003	21	258.4	0	1	66	5	8	4	6	0	0	23	0	10	503	1	3	2	0	0	4	1	1	0	3	641
2004	21	277.2	0	6	47	1	22	7	8	0	0	20	0	5	165	1	7	0	2	1	0	1	1	1	2	297
2005	22	309.6	0	1	61	2	12	1	18	0	0	12	0	7	275	0	3	0	0	0	1	1	1	0	3	398
2006	22	300.4	0	2	89	3	30	10	13	0	0	10	0	22	282	0	10	0	1	0	5	3	7	0	3	490
2007	19	237.3	0	1	98	3	32	6	13	0	0	37	0	13	269	1	12	1	1	1	1	0	0	0	2	491
2008	15	151	0	0	13	0	1	1	0	0	0	2	0	0	78	0	0	0	1	0	1	1	0	2	1	101
2009	13	160.6	0	0	40	0	1	5	2	0	0	6	0	1	198	0	1	0	0	0	1	1	0	0	0	256
2010	15	171.9	0	0	24	0	1	0	4	0	0	8	0	1	109	0	1	0	0	1	0	0	3	0	0	152
2011	21	250.7	0	1	68	3	36	7	8	0	0	43	0	31	428	1	4	0	1	1	1	2	3	0	0	638
2012	20	224.6	0	1	48	2	22	5	15	0	0	51	0	2	263	2	4	1	3	1	6	2	3	0	0	431
2013	20	226.7	0	0	30	2	8	1	3	0	0	10	0	23	173	0	4	0	0	1	2	3	0	0	1	261
2014	21	235.4	0	3	54	2	15	5	9	0	0	20	0	16	751	2	1	0	2	1	3	3	4	2	0	893
2015	22	259.5	0	1	31	5	13	5	10	1	0	37	0	10	165	0	3	1	1	1	1	1	3	0	1	290
2016	22	286.2	2	2	55	8	13	5	15	0	0	34	0	20	203	0	0	0	1	1	2	1	2	1	1	366
TOTAL	486	5572	3	39	1565	83	471	131	254	3	0	550	4	304	10803	21	92	10	21	26	39	28	30	12	25	14514
Av 93-15	20.2	229.8	0.04	1.61	65.7	3.26	19.9	5.48	10.4	0.13	0	22.4	0.17	12.3	460.87	0.91	4	0.43	0.87	1.09	1.61	1.17	1.22	0.48	1.04	615.13
16 cf Av	9.05	24.5	4500	24.3	-16	145	-35	-8.7	44.4	-100		51.6	-100	62	-55.95	-100	-100	-100	15	-8	24.3	-15	64.3	109	-4.2	-40.5

TABLE 5B

APRIL 1-22 SUMMARY TOTALS, MOUNT LORETTE 1993-2016, (excluding 2008-2010 and 2012)

	days	hrs.	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ME	GY	PG	PR	UA	UB	UE	UF	UU	T
1993	21	189.5	1	3	60	1	30	17	31	0	0	24	0	2	948	0	4	0	2	4	0	0	0	2	0	1129
1994	22	215	0	4	64	8	44	15	20	1	0	29	1	20	786	0	0	1	0	4	2	1	0	0	0	1000
1995	20	194.9	0	4	72	0	30	5	10	0	0	27	2	11	490	1	7	0	3	4	0	0	0	0	0	666
1996	22	237.9	0	4	128	7	25	3	9	1	0	17	0	8	1173	0	4	0	1	1	3	1	0	0	0	1385
1997	22	209.8	0	2	103	4	15	5	11	0	0	17	0	11	234	2	5	0	0	1	2	1	0	1	0	414
1998	22	203	0	0	70	5	17	4	5	0	0	20	0	25	571	0	4	0	1	1	0	1	0	2	0	726
1999	21	223.8	0	0	60	9	7	2	3	0	0	44	0	14	245	1	3	0	0	1	1	1	0	0	0	391
2000	21	249	0	1	63	5	28	7	5	0	0	9	0	23	468	5	5	1	0	0	0	2	1	0	3	626
2001	19	223.1	0	1	100	4	29	6	17	0	0	27	1	20	571	2	3	1	1	0	0	0	1	0	1	785
2002	22	277.3	0	1	121	4	32	5	19	0	0	23	0	9	1455	2	4	2	0	1	3	1	0	1	4	1687
2003	21	258.4	0	1	66	5	8	4	6	0	0	23	0	10	503	1	3	2	0	0	4	1	1	0	3	641
2004	21	277.2	0	6	47	1	22	7	8	0	0	20	0	5	165	1	7	0	2	1	0	1	1	1	2	297
2005	22	309.6	0	1	61	2	12	1	18	0	0	12	0	7	275	0	3	0	0	0	1	1	1	0	3	398
2006	22	300.4	0	2	89	3	30	10	13	0	0	10	0	22	282	0	10	0	1	0	5	3	7	0	3	490
2007	19	237.3	0	1	98	3	32	6	13	0	0	37	0	13	269	1	12	1	1	1	1	0	0	0	2	491
2008																										
2009																										
2010																										
2011	21	250.7	0	1	68	3	36	7	8	0	0	43	0	31	428	1	4	0	1	1	1	2	3	0	0	638
2012																										
2013	20	226.7	0	0	30	2	8	1	3	0	0	10	0	23	173	0	4	0	0	1	2	3	0	0	1	261
2014	21	235.4	0	3	54	2	15	5	9	0	0	20	0	16	751	2	1	0	2	1	3	3	4	2	0	893
2015	22	259.5	0	1	31	5	13	5	10	1	0	37	0	10	165	0	3	1	1	1	1	1	3	0	1	290
2016	22	286.2	2	2	55	8	13	5	15	0	0	34	0	20	203	0	0	0	1	1	2	1	2	1	1	366
TOTAL	423	4864	3	38	1440	81	446	120	233	3	0	483	4	300	10155	19	86	9	17	24	31	24	24	10	24	13574
Av 93-15	21.1	241	0.05	1.89	72.9	3.84	22.8	6.05	11.5	0.16	0	23.6	0.21	14.7	523.79	1	4.53	0.47	0.84	1.21	1.53	1.21	1.16	0.47	1.21	695.16
16 cf Av	4.24	18.76	3700	5.56	-25	108	-43	-17	30.7	-100		43.9	-100	35.7	-61.24	-100	-100	-100	18.8	-17	31	-17	72.7	111	-17	-47.35

TABLE 6

MOUNT LORETTE, SPRING 2016

SUMMARY

											% TIME		
											RIDGES		#
		TEMP		RIDGE	WIND	CLOUD			PRECIPITATION & NOTES		OBSCURED	migrant	
Day #		Max	Min	Direction	Velocity	Max%	Min%	type			East	West	raptors
1	Mar	1	2	-3	SW	L-M	100	50	St,Cu,As	v light snow after 1700	10	10	2
2	Mar	2	5	2	SW	M	70	20	Cu,Ac			20	10
3	Mar	3	5	1	SW-WSW	M	100	20	St,Sc,Cu	light snow showers in pm	20	70	4
4	Mar	4	8	-1	WSW	S	100	30	Cu,As,Ci,Cs				6
5	Mar	5	11	3	SW-W	M-S	100	30	Cu,As	rain after 1600 (move to Barrier Lake)	20	20	13
6	Mar	6	8	0	SW	M-S	100	80	St,Cu,As	light-mod. snow in am, drizzle in pm	50	60	61
7	Mar	7	5	-5	SW	M	80	10	Cu,Ci				144
8	Mar	8	4	-3	W	M	70	10	Cu,Sc,As,				51
9	Mar	9	5	-4	WSW-W	M-S	70	10	Cu,Ci				145
10	Mar	10	6	2	SW-NW	M-S	100	40	St	rain,snow all day; heavy snow after 1500	40	70	20
11	Mar	11	8	1	SW	S-M	100	tr	Cu,As,Ci	1cm fresh snow overnight			57
12	Mar	12	10	0	SW	M	100	30	St,Cu,lent,As,Ac	v light rain after 1400		20	319
13	Mar	13	4.5	-1	SW	M-S	100	50	St,Cu,Cs	snow plumes on ridges	10	40	213
14	Mar	14	2	-2	SW	S	100	10	Sc,Cu,Ci		10	20	33
15	Mar	15	4	-2	NW	L-M	90	10	St,Cu			20	86
16	Mar	16	4	-1	SW	M-S	60	20	Cu				75
17	Mar	17	1	-6	N-NE	L-M	100	100	St	periods of snow all day	70	70	85
18	Mar	18	2	-14	W-WSW	L-M	50	0	Cu				237
19	Mar	19	10	-7	SW-WSW	L-M	30	10	St,lent,As				223
20	Mar	20	12	-3	SW	L-M	100	90	As,Cs,Ci				221
21	Mar	21	6	3	SW	M-S	100	30	St,As,Ac	all obscured to 1000; flurries in pm	30	30	90
22	Mar	22	6	-2	NE	M-S	100	20	St,Cu	fog and freezing rain to 1000	30	40	51
23	Mar	23	8	-2	SW	M-S	90	30	Cu,As,Ci			30	14
24	Mar	24	8	2	W	M-S	100	70	St,Cu,AS,Ci	1900 front bringing snow : all obscured	10	30	15
25	Mar	25	4	-5	C-NE	C-L	100	30	Cu,Ac,St	brief flurries in pm	30	30	2
26	Mar	26	6	-7	SW	M-S	40	0	Cu,As,Cs				120
27	Mar	27	7	-4	SW	L-M	100	70	Cu,As,Ci				166
	Mar	28	NO OBSERVATION Weather)				100	100		now obscured ridges all day	100	100	no
28	Mar	29	11	-2	NE	L	90	0	Cu,Sc,As,Ci				30
29	Mar	30	10	3	SW-W-NW	M	100	100	As,Ac	rain after 1800	10	10	2
30	Mar	31	11	-1	NW	M	100	10	St,Cu,Ac,As	v light snow to 0900	10	40	5
31	Apr	1	15	-6	SW	M	80	0	Ci,Cs				34
32	Apr	2	16	1	SW	M-S	80	10	Cu,Cs				32
33	Apr	3	13.5	3	SW	M	100	40	Sc,Cu,Ac	light rain to 0900	10	20	45
34	Apr	4	13	0	WSW	M-S	100	60	St,Cu	light rain after 1730		20	2
35	Apr	5	8	2	W-SW	M-S	100	10	Cu,As				5
36	Apr	6	12	5	W-SW	S	80	40	Cu,Ci	snow plumes on ridges		10	3
37	Apr	7	16	-6	SW	M	10	0	Ci				7
38	Apr	8	18.5	-2	SW	L-M	100	10	As,Ci,Cu				32
39	Apr	9	14	-1	NE	M	90	0	Cu,Sc				23
40	Apr	10	7	-2	NE	M	100	20	St,Cu,Ac,Ci,Cs		60	70	55
41	Apr	11	15	-5	SW	M-S	100	10	Ci,Sc,Cu,lent			10	9
42	Apr	12	13	-2	SW	L-M-S	100	50	Cu,As	1430 light rain			1
43	Apr	13	8	-2	W-WSW	M	100	50	Cu,St,Cs,As	flurries to 1200	10	40	14
44	Apr	14	3	-2	NE	L-M	100	100	St,Cu,Ac	moderate snow to 0900, flurries to 1700, then snow	70	80	1
45	Apr	15	10	-6.5	SW-WSW	L-M	80	40	St,Cu				18
46	Apr	16	15	0	SW	L-M	30	10	Cu,Ci				16
47	Apr	17	18.5	-2	SW	M	90	0	As,Ci				13
48	Apr	18	22	-2	SW	L-M	20	0	lent,Cs				22
49	Apr	19	3	2	SW	L	90	40	As				14
50	Apr	20	17	-1.5	E-NE	L-M	70	30	Ci				9
51	Apr	21	20	2	WSW-SW	L-M	100	80	As,Cu,Ci			10	9
52	Apr	22	10	2	NW	M	100	80	Cu,Ns,As,Ci	1200-1300 light rain			2
													2866

TABLE 7	
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MOUNT LORETTE: GOLDEN EAGLE: PASSAGE BY HOUR, SPRING 2016	

	MDT	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	n	T	
		3	11	24	72	173	188	287	196	251	300	379	439	217	2			
	MST	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20			
MAR		1	-	0	0	0	0	0	1	0	0	(W)	0	-	-	1	1	
		2	-	-	0	0	0	0	3	5	1	0	0	-	-	9	10	
		3	w	W	W	0	0	0	0	0	0	0	0	0	-	0	10	
		4	0	0	0	0	0	0	2	2	1	0	0	0	-	5	15	
		5	0	0	0	2	2	2	0	2	W	(W)	(W)	(w)	(w)	8	23	
		6	W	W	0	W	W	W	0	7	4	6	33	5	-	55	78	
		7	-	0	0	0	0	21	8	10	8	11	80	0	-	138	216	
		8	-	0	0	5	3	0	2	3	5	6	21	2	-	49	265	
		9	-	0	1	1	0	9	20	7	13	6	37	29	17	-	140	405
		10	-	0	1	10	2	1	W	W	2	2	W	w	w	18	423	
		11	-	0	0	0	1	0	1	2	8	19	20	5	0	-	56	479
		12	-	6	10	8	64	21	64	37	11	55	16	4	0	-	296	775
	MST	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20			
	MDT	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21			
		13	w	W	0	5	14	9	8	15	24	30	70	27	6	0	208	983
		14	-	0	0	0	W	14	6	7	5	1	0	0	-	33	1016	
		15	-	0	1	0	0	0	1	1	4	0	5	28	32	0	72	1088
		16	-	-	0	2	1	3	4	1	8	21	14	19	0	-	73	1161
		17	w	w	W	8	W	1	26	3	20	16	2	1	W	-	77	1238
		18	2	0	0	5	36	14	5	5	10	27	36	54	41	-	235	1473
		19	-	0	0	9	18	33	31	23	33	10	21	19	7	0	204	1677
		20	0	0	1	1	7	45	16	19	36	25	37	25	0	0	212	1889
		21	w	w	w	(w)	0	1	11	10	16	21	27	3	-	-	89	1978
		22	w	w	W	W	0	0	0	5	15	17	4	1	0	-	42	2020
		23	-	0	0	0	0	0	5	0	2	1	3	1	-	-	12	2032
		24	0	0	4	2	2	0	2	2	0	0	1	0	0	W	13	2045
		25	0	0	(W)	(W)	(W)	(W)	W	(W)	0	(W)	0	0	-	-	0	2045
		26	0	0	0	0	3	4	3	4	7	11	21	28	26	1	108	2153
		27	0	2	2	9	9	20	38	17	2	7	12	17	23	0	158	2311
		28	w	w	w	w	w	w	w	w	w	w	w	w	w	w	0	2311
		29	0	0	0	0	1	0	0	0	0	0	6	16	0	23	2334	
		30	-	-	0	1	0	0	0	0	0	0	W	W	w	1	2335	
		31	0	0	0	0	0	0	0	0	0	3	1	0	0	4	2339	
APR		1	0	0	0	0	0	0	0	0	0	1	4	8	18	0	31	2370
		2	0	0	1	0	1	1	4	1	0	2	0	8	0	0	18	2388
		3	(W)	(W)	0	0	1	2	2	2	1	4	8	2	1	0	23	2411
		4	-	0	0	0	0	2	0	0	0	0	0	0	-	-	2	2413
		5	0	0	0	0	1	1	0	1	0	0	0	0	0	0	3	2416
		6	1	0	0	0	1	0	0	0	0	0	0	0	0	-	2	2418
		7	0	0	0	0	1	0	0	0	0	0	0	0	6	0	7	2425
		8	0	3	2	0	3	1	3	4	0	2	3	4	0	0	25	2450
		9	0	0	0	0	2	0	4	0	0	0	2	0	0	0	8	2458
		10	W	W	(W)	(W)	(W)	3	6	8	3	0	2	3	0	0	25	2483
		11	-	0	0	0	0	0	1	2	0	0	4	1	0	-	8	2491
		12	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2492
		13	0	0	0	0	0	0	0	0	0	0	4	2	0	-	6	2498
		14	W	W	(W)	(W)	(W)	(W)	W	W	W	W	W	W	w	w	0	2498
		15	0	0	0	0	0	1	2	1	1	1	0	4	3	0	13	2511
		16	0	0	0	0	0	0	0	2	1	1	0	0	0	-	4	2515
		17	0	0	0	1	0	0	0	0	0	0	1	0	5	0	7	2522
		18	-	0	1	0	0	0	0	0	0	0	0	0	8	1	10	2532
		19	0	0	0	0	0	0	0	2	0	2	1	0	0	0	5	2537
		20	0	0	0	1	0	0	1	0	0	0	1	0	0	0	3	2540
		21	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2542
		22	0	0	0	0	0	0	0	0	0	0	-	-	-	-	0	2542
	MDT	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21			
	MST	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20			
TOTALS		3	11	24	72	173	188	287	196	251	300	379	439	217	2	2542		
W	Ridges observed to be obscured: migration impossible																	
(W)	Poor migration conditions observed																	
w	Ridges obscured: not observed																	
(w)	Poor migration conditions: not observed																	
Red	Observation aw ay from Hay Meadow site: generally Lusk Creek but occasionally Wasootch Creek or Barrier Lake																	

TABLE 8

Beaver Mines, Alberta, spring 2016																											
March 01-April 22 (52 days, 401.3 hours)																											
DAY																											
#	Date	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL	# spp
1	2015-03-01	4	0	0	1	0	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	0	0	0	0	11	3
2	2015-03-02	4	0	0	6	0	0	0	0	0	0	0	0	5	14	0	0	0	0	0	0	0	0	0	0	25	3
3	2015-03-03	4	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
4	2015-03-04	4.75	0	0	8	0	0	0	0	0	0	0	0	6	12	0	0	0	0	0	0	0	0	0	0	26	3
5	2015-03-05	5	0	0	0	0	0	0	0	0	0	1	0	3	12	0	0	0	0	0	0	0	0	0	0	16	3
6	2015-03-06	5	0	0	6	0	0	0	4	0	0	0	0	1	39	0	0	0	0	0	0	0	0	0	0	50	4
7	2015-03-07	7	0	0	5	0	0	0	4	0	0	0	1	4	59	0	0	0	0	0	0	0	0	0	0	73	5
8	2015-03-08	7	0	0	6	0	1	0	3	0	0	0	0	5	106	0	0	0	0	0	0	0	0	0	0	121	5
9	2015-03-09	8.5	0	0	13	1	0	0	2	0	0	1	0	4	81	0	0	0	0	2	0	1	0	0	3	108	7
10	2015-03-10	8	0	0	0	0	0	0	4	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	14	2
11	2015-03-11	10.5	0	0	3	0	1	0	0	0	0	0	0	11	35	0	0	0	0	0	0	0	0	0	0	50	4
12	2015-03-12	10.5	0	0	1	0	0	0	2	0	0	0	0	6	3	0	0	0	0	0	0	0	0	0	0	12	4
13	2015-03-13	6	0	0	5	1	0	0	1	0	0	0	1	7	29	0	0	0	0	1	0	0	0	0	0	45	7
14	2015-03-14	7	0	0	3	0	0	0	1	0	0	0	0	0	27	0	1	0	0	0	0	0	0	0	0	32	4
15	2015-03-15	7.67	0	0	5	0	0	0	2	0	0	1	0	5	99	0	2	1	0	0	0	0	0	0	0	115	7
16	2015-03-16	8.75	2	0	6	0	0	0	1	0	0	1	0	6	99	0	0	0	0	0	0	0	0	0	0	115	6
17	2015-03-17	5.67	0	0	2	1	0	0	0	0	0	0	0	3	8	0	0	0	0	0	1	0	1	0	0	16	5
18	2015-03-18	6	0	0	0	0	0	0	0	0	0	1	0	0	19	0	0	0	0	0	0	0	0	0	0	20	2
19	2015-03-19	9	0	0	3	4	0	0	1	0	0	3	0	3	11	0	0	0	0	0	0	0	0	0	0	25	5
20	2015-03-20	8.25	0	0	6	2	2	0	4	0	0	7	0	6	16	0	0	1	0	0	0	2	0	0	0	46	8
21	2015-03-21	8.5	0	0	20	1	1	0	4	0	0	10	2	5	33	2	0	1	0	1	0	0	0	0	1	81	11
2015-03-22		NO OBSERVATION (weather)																									
22	2015-03-23	9	0	0	4	0	3	0	6	0	0	5	0	3	29	1	1	0	0	1	0	0	0	0	0	53	9
23	2015-03-24	8	0	0	13	1	0	0	3	0	0	5	0	4	11	0	1	0	1	0	0	0	0	0	1	40	8
24	2015-03-25	4.25	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	1
25	2015-03-26	9.5	0	0	22	4	0	0	1	0	0	6	2	5	40	1	1	2	1	0	0	0	0	0	0	85	11
26	2015-03-27	9.5	0	0	5	5	0	0	1	0	0	1	0	4	17	0	0	0	0	0	0	1	1	0	0	35	6
27	2015-03-28	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	2015-03-29	7.25	0	0	7	1	1	0	0	0	0	15	0	2	3	0	0	1	0	0	0	0	0	0	0	30	7
29	2015-03-30	5.75	0	0	2	0	0	0	0	0	0	2	0	0	8	0	0	0	0	0	0	0	0	0	0	12	3
30	2015-03-31	6.75	0	0	4	1	0	0	1	0	0	6	0	1	0	1	0	1	0	0	0	0	0	0	0	15	7
March		207.1	2	0	159	22	9	0	45	0	0	65	6	100	831	5	6	7	2	5	1	4	2	0	5	1276	14
31	2015-04-01	9.5	0	0	14	2	1	0	2	0	0	7	0	3	6	1	0	0	0	1	0	0	0	0	0	37	8
32	2015-04-02	9.5	0	0	33	5	4	1	2	0	0	21	0	4	11	0	1	0	1	0	0	0	0	0	0	83	10
33	2015-04-03	8.25	0	0	1	1	1	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	7	6
34	2015-04-04	10	0	0	17	4	8	1	1	0	0	34	0	9	16	0	1	0	2	0	0	0	1	0	0	94	10
35	2015-04-05	9.5	0	0	9	3	2	0	3	0	0	23	0	1	12	1	0	0	2	0	0	0	0	0	0	56	9
36	2015-04-06	9.25	0	0	7	6	8	2	4	0	0	43	0	2	16	2	4	0	1	0	0	1	0	0	0	96	11
37	2015-04-07	10	0	0	4	2	2	0	2	0	0	10	0	1	8	0	0	0	0	0	0	0	0	0	0	29	7
38	2015-04-08	9.5	0	0	7	2	14	1	0	0	0	28	0	10	14	0	0	0	1	0	0	0	0	0	0	77	8
39	2015-04-09	7.5	0	0	1	0	1	0	0	0	1	3	0	0	2	0	0	0	0	0	0	0	0	0	0	8	5
40	2015-04-10	9.5	0	0	0	1	1	1	0	1	0	0	0	1	3	0	0	0	0	0	0	1	0	0	0	9	6
41	2015-04-11	7	0	0	2	1	12	4	0	0	0	19	0	2	3	1	0	1	0	1	2	1	0	0	1	50	10
42	2015-04-12	8.5	0	0	7	0	8	1	0	1	0	5	0	2	6	0	1	0	0	0	1	3	0	0	0	35	8
43	2015-04-13	8.5	0	0	3	1	6	1	0	1	0	6	0	2	8	0	1	0	0	1	0	0	0	0	0	30	10
44	2015-04-14	9	0	0	0	8	0	0	0	0	0	2	0	1	2	0	0	0	0	1	0	0	0	0	0	14	5
45	2015-04-15	7	0	0	3	1	6	2	0	0	0	5	0	0	12	0	0	1	0	0	0	0	0	0	0	30	7
46	2015-04-16	9	0	0	1	1	4	0	0	0	0	6	0	4	7	0	0	0	0	0	0	2	0	0	0	25	6
47	2015-04-17	8	0	0	1	1	0	0	0	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	7	4
48	2015-04-18	9	0	0	4	3	3	1	1	0	1	4	0	1	2	0	0	0	0	0	0	0	0	0	0	20	9
49	2015-04-19	7.75	0	0	0	1	2	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	7	4
50	2015-04-20	9	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2
51	2015-04-21	9.5	0	0	4	0	2	1	0	0	0	3	0	0	0	0	0	1	0	2	0	0	0	0	0	13	6
52	2015-04-22	9.5	0	0	1	3	4	0	0	5	3	5	0	3	2	0	1	0	0	0	0	2	0	0	0	29	9
April		194.3	0	0	119	46	89	18	15	9	5	236	0	48	132	5	10	2	9	4	3	10	1	0	1	762	15
Total		401.3	2	0	278	68	98	18	60	9	5	301	6	148	963	10	16	9	11	9	4	14	3	0	6	2038	17
Date		HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL	# spp

TABLE 9

BEAVER MINES, SPRING 2016

[illegible]

			MIN	MAX	WIND		CLOUD			RIDGE	#
			TEMP	TEMP		Velocity			PRECIPITATION & NOTES	OBSCURED (%)	migrant
Day #			°C	°C	Direction	km/h	%	type			raptors
1	Mar	1	5	6	W	15-21g35	80-100	As,Cu	v light snow after 1700		11
2	Mar	2	6	7	W-WSW	35-60g80	10-30	Cu,Ac			25
3	Mar	3	9	9	WSW	50g70	30-60	Ac,Cu,Ci			3
4	Mar	4	11	12	WSW	26-30g50	30-80	thin Ac,As,Cu,Ci	T max 9C above normal		26
5	Mar	5	9	14	WSW-W	40g63	20-70	Cu,Ac	1440 light rain	mts to SW obsc.	16
6	Mar	6	7	12	W-WSW	43-50g76	70-100	As,Ac,Cu	1442-1450 light rain		50
7	Mar	7	6	10	W-WSW	34-40g50	20-90	As,Ci,Ac	sun or hazy sunshine		73
8	Mar	8	3	6	W-WSW	30-45g63	90-10	Cu,Sc,Ac		mts to SW obsc.	121
9	Mar	9	3	7	WSW-W	30-40g60	30-100	Cu,As,Cs	brief flurries	mts to SW obsc.	108
10	Mar	10	5	11	WSW-SW	20-50g67	20-100	AS,Ac,St	rain,sleet 1130-1645	50	14
11	Mar	11	0	11	W-NNW	30-40g50	0-40	As,Ac	2cm fresh snow overnight		50
12	Mar	12	4	12	WSW-W	30-40g70	50-100	As,Cu,St	rain 1700-1800	CD obscured	12
13	Mar	13	4	7	WSW-W	30-50g63	0-100	As,Cu	CD obscured after 1800		45
14	Mar	14	2	6	WSW-WNW	45-50g75	10-80	Cu,As,Cs	1545-1620 snow	10	32
15	Mar	15	2	6	WSW-W	30-45g60	80-20	As,Ac,Ci,Cu		CD obscured	115
16	Mar	16	2	6	W-WSW	28-40g60	0-80	Cu			115
17	Mar	17	-3	1	variable	light	60-80	St,Cu	periods of snow	60	16
18	Mar	18	-4	4	S-SE	light	10-60	Cu	sunny		20
19	Mar	19	2	11	W-WSW	20-40g55	20-100	Ac,As,lent,Ci	T max 10C above normal		25
20	Mar	20	9	16	W-WSW	15-30g40	90-100	Ac,As,Ci	hazy sunshine		46
21	Mar	21	7	12	W-WSW	35-50g80	90-10	Sc,Cu	hazy sunshine or sunny		81
	Mar	22	NO OBSERVATION (w eather)						fog and freezing drizzle		no
22	Mar	23	5	10	WSW-W	25-45g60	40-90	Cu,As,Ac	hazy sunshine or sunny		53
23	Mar	24	5	9	WSW-W	30-46g60	60-100	Cu,Ac,As	1400-1850 periods of snow	20	40
24	Mar	25	0	3	ESE	light	100-20	Sc,Cu	snow to 1200 (5cm)	60	2
25	Mar	26	4	7	W-WSW	26-32g50	90-20	Ci,Cu,Ac,As			85
26	Mar	27	5	7	W-WSW	20-35g43	100-50	As,Cu			35
27	Mar	28	3	5	NNE	25g40	100	St,Cu	snow to 1200 and after 1500	70	0
28	Mar	29	2	9	NNE-SSE	light	100-10	Sc,Cu			30
29	Mar	30	10	13	W-SW-var	15-25	80-100	St,Cu	drizzle and light rain after 1700		12
30	Mar	31	5	8	E-SW	light-C	100-30	Sc,Cu,Ac			15
31	Apr	1	7	18	W-SW	22-34g43	0-30	Ac,Ci	T max 10C above normal		37
32	Apr	2	14	18	WSW-W	40-60g80	10-80	Cu,As			83
33	Apr	3	9	17	E-SSE/W-WSW	10-20g30	100-60	Sc,Cu			7
34	Apr	4	7	12	WSW-W	30-50g75	100-70	Sc,Ac,Cu (arch)	brief rain show ers in pm		94
35	Apr	5	8	11	W-WSW	50-60g90	10-100	Cu,Ac,Cs,As			56
36	Apr	6	9	15	W-WSW	30-45g60	100-80	As,Cu			96
37	Apr	7	9	19	E-S/WSW-W	light/20g37	80-0	thin Ci,As,Ac			29
38	Apr	8	18	23	W-WSW	35-50g65	50-100	thin As,Ac	T max 14C above normal		77
39	Apr	9	10	14	E-ENE	10-20g30	0-100	Cu,Sc			8
40	Apr	10	2	9	ESE-SSE	5-11	100-0	Sc,As			9
41	Apr	11	12	19	W-WSW	18-40g60	60-0	As,Ac,lent,Cu			50
42	Apr	12	14	16	W-SW	20-50g70	70-100	Cu,Ac,Cs,As			35
43	Apr	13	11	12	W-WSW	20-40g54	100-30	As,Cu			30
44	Apr	14	4	8.5	NNE-N	15-35g50	100	St	rain and sleet at 1800		14
45	Apr	15	5	11.5	S-SSW	15-May	100-30	As,Cu,Ac	30cm wet snow on hills		30
46	Apr	16	11	16	W-SW	13-28g40	80-10	As,Ac,Cu			25
47	Apr	17	13	19.5	W-ESE	13-22	90-0	As,Ac	cloudless after 1500		7
48	Apr	18	11	22	E-ESE	10-25	0				20
49	Apr	19	15	26.5	NW-SW	10-25	60-0	As	T max 15.5C above normal		7
50	Apr	20	14	18	E-ENE	10-17g30	10-20	thin As,Ci			6
51	Apr	21	15	24	SE-WSW	C-20g28	100	As,Cu			13
52	Apr	22	9	15	SE-NE	10-20g34	100	As,Cu,Ac			29
										TOTAL	2038

TABLE 10

Beaver Mines, AB, spring counts 2015-2016

YEAR	DAYS	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL
2014	17	78.07	0	0	110	0	16	5	12	1	0	62	3	14	853	0	3	0	0	0	4	6	2	0	1	1092
2015	39	208.8	0	1	183	42	60	15	56	1	1	161	3	51	1169	16	13	1	2	5	2	13	1	0	2	1798
2016	52	401.3	2	0	278	68	98	18	60	9	5	301	6	148	963	10	16	9	11	9	4	14	3	0	6	2038
TOTALS	108	688.2	2	1	571	110	174	38	128	11	6	524	12	213	2985	26	32	10	13	14	10	33	6	0	9	4928
16 cf 15	33.33	92.26		-100	51.91	61.9	63.3	20	7.14	800	400	87	100	190.2	-17.62	-38	23.1	800	450	80	100	7.69	200		200	13.35

TABLE 11

MEDIAN PASSAGE DATES, MOUNT LORETTE, SPRING 2016

	Species		Adults		Immatures	
BALD EAGLE	23-Mar	5d early	20-Mar	7d early	31-Mar	6d early
NORTHERN HARRIER	9-Apr	4d early				
SHARP-SHINNED HAWK	10-Apr	6d early	19-Apr	5d late		
COOPER'S HAWK	10-Apr	3d early				
NORTHERN GOSHAWK	26-Mar	4d early	20-Mar	8d early		
RED-TAILED HAWK	16-Apr	7d late	16-Apr	8d late		
ROUGH-LEGGED HAWK	22-Mar	18d early				
GOLDEN EAGLE	18-Mar	4d early	17-Mar	5d early	7-Apr	11d early
COMBINED SPECIES	23-Mar	5d early				

(Note: statistics are not calculated for less than 4 birds)

MEDIAN PASSAGE DATES, BEAVER MINES, SPRING 2016

	Species		Adults		Immatures	
BALD EAGLE	26-Mar		25-Mar		1-Apr	
NORTHERN HARRIER	4-Apr		2-Apr		13-Apr	
SHARP-SHINNED HAWK	8-Apr		8-Apr			
COOPER'S HAWK	11-Apr		11-Apr			
NORTHERN GOSHAWK	21-Mar		15-Mar		6-Apr	
BROAD-WINGED HAWK	22-Apr					
RED-TAILED HAWK	5-Apr		5-Apr		18-Apr	
FERRUGINOUS HAWK	21-Mar					
ROUGH-LEGGED HAWK	20-Mar					
GOLDEN EAGLE	15-Mar		14-Mar		4-Apr	
AMERICAN KESTREL	31-Mar					
MERLIN	4-Apr		2-Apr			
GYRFALCON	26-Mar					
PEREGRINE FALCON	5-Apr		4-Apr			
PRAIRIE FALCON	23-Mar					
COMBINED SPECIES	23-Mar					

(Note: statistics are not calculated for less than 4 birds)

TABLE 12

Steeles, BC, spring 2016

[illegible]

#	Date	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL	SITE	
	2016-03-01	NO OBSERVATION (w weather)																							0			
	2016-03-02	NO OBSERVATION																							0			
1	2016-03-03	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	LL	
2	2016-03-04	4.5	0	0	1	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	25	LL
3	2016-03-05	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0		0	0	0	0	0	0	0	0	4	BN
	2016-03-06	NO OBSERVATION (w weather)																							0			
	2016-03-07	NO OBSERVATION																							0			
4	2016-03-08	5	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	7	BN
	2016-03-09	NO OBSERVATION																							0			
5	2016-03-10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	BN
6	2016-03-11	6	0	0	2	0	0	0	1	0	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	63	BN
7	2016-03-12	2	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	BN
8	2016-03-13	5.5	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	11	BN
	2016-03-14	NO OBSERVATION																							0			
9	2016-03-15	5	0	0	1	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	7	BN
	2016-03-16	NO OBSERVATION																							0			
10	2016-03-17	6	0	0	13	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	34	BN
11	2016-03-18	6	0	0	10	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	20	BN
12	2016-03-19	6.5	1	0	14	0	1	0	0	0	0	0	0	0	44	0	0	0	0	0	0	0	0	0	0	0	60	BN
13	2016-03-20	5.5	0	0	12	1	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	1	0	0	17	BN
	2016-03-21	NO OBSERVATION																							0			
14	2016-03-22	6	1	0	19	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	42	BN
	2016-03-23	NO OBSERVATION																							0			
15	2016-03-24	4.5	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	BN
16	2016-03-25	6	0	0	13	0	0	0	0	0	0	1	0	0	4	0	0	0	0	0	0	0	0	1	0	0	19	BN
17	2016-03-26	6	0	0	2	0	0	0	0	0	0	0	0	0	6	0	0		0	0	0	0	0	0	0	0	8	BN
	2016-03-27	NO OBSERVATION																										
18	2016-03-28	4	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	BN
19	2016-03-29	6	0	0	8	0	1	0	1	0	0	0	0	1	2	0	0		0	0	0	0	0	0	0	0	13	BN
	2016-03-30	NO OBSERVATION																							0			
20	2016-03-31	4	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	BN
	March	98.5	2	0	102	1	2	0	2	0	0	2	0	1	227	0	0	0	0	0	0	0	0	2	0	0	341	
21	2016-04-01	4	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	BN
22	2016-04-02	5	0	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5	BN
23	2016-04-03	4	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0	0	0	0	3	LL
	2016-04-04	NO OBSERVATION																							0			
24	2016-04-05	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	BN
	2016-04-06	NO OBSERVATION																							0			
25	2016-04-07	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	BN
26	2016-04-08	3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	LL
27	2016-04-09	4	0	0	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	BN
28	2016-04-10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	BN
	2016-04-11	NO OBSERVATION																							0			
29	2016-04-12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	BN
	2016-04-13	NO OBSERVATION																							0			
30	2016-04-14	2.5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	BN	
	2016-04-15	NO OBSERVATION																							0			
31	2016-04-16	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	BN
32	2016-04-17	5	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0		0	0	0	0	0	0	0	0	3	BN
	2016-04-18	NO OBSERVATION																							0			
	2016-04-19	NO OBSERVATION																							0			
	2016-04-20	NO OBSERVATION																							0			
33	2016-04-21	5	0	1	7	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	BN
34	2016-04-22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	SL
	April	53	0	2	15	0	2	0	0	0	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	0	31	
	Total	151.5	2	2	117	1	4	0	2	0	0	8	0	1	233	0	0	0	0	0	0	0	0	2	0	0	372	
	Date	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL		

TABLE 13

Steeple, BC, spring counts 2010-2016

YEAR	DAYS	HRS	TV	OS	BE	NH	SS	CH	NG	BW	SW	RT	FH	RL	GE	AK	ML	GY	PG	PR	UA	UB	UE	UF	UU	TOTAL	raptors/hr
2010	48	213.5	13	2	218	2	7	0	8	0	0	20	0	7	534	2	0	0	1	0	0	0	2	0	0	816	3.82
2011	28	118.5	12	0	147	1	5	0	2	0	0	7	0	2	395	0	0	0	0	0	0	2	0	0	573	4.84	
2012	32	98.5	9	2	112	1	7	0	2	0	0	11	0	7	236	1	0	0	1	0	0	0	4	0	0	393	3.99
2013	25	83	1	1	113	0	1	0	1	0	0	7	0	3	230	0	0	0	2	0	0	1	3	0	0	363	4.37
2014	40	142.3	14	3	140	0	5	0	0	0	0	14	0	4	275	4	0	0	0	0	0	1	0	0	0	460	3.23
2015	32	130.5	10	0	81	1	2	0	1	0	0	4	0	0	200	0	0	0	1	0	0	1	0	1	0	302	2.31
2016	34	151.5	2	2	117	1	4	0	2	0	0	8	0	1	233	0	0	0	0	0	0	0	2	0	0	372	2.46
TOTALS	239	937.8	61	10	928	6	31	0	16	0	0	71	0	24	2103	7	0	0	5	0	0	3	13	1	0	3279	3.76
																									16 cf Av	-34.72	

TABLE 14

STEEPLES, SPRING 2016

SUMMARY WEATHER

				RIDGE	WIND		CLOUD			RIDGES	#	SITE
			TEMP						PRECIPITATION & NOTES		migrant	
Day #			°C	Direction	Velocity	%	type				raptors	
	Mar	1	NO OBSERVATION (w eather)						overcast; flurries all day	obscured	no	
	Mar	2	NO OBSERVATION								no	
1	Mar	3	6-8	SE	M	90	Cu,As			obscured	0	LL
2	Mar	4	12	S-SE	M-S	30-90	thin As,Cu	sunny		clear	25	LL
3	Mar	5	11	S	S	100	As,Cu	overcast		obscured	4	BN
	Mar	6	NO OBSERVATION (w eather)						overcast; flurries all day	obscured	no	
	Mar	7	NO OBSERVATION								no	
4	Mar	8	7	W	S	60-80	As,Cu	partly sunny		partly obscured	7	BN
	Mar	9	NO OBSERVATION						(good conditions)		no	
5	Mar	10	7	SW	S	50-100	As,Cu	partly sunny		partly obscured	0	BN
6	Mar	11	12		C	70-100	As,Ac	partly sunny		clear	63	BN
7	Mar	12	8	W	M	100	St	rain in am and after 1615		mainly obscured	3	BN
8	Mar	13	6	W	S	60-100	Cu,St	cloudy		mainly clear	11	BN
	Mar	14	NO OBSERVATION						(good conditions)		no	
9	Mar	15	8-Jun	S-SE	M-S	50-80	As,Cu	partly sunny		clear	7	BN
	Mar	16	NO OBSERVATION						(good conditions)		no	
10	Mar	17	6	SE-W	M-S	30-50	Cu	sunny		clear	34	BN
11	Mar	18	0-7	SE-E	S-M	0-10	Cu	sunny		clear	20	BN
12	Mar	19	4-12		C	20-50	Ac,As	sunny		clear	60	BN
13	Mar	20	4-12		C	30-100	As	mainly cloudy		clear	17	BN
	Mar	21	NO OBSERVATION						(good conditions)		no	
14	Mar	22	9-15	W	C-M	100-50	As,Cu	mostly sunny		clear	42	BN
	Mar	23	NO OBSERVATION						(reasonable conditions)		no	
15	Mar	24	9	SW	M	100-80	As,Cu	1350-1415 light rain and hail		partly obscured	3	BN
16	Mar	25	7-12	NW	S	30-50	Cu	calm after 1700		clear	19	BN
17	Mar	26	6-12	W	L-S	20-40	Cu	sunny		clear	8	BN
	Mar	27	NO OBSERVATION (w eather)						overcast w with rain	obscured	no	
18	Mar	28	6-10	NE	S	70-90	Cu,As	ridges clear after 1330		partly obscured	3	BN
19	Mar	29	9-15	NE	S	0		sunny		clear	13	BN
	Mar	30	NO OBSERVATION								no	
20	Mar	31	17	N	M-S	60-40	As,Cu,lent	sunny		clear	2	BN
21	Apr	1	18	W	C-L	0		sunny		clear	2	BN
22	Apr	2	20	SW	S	50-80	Cu	mainly sunny		clear	5	BN
23	Apr	3	20	S-SE	S	50	Cu	sunny		clear	3	LL
	Apr	4	NO OBSERVATION								no	
24	Apr	5	11-13	SW	S	50-80	Cu,As	sunny		clear	1	BN
	Apr	6	NO OBSERVATION								no	
25	Apr	7	21	S-SW	L-M	0-tr	Cu	sunny		clear	0	BN
26	Apr	8	24		C	0		sunny		clear	0	LL
27	Apr	9	22	W	L-M	0		sunny		clear	4	BN
28	Apr	10	18	SW	L	0-50	Cu	mainly sunny		clear	0	BN
	Apr	11	NO OBSERVATION								no	
29	Apr	12	13	SW	S	100	St	overcast		obscured to 1345	0	BN
	Apr	13	NO OBSERVATION								no	
30	Apr	14	12		C	100	St	overcast, light rain		partly obscured	1	BN
	Apr	15	NO OBSERVATION								no	
31	Apr	16	18		C	50	Cu	sunny		clear	1	BN
32	Apr	17	21	SW	C-L	0		sunny		clear	3	BN
	Apr	18	NO OBSERVATION								no	
	Apr	19	NO OBSERVATION								no	
	Apr	20	NO OBSERVATION								0	BN
33	Apr	21	25	W	C-L	100-60	thin As	sunny		clear	11	BN
34	Apr	22	19	W	L	60-90	Cu,As	mainly cloudy		clear	0	SL
	BN		Bill Nye									
	LL		Lakit Lake							TOTAL	372	
	SL		South Lakit									