

MOUNT LORETTE, FALL 2015

With notes on the reconnaissance counts at the Steeples, BC, site and at Vicki Ridge, AB

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Summary and highlights

This was the 23rd consecutive year that some form of fall count has been conducted by RMERF in the Front Ranges of the Alberta Rocky Mountains, and was the 22nd conducted at Mount Lorette. At Mount Lorette the weather and observing conditions were generally good and no days were lost to inclement weather. The combined species count of 4106 and the Golden Eagle count of 3388 were 1.3% above and only 2.3% below average respectively and were respectively the highest counts since 2005 and 2011. The highest daily Golden Eagle count was a low 286 birds but this was offset by 15 days having 100+ counts, and the statistical structure of the daily counts and the cumulative hourly counts were similar to those regularly seen up to 2005. The Golden Eagle immature:adult was 0.31, 9.6% above average, a decline from last year suggesting that the northern snowshoe hare cycle is beginning a declining trend. Nine species occurred in above average numbers including record counts for Sharp-shinned Hawk (286) and Merlin (22); 7 species occurred in below average numbers. Seven species moved later than average, 5 were earlier and the combined-species median passage date of October 11 was 1 day earlier than average. Of the 8 species with sufficient data, 6 had immature:adult ratios below average; only Golden Eagle was above average and Bald Eagle was average.

The Steeples site on the western flanks of the Rocky Mountains near Cranbrook, BC produced 388 birds of which a record 230 (59.1%) were Bald Eagles. Thirty-four days at Vicki Ridge in SW Alberta counted 1340 birds of 15 species with November 15, the last day of the count, producing 125 migrants including 70 Bald Eagles which is a new single-day high count for any RMERF site.

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 2500 m with Mount McDougall rising to 2726 m. Mount Lorette itself is 2487 m 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 (2958 m), Mount Bogart (3144 m) and Mount Allan (2819 m). The observation site is in a cleared area on the valley floor known as the Hay Meadow at about 1433 m. The site allows 360° 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 Mount Lorette and the north end of the Fisher Range. 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, 13 km 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.

Table 1 summarizes the fall counts from 1992 to 2015 at the principal observation count for each year. 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 that fall and yielded 2661 migrant raptors of which 2044 were Golden Eagles¹. Subsequently full-season fall counts (averaging 88 days, 865 hours) were conducted annually at Mount Lorette to 2005 with the exception of 1997 when a full count was conducted at Plateau Mountain and 2002 when serious illness to a key member of the team reduced the count to just 14 days. From 2006 to 2009 the principal fall observation site was moved to the Piitaistakis-South Livingstone location close to the Municipality of Crownsnest 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 lasted for 32 days, 25 days and 30 days respectively and are considered to be too short for statistical comparison with previous counts from which data from a standard count period September 20 to November 15 have been recalculated. The only exception is 2009 where a 46-day count from September 20 to November 9 has been included. The period September 20 to November 15 captured an average of 97% of the total Golden Eagle count at Mount Lorette between 1992 and 2005. Long-term averages of several other raptor species, however, will differ more widely from full count statistics where significant movement usually occurs before September 20 (e.g. Red-tailed Hawk) or after November 15 (e.g. Bald Eagle). In this report data variances (number, median passage dates, age ratios) are given for the period September 20 to November 15 for averages of the 17 years 1993-1996, 1998-2001, 2003-2005 and 2009-14.

At Mount Lorette this season observers spent a total of 57 days (599.5 hours) of a possible 57 days at the site between September 20 and November 15 (**Table 2**), the days and hours being 4.8% and 7.1% above average respectively. Again no systematic daily count was held this season at the Piitaistakis-South Livingstone site, but the reconnaissance count conducted on Vicki Ridge near Beaver Mines, Alberta was extended to 34 days (134.8 hours) between September 22 and November 15. Vicki Ridge is located 17 km SSE of the Piitaistakis-South Livingstone site and monitors some of the birds that would have passed south along the Livingstone Range over that site. The Steeples site on the western flanks of the Rocky Mountains near Cranbrook, BC, was occupied for 34 days (121.3 hours) from September 22 to November 15.

Detailed daily summaries of these counts and counts from past years can be accessed on a blog published on the RMERF website www.eaglewatch.ca.

Mount Lorette, Alberta

Weather

Table 3 summarizes the season's weather. No complete days were lost because of the weather, but 5 days, October 3 and 31, and November 9, 13 and 14, were shortened because of the conditions. The overall average daily maximum temperature was 9 °C, almost coincident with the average of the last four years. The average temperature in September was 15 °C (13% below average), in October it was 10.8 °C (+17.1%) and in November it was 0.9 °C (-75%). The highest maximum temperature was 21 °C on October 17, the lowest minimum temperature was -15 °C on November 4, and on 7 days, all in November (12.5%), the temperature failed to rise above freezing, which is 27.2% above the average of the last four years. Precipitation of some form fell on 18 days (32.1%: 30% above average) but it was rarely persistent apart from on the 5 days of shortened observation. Eleven days (19.6%: 32.2% above average) involved mainly rain and 7 days (12.5%: 26.9% above average) involved mainly snow. On October 3 fog persisted all day, along with snow and rain but overall relatively little observation time was lost owing to the weather.

The eastern ridges were occluded by more than 10% cloud on 17 days (29.8%: 6.4% below average) and were 80-100% occluded on 10 of these days (17.5%: 39.7% above average). The western ridges were occluded by more than 10% cloud on 24 days (42.1%: 6.2% below average) and were 80-100% occluded on 13 of these days (22.8%: 22.4% below average).

Data from the Environment Canada weather station (Nakiska Ridgetop) situated 4 km west of the Hay Meadow site on Olympic Summit (Mount Allan) at 2543 m has not been available since 2011 so 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, and on cloudless days or when the ridges were cloaked in cloud estimating wind direction and velocity proved to be impossible. Observers assessed ridge winds to be from the SSW-W 71.9% (just 1.5% below average), WNW-NW 8.8% (26.8% above average), S 1.8% and NW-NE 1.8% and variable 8.8% of the time. It was impossible to assign a direction on 7.0% of days because of cloudless or overcast conditions. Most of the time wind directions favourable to migration prevailed. Observers assessed these winds as light 21.1% of the time (31.5% above average), as light to moderate (1-40 km/h) 17.5% of the time (12.9% above average), as moderate (11-40 km/h) 10.5% (22.9% below average), as moderate to strong (11-100 km/h) 22.8% (19.7% below average, and as strong to very strong (40-100 km/h+) 21.1% (3.1% below average). Wind velocities were either very variable or were not able to be assessed 7% of the time (52.2% above average).

Four days (7.0%, an average figure) were either completely cloudless or had a maximum cloud cover of less than 20% and 9 days (15.8%: 68.5% above average) experienced a cloud cover that was between 80 and 100%. Most other days saw wide diurnal variation in percentage cloud cover with 50.9% (2.3% above average) of days reaching a maximum cover of 100%. Generally on most days the cloud cover produced good observing conditions.

In summary September was cooler than average, October was warmer than average and November was much cooler than average; overall precipitation was well above average and usually fell in the form of rain; as usual SSW-W winds were dominant but velocities were lower than normal, and the eastern ridges were more occluded but the west less occluded than usual. Weather conditions were generally conducive to raptor movement throughout the count and adverse weather conditions did not persist for more than one or two days at a time.

General flight dynamics *September 20 to November 15*

Migrant raptors were recorded on 54 of the 57 field days between September 20 and November 15, with only November 2, 9 and 13 failing to yield migrants (**Table 2**). A total of 18 days (31.6%) between September 29 and October 29 had a passage of at least 100 migrants. The highest single-day count occurred, as last year, on October 9 with the passage of 296 birds which is only one more than the lowest maximum count ever at the site for valid counts: 295 in 2001. It appears that the generally favourable migration conditions that persisted throughout the count failed to produce extended periods of poor weather that either “ponds up” migrants or drives them ahead of slow southward-moving fronts that can result in exceptional concentrations of birds. Counts of 63 raptors (47 Golden Eagles) and 64 raptors (51 Golden Eagles) on November 10 and 15 (the last day of the count) were notable and both followed two previous days of poor weather.

The combined species total of 4106 is 1.3% above the long-term average for valid counts (**Table 4**) and is the highest count at the site since 2005. The September count (**Table 5A**) of 753 was the third highest ever and 55.7% above average; the October count (**Table 5B**) of 3082 was the highest since 2011 and just 3.8% below average, and the November count (**Table 5C**) of 271 was 14% below average. The combined species median passage date of October 11 is one day earlier than the average for the count period September 20-November 15. Of the 12 species that occurred in sufficient numbers to calculate median passage dates, 5 were earlier than average: Bald Eagle, Northern Harrier and Golden Eagle (1 day early), Sharp-shinned Hawk (2 days early) and Northern Goshawk (3 days early) and 7 were later than average: Gyrfalcon (1 day late), Red-tailed Hawk and Peregrine Falcon (3 days late), Rough-legged Hawk (5 days late), Broad-winged Hawk (6 days late), Cooper’s Hawk (12 days late) and Merlin (21 days late). Interestingly the combined species median passage date excluding Golden Eagle data is only one day earlier on October 10.

Of the 16 species recorded (**Table 4**), 9 occurred in above average numbers: Northern Harrier 14 (+34.5%), Sharp-shinned Hawk a new count high 255 (+94.7%), Cooper's Hawk 31 (+35.5%), Ferruginous Hawk 1 (a non-significant + 240%), Rough-legged Hawk 59 (+11.6%), Merlin a count high 22 (+ 216.9%), Gyrfalcon 5 (+77.1%), Peregrine Falcon 9 (+62.8%) and Prairie Falcon 4 (+112.5%). Seven species occurred in below average numbers: Osprey 1 (-63%), Bald Eagle 188 (-22.9%), Northern Goshawk 43 (-4.8%), Broad-winged Hawk 6 (-5.6%), Red-tailed Hawk 30 (-12.1%), Golden Eagle 3388 (-2.3%) and American Kestrel 2 (-19%). Turkey Vulture and Swainson's Hawk were not recorded: they have occurred previously on 1 and 5 previous counts within the current period respectively.

The final count was Turkey Vulture 0, Osprey 1, Bald Eagle 188, Northern Harrier 14, Sharp-shinned Hawk 255, Cooper's Hawk 31, Northern Goshawk 43, *Accipiter* sp. 16, Broad-winged Hawk 6, Swainson's Hawk 0, Red-tailed Hawk 30, Ferruginous Hawk 1, Rough-legged Hawk 59, *Buteo* sp. 15, Golden Eagle 3388, eagle sp. 13, American Kestrel 2, Merlin 22, Gyrfalcon 5, Peregrine Falcon 9, Prairie Falcon 4, *Falco* sp. 1, and indeterminate raptor 3, for a total of 4106 migrant raptors.

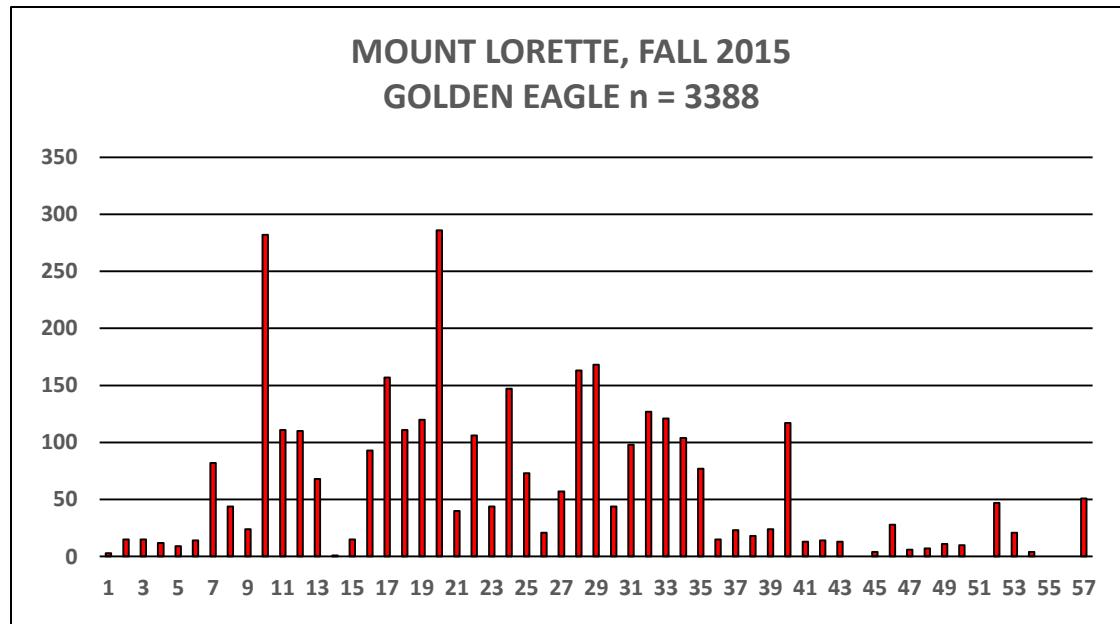
Golden Eagle

Observers counted a total of 3388 migrating Golden Eagles on 53 days between September 20 and November 15 (**Table 2, Figure 1**). The count is just 2.3% below the long-term average of counts that are considered valid, and is the highest total since 2011. It should be noted, however, that only 2 counts between 1993 and 2005 were lower than this total. The highest single-day count was 286 on October 9, which is the third lowest maximum count after 256 in 2001 and 264 last year, and is 30.1% below the average maximum count. There were, however, 15 days between September 29 and October 29 which saw movement in excess of 100 birds. Unlike last year which saw 53.4% of the movement involving 1518 birds between October 5 and 13, this year the migration was much more evenly paced (**Figure 1**) and shows a distribution pattern close to those regularly recorded in the complete counts conducted at the site up to 2005. The seemingly anomalous count of 51 birds on November 15, the last day of the count, followed several days of poor weather, and subsequently the weather deteriorated for a long period so it may well have been the last "pulse" of the migration.

The monthly counts (**Table 5**) show that 611 birds moved in September, which is 75.4% above average and the third highest ever for the month; 2575 moved in October (-9.9%) and 202 in November (-7%). Golden Eagles comprised 82.5% of the total count this season, mainly resulting from higher counts of several other raptor species. The flight comprised 2057 adults, 195 subadults, 443 juveniles and 693 birds of unknown age yielding an immature:adult ratio of 0.31 that is 9.6% above average. The ratio of juvenile birds to subadults and adults was 0.2 which is 35.1% above average. Both ratios indicate a reasonably productive breeding season.

The highest cumulative hourly counts were 485 (1300-1400), 469 (1500-1600), 425 (1700-1800) and 415 from (1400-1500) MST. Thirteen birds were recorded between 0600 and 0700 while 46 birds occurred after 1800. (**Figure 2, Table 6**). Like the relatively even daily distribution of the species there was no spectacularly high hourly count this year with a highest single-hour passage of only 55 birds on October 9. What was surprising was that it occurred between 0700 and 0800 MST. Also reflecting the evenness of the daily counts was that a further 46 hourly counts were between 20 and 48 birds, and even the count of 51 Golden Eagles on November 15, the last day of the count, saw birds move in each of the 10 hours between 0700 and 1700.

This is the second consecutive year that the hourly distribution pattern (**Figure 2**) has closely approximated the cumulative distribution of the complete fall counts conducted at the site up to 2005, which was the last year that a complete count occurred there (**Figure 3**). This shows an almost perfect negatively skewed distribution curve peaking at 1500-1600 (MST), and individual year counts up to 2005 rarely varied from this average pattern. The 2015 count is only the second time this pattern has been observed since 2005. The species median passage date of October 12 coincided with the average date, adult birds were 2 days earlier than average on October 14, while immature birds were also 2 days later than average on October 10. It is unusual for all age classes to fall within a two-day period and this is the second consecutive year that this has happened.



(1 = September 20, 12 = October 1, 43 = November 1)

Figure 1

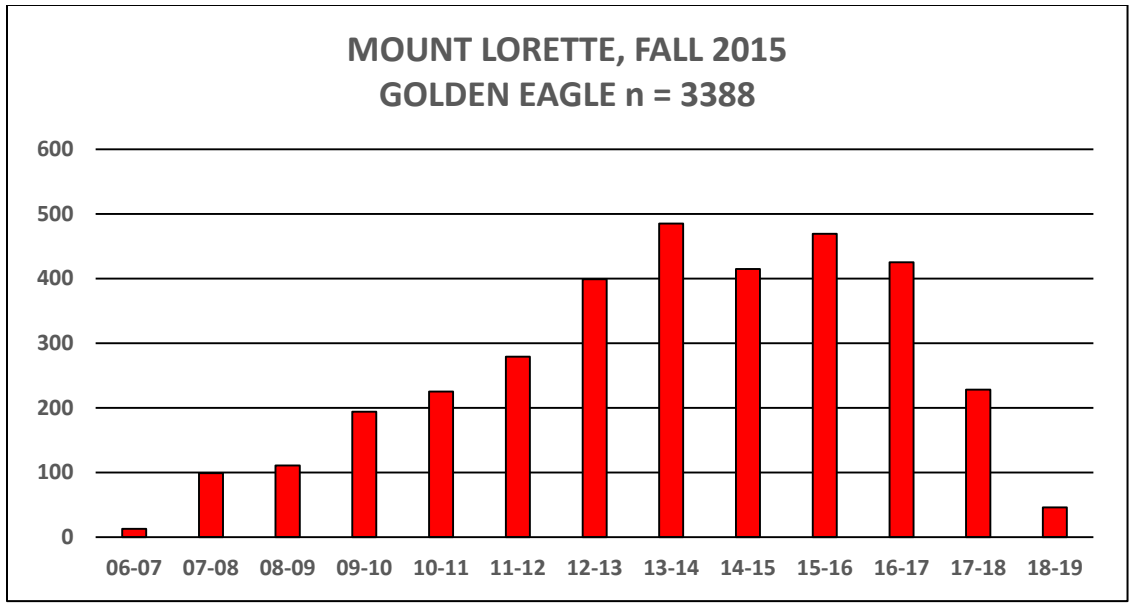


Figure 2

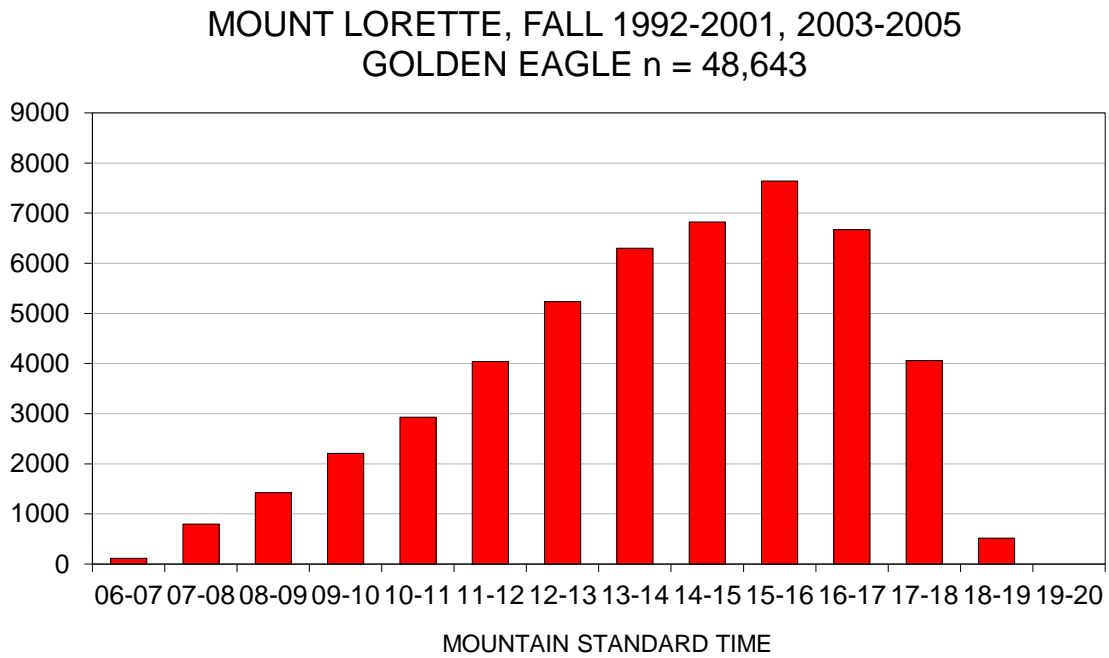


Figure 3

Fall Golden Eagle Trend

Figure 4 shows the linear trend of all counts from 1993-2014 excluding 2002, while **Figure 5** shows the trend excluding 2002 and the short counts of 2006, 2007 and 2008. Both show a clear diminishing trend with the removal of the short counts ameliorating but not significantly altering the trend. A similar trend is also seen in spring counts at the site after 1995. This season's count, is the third in a three-year rising trend but does not alter the overall declining trend for the species at the site seen since 1993. This declining fall trend was also seen at a number of other sites in western North America up to 2005². In the Rocky Mountains region, both Mount Lorette (1993-2005), and the Bridger Mountains (Montana) (1992-2005) showed marginally significant declining trends, the Manzano Mountains (New Mexico) (1983-2005) showed a significant decline (especially since 1996), and the Wellsville Mountains (Utah) showed a significant decline since 1993. In the Intermountain Basin region the Goshute Mountains (Idaho) (1983-2005), Lipan Point (Arizona) (1991-2005) and the Grand Canyon combined count (Arizona) (1997-2005) all showed significant declines, while Boise Ridge (Idaho) (1993-2005) showed a non-significant increasing trend. With the exception of Boise Ridge (which has an average count of only 52 birds) the declines at all sites started in the early to mid-1990s.

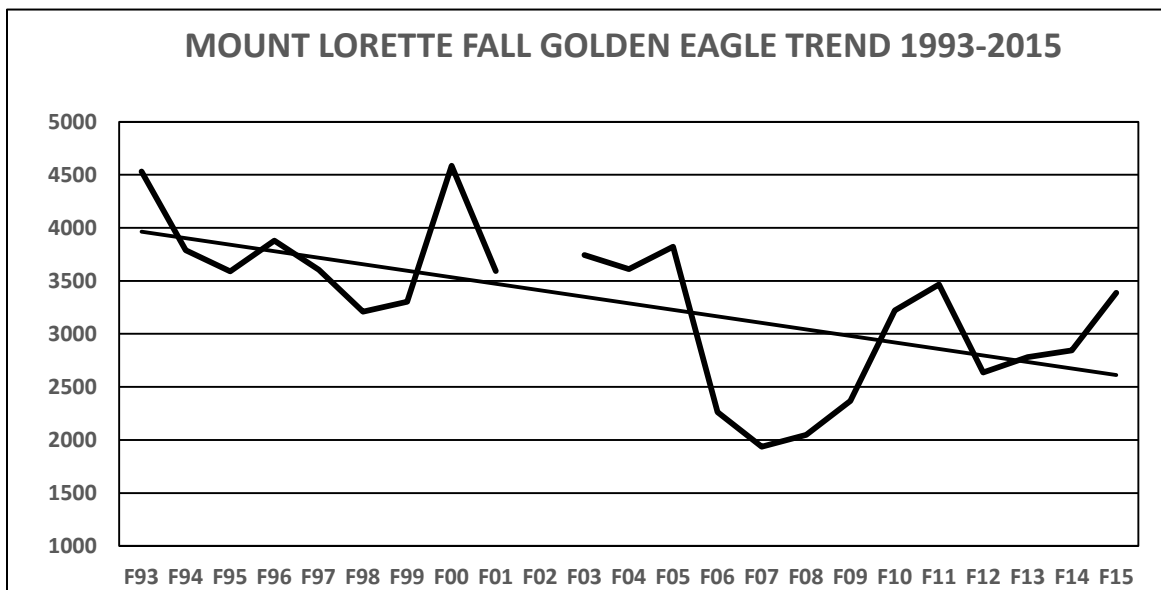


Figure 4

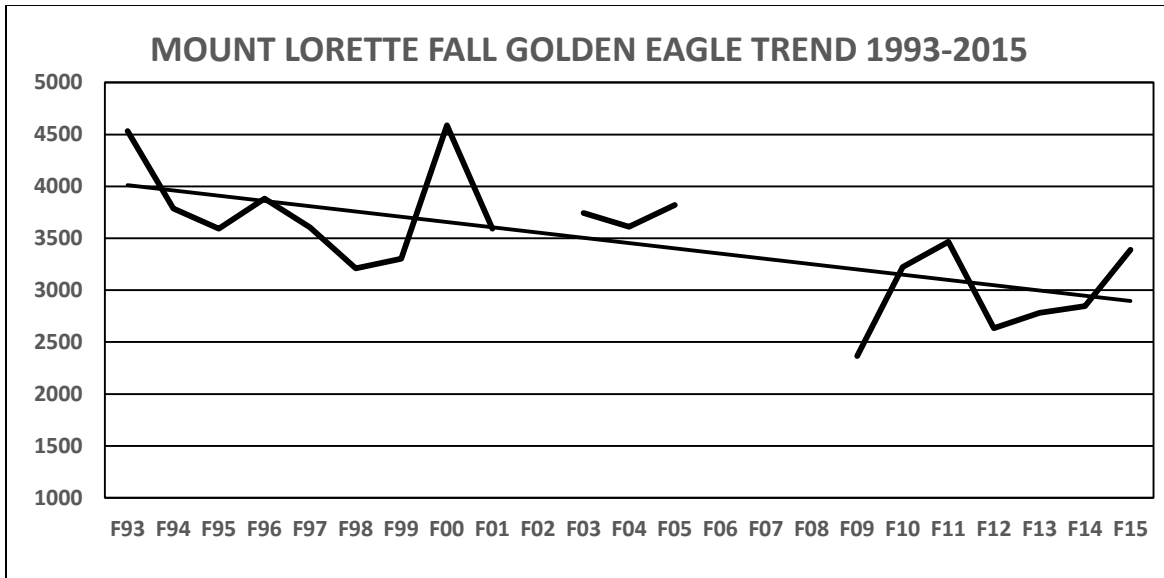


Figure 5

Golden Eagle Age Analysis

Figure 6 shows the trend of fall immature:adult ratios since 1994. Note that the 1997 count was at Plateau Mountain and the 2006-9 counts were at Piitaistakis-South Livingstone with the rest conducted at Mount Lorette. As the age ratios have been found to be very similar between counts at Plateau Mountain, Piitaistakis-South Livingstone and Lorette, it is reasonable to combine data from three sites along the migration trend: when plotted, the points form a consistent trend pattern. There is a generally increasing trend to 1999, followed by a decrease to 2002, then a steady increase to 2008 followed by a decrease to 2012. The 2013 count showed a slight rise in the ratio, which was the first since 2007 and the 2014 ratio strengthens this rising trend. This trend (which is paralleled by the spring trend) almost certainly reflects the reproduction cycles of the northern Snowshoe Hare population^(3, 4, 5). It is interesting to note that the fall 2000 spike in numbers (**Figures 4 and 5**) occurred a year after the apparent peak in the snowshoe hare cycle and may represent a more complete southward movement of a population at its peak resulting from an increasing dearth of a fall and winter prey species. This also raises the possibility that part of the apparent overall decline in the species seen at the site may result from progressively more birds wintering north of the counting sites as hare numbers recover (“shortstopping”), but even allowing for this it appears that numbers counted during the second cycle (i.e. after 2000) are significantly lower than the first (<1993-1999). It appears that fall 2009 marked the start of the declining phase of the hare cycle, 9 or 10 years after the previous peak. It is possible that 2014 was the peak of the cycle and that this year’s count marks the beginning of the next declining trend.

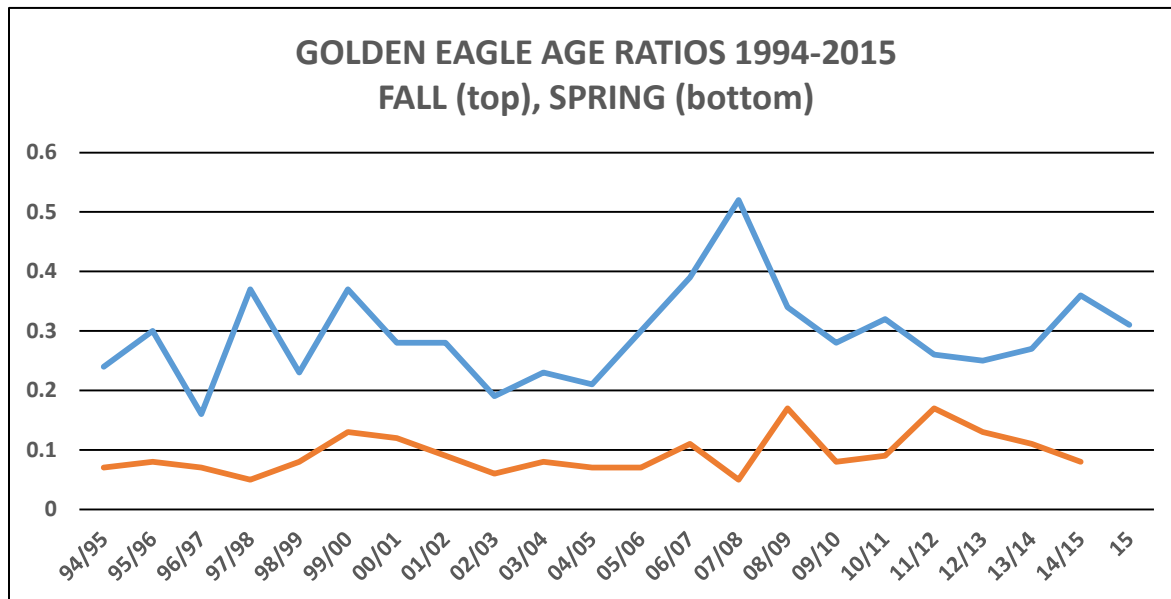


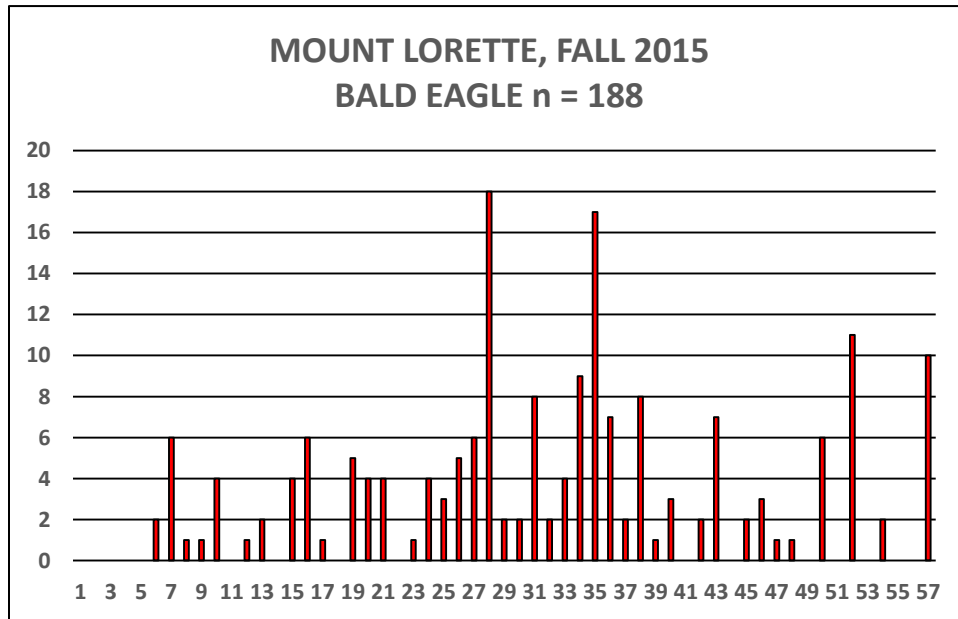
Figure 6

Bald Eagle

The count of 188 birds seen on 41 days between September 25 and November 15 was the highest count since 2005 but was still 22.9% below average (**Figure 7**). The six lowest fall counts at the site have occurred in the last six years and it is possible that increasingly warm falls have resulted in water bodies to the north remaining ice-free later in the year resulting in delayed migration of the species. The idea that on mild years the species migrates later appears to be borne out by the high number of south-bound Bald Eagles seen after November 25 at the Beauvais Ridge count in 2011 and early 2012 documented in the fall 2011 report.

The monthly counts (**Table 5**) were 14 in September (-24.2%), 131 in October which is the highest count since 2005 but is still 10.7% below average, and 43 in November (-44.4%). There was a slight peak of 10 birds on November 15, but nothing like the record count of 70 birds seen that day at Vicki Ridge (see below). The highest single-day counts were 18 on October 17 and 17 on October 24 and the only other double figure counts were 11 on November 10 and 10 on November 15. The high count of 18 is 21.7% below the average high count for the species. The flight comprised 123 adults, 24 subadults, 37 juveniles and 4 undifferentiated immature birds giving an immature:adult ratio of 0.53 which is almost coincident with the long-term average ratio. The median passage dates for the species, for adults and for juvenile birds were October

22, October 23 and October 18 which were 1 day earlier, 1 day earlier and 2 days earlier than average respectively.



(1 = September 20, 12 = October 1, 43 = November 1)

Figure 7

Other Species

Turkey Vulture Not recorded. A single bird seen on September 20, 1998 remains the only fall record of the species at the site during the current count period.

Osprey Only a single bird was seen on October 17, a total which was 63% below the average count.

Northern Harrier A total of 14 birds were seen on 12 days between September 20 and October 28. The total is 34.5% above average and is the fourth highest count for the period. The highest daily count was 2 on October 1 and the median passage date for the species was October 3 which was 1 day earlier than the long-term date. The flight comprised 8 adult birds (3 males and 5 females), 5 juveniles and 1 indeterminate bird. The immature:adult ratio of 0.63 is 50% below average.

Sharp-shinned Hawk The total of 255 birds counted on 37 days between September 20 and the relatively late date of November 11 was the highest ever at the site and is 94.7% above average. The highest single-day count of 98 on October 1 is 359% above the average maximum daily count: the previous high count was 47, also on October 1, in 1993. The monthly counts were 73 in September (+33.7%) which is the highest September count since 2004, 179 in October (+149%) and the highest October count ever, and 3 in November (+54.8%). The flight comprised 66 adults, 19 juveniles and 170 birds of unknown age yielding an immature:adult ratio of 0.29, which is 30% below average although the high percentage of unaged birds means that this figure should be treated with caution. The median passage date for the species was October 1, 2 days earlier than average; adult birds were 3 days earlier than average on October 1 and juveniles were 3 days earlier than average also on October 1.

Cooper's Hawk A total of 31 birds moved on 19 days between September 21 and the relatively late date of November 11 with a maximum passage of 5 birds on October 10 (13.3% above average). The September count of 4 birds was 67% below average, the October count of 25 birds was 148.6% above average and was the second highest count for the month, and the November count of 2 was 166.7% above average. The flight comprised 20 adults, 3 juveniles and 8 birds of indeterminate age giving an immature:adult ratio of 0.15 which is which is 68.7% below average. The median passage date for the species was October 12, 12 days later than average, and for adults was October 13, 11 days later than average. There is a clear trend indicating that this species has moved progressively later in the season: the average median passage date between 1993 and 2009 was September 28, but between 2010 and 2015 the average has advanced to October 7.

Northern Goshawk A total of 43 goshawks migrated on 20 days between September 21 and November 7, which is 4.8% below average for the site. The highest single-day counts were 4 on October 1, 10 and 24 which are 29.2% below the average high count. The September count of 14 was 112.5% above average, the October count of 28 was 8.7% below average and the November count of 1 was 85.6% below average. The flight comprised 34 adults, 4 juveniles and 5 birds of unknown age giving an age ratio of 0.12 which is 51.5% below average. The median passage date for both the species and adult birds was October 9, 3 days and 2 days earlier than average respectively.

Broad-winged Hawk The total of 6 Broad-winged Hawks seen on 5 days between September 9 and October 24 was the highest count since 2005, but is still 5.6% below average. Two of the birds occurred on October 10. The flight comprised 2 light morph adults and 2 light morph juveniles, 1 dark morph adult and 1 indeterminate bird giving an age ratio of 0.67 which is 6.7% below average. The median passage date for the species was October 10, 6 days later than average.

Swainson's Hawk Not recorded this year. It has only occurred on 5 of the 18 valid fall counts at the site and apart from two birds that occurred in 1995 only single birds were involved. It has not been recorded here since 2005.

Red-tailed Hawk The count of 30 birds on 16 days between September 22 and October 24 was 12.1% below average. The highest daily count was 7 on October 1, which is 2.5% below

average. The September count of 5 was 73.6% below average but the October count of 25 was 82.19% above average. As a result the median passage date for the species was 3 days later than average on October 2, adults were 6 days later on October 5 and juveniles were 1 day later on October 1. The flight comprised 22 birds of the race *B.j.calurus*, 130 of which were light morphs (7 adults and 3 juveniles), 1 was an adult rufous (intermediate) morph, and 11 were dark morphs (6 adults and 3 juveniles and 2 of indeterminate age); 1 adult was considered to be a "Krider's Hawk" (*B.j. borealis* var *krideri*), and 3 were dark morph "Harlan's Hawks" (*B.j.harlani*) (2 adults and 1 juvenile). There were also 3 indeterminate dark morph birds and 1 completely indeterminate bird. The overall immature:adult ratio was 0.41 which is 12.2% below average.

Ferruginous Hawk An adult light morph bird was recorded on September 30. Single birds have been recorded on five previous counts, and this is the first record at the site since 2010.

Rough-legged Hawk A total of 59 birds moved on 25 days between September 26 and November 15 (the last day of the count), which is 11.6% below average. The single-day high count was only 5 on October 18 and November 10, which is 52.2% below the average high count. The September count of 1 was 45.2% above average, the October count of 41 was 5.9% below average and the November count of 17 was 195.7% above average. As a result the median passage was 5 days later than average on October 22. The flight comprised 39 light, 16 dark and 4 indeterminate morphs giving a dark:light ratio of 0.41, which is 48.4% above the average ratio. The median passage date of October 18 was 1 day later than average.

American Kestrel Only 2 birds were seen: a male on September 20 and a female on the relatively late date of October 29. The total is 19% below average.

Merlin The total of 22 Merlins seen on 14 days between September 20 and October 31 was by far the highest count ever at the site and 216.9% above average. The highest single day count was 4 on October 24, 161.5% above average. Four birds moved in September (+38.8%) and 18 in October (+376.5%), and the median passage date for the species was October 24, 21 days later than average. The flight comprised 17 birds ascribed to the race *F.c.columbarius* (2 adult males, 3 adult females, 1 undifferentiated female/juvenile and 8 of unknown age or sex), 1 undifferentiated female/juvenile of the race *F.c.richardsoni*, and 4 birds of indeterminate race, age or sex.

Gyrfalcon Five birds were recorded on 5 days between September 26 and November 5 comprising 1 grey morph and 4 black morphs. The total is 77.1% above average.

Peregrine Falcon A total of 9 birds was counted on 6 days between September 25, when 3 birds were seen, and October 19. Interestingly, last year 9 birds were also counted, the first of which were also 3 birds seen on September 25. The count is 62.8% above average and equals the third highest at the site. The flight comprised 4 adults, 1 juvenile and 4 birds of indeterminate age, giving an age ratio of 0.25. The median passage date of October 7 was 3 days later than the long-term average date.

Prairie Falcon The 4 prairie Falcons seen on 4 days between September 25 and October 3 equals the highest count at the site achieved on 3 previous years, and is 112.5% above average.

Observers at Mount Lorette

Principal Observers Cliff Hansen (9 days), Jim Davis (8 days), Joel Duncan (8 days), Terry Waters (8 days), Bill Wilson (8 days), Brian McBride (7 days), George Halmazna (7 days), Peter Sherrington (1 day).

Assistants Cliff Hansen (10 days), Kevin Barker (8 days), Ruth Morrow (8 days), Dan Parliament (6 days), Patrick Farley (5 days), Gord Petersen (5 days), Jennifer Waters (5 days), Diane Stinson (4 days), James and Teresa Bannon (3 days), Monica Dragosz (1 day), Lisa Simms (3 days), Alan Hingston (2 days), Doug Pedersen (2 days), Chris Hunt (1 day), Dermot Lane (1 day), Brian McBride (1 day), Ed McCullough (1 day), Cindy Parliament (1 day), Heinz Unger (1 day).

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Steeple Ridge extended reconnaissance count, British Columbia (Vance Mattson)

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 potential significance is that it is located about 80 km almost due west of the Piitaistakis-South Livingstone site giving the possibility of simultaneously monitoring movement along the eastern and western flanks of the Rocky Mountains at the same latitude. This year, with the exception of 1 day at the South Lakit site, all counts were conducted at the Bill Nye site (49° 45' 11.10"N, 115° 38' 49.14"W, at 1041m). The site, located beneath a prominent 'scar' on the face of the mountain) can be accessed from Wasa Lake by following Lazy Lake Road east toward Lazy Lake. It is located south of an unmarked back road approximately 10km 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). The fall 2015 season is the seventh reconnaissance count at the site (**Table 8**).

Weather and count summary

A total 35 days (123.3 hours) were spent observing between September 22 and November 15. The days and hours are 28.8% and 29.2% above average respectively. A total of 11 days were lost because of inclement weather, and another 10 days were missed due to previous commitments of the Principal Observer. **Table 10** summarizes the weather at the site. Much of the count to October 25 was conducted under mainly warm, sunny conditions and light to moderate winds with clear ridges. Strong winds were only noted October 9-11, and the ridge was partially obscured only on October 3. From October 26 the weather deteriorated with cooler temperatures and mainly cloudy skies and several days were lost to overcast, rainy conditions.

A total of 388 raptors were counted which is the third highest count at the site and 41.1% above average (**Table 9**). Peak movement occurred on October 11, when 93 raptors moved south, 67 of which were Bald Eagles. This was also the peak movement date in 2014 which also consisted mainly of Bald Eagles. Two other bursts of movement were observed: the first occurred between

October 2 and 5 in which 79 raptors moved, and the second was a late single day movement of 64 migrants on November 3.

The most common migrant was Bald Eagle with a record 230 birds counted. They constituted 59.1% of the flight and the total was 100% above average. This is the second year in a row in which the Bald Eagle count was significantly larger than the Golden Eagle count. The Golden Eagle total of 96 birds was 14.4% below average but was considerably higher than last year's 64 birds, and itself constitutes the fourth highest fall count to date.

It should be noted that fall counts at the site generally produce lower overall numbers than do spring counts and also reveal, relative to spring counts, a lower overall proportion of eagles to total raptors as well as generally having a higher ratio of Bald to Golden Eagles which is reversed in the spring.

Turkey Vulture Recorded in 2009 and 2012 but not this year.

Osprey A record total of 4 birds moved between September 26 and October 15.

Bald Eagle The flight of 230 birds counted between September 26 and November 15 comprised 120 adults, 39 subadults, 65 juveniles and 6 indeterminate birds giving an immature:adult ratio of 0.87, compared to the much lower ratio of 0.53 at Mount Lorette.

Northern Harrier The total of 3 birds was 38.5% above average: 1 adult female and 1 unsexed juvenile occurred on September 26, and 1 adult female was seen on November 3.

Sharp-shinned Hawk The total of 35 birds seen between August 26 and November 4th was the second highest for the site and 81% above average. The flight comprised 9 adults, 3 juveniles and 23 indeterminate birds.

Cooper's Hawk Single adult birds were seen on October 11 and 23. This is only the second count on which they have been recorded: 4 were seen in 2009.

Northern Goshawk An adult bird was seen on October 8 and a juvenile on November 4. Each of the 7 years of the count have produced 2 to 5 birds.

Broad-winged Hawk Never recorded on the count.

Swainson's Hawk Never recorded on the count.

Red-tailed Hawk A total of 12 birds (-7.7%) occurred between September 26 and October 24 comprising 11 birds of the race *B.j.calurus*, 9 of which were light morphs (8 adults and 1 juvenile), 2 were dark morphs (1 adult and 1 juvenile) and 1 was an indeterminate bird.

Ferruginous Hawk Never recorded on the count.

Rough-legged Hawk Single light morph birds were recorded on October 5, 10 and 11. The count of 3 is 44% below average.

Golden Eagle The flight of 96 birds counted between September 26 and November 11 comprised 81 adults, 1 subadult, 10 juveniles and 4 indeterminate birds giving an immature:adult ratio of 0.14, compared to the much higher ratio of 0.31 at Mount Lorette.

American Kestrel One adult female bird was seen on October 4, which is an average count.

Merlin Not recorded. The only record is 1 bird seen in 2009.

Gyrfalcon Never recorded on the count.

Peregrine Falcon Not recorded. The only record is 1 bird seen in 2011.

Prairie Falcon Never recorded on the count.

Observers

Vance Mattson (33 days), assisted by Peter Davidson (1 day) and Virginia Rasch (1 day), Peter Davidson (1 day)

Vicki Ridge reconnaissance count, Alberta (Peter Sherrington)

Introduction

Vicki Ridge is a north-south oriented foothills ridge located 4.5 km WNW of the Hamlet of Beaver Mines in SW Alberta. It is 17 km SSE of the Piitaistakis-South Livingstone site and monitors some of the birds that would have passed south along the Livingstone Range in the fall. The high point of the ridge is 1670m and most observation was conducted near the south end of the ridge at 1533 m (49° 27' 59" N 114° 15' 13" W). On very windy days observation was conducted from the end of a well-site access road immediately west of the southern end of the ridge at 1418m. Access to the ridge is from the Seven-Gates Road which goes west from Highway 507 1 km NW of Beaver Mines. The ridge top is a very easy climb from the road and affords excellent 360° views. The ridge has been well-known to locals for a number of years as a good place to observe raptors but no systematic counts had previously been conducted there. In 2014 the site was sporadically occupied on 11 days between October 5 and November 8 for a total of 37.28 hours at an average of 3.39 hours a day. The count yielded a total of 405 migrants of 13 species at an average rate of 10.87/hour (**Table 13**). 2015 was the second count conducted on the ridge with a fairly continuous coverage of 32 of a possible 42 days from October 5 to November 15. Data were also gathered by Doug and Teresa Dolmen on September 12 (which is posted in Table 11, but the numbers are not included in the count as the date falls outside our standard count period), and September 22 and 24 which are included. The site was therefore occupied for 34 days (134.8 hours) from September 22 to November 15 at an average of almost 4 hours per day.

Weather and count summary

Table 12 summarizes the weather at the site, although on days when I was not the observer weather data were not recorded. For much of October it was relatively warm with the highest temperature of 21 °C recorded on October 6 and temperatures continue to reach double-digits until October 22 after which it cooled but on only 2 days did the temperature fail to rise above freezing with highs of -1 °C and -2 °C on November 4 and 5 respectively. The area is famous for its strong SW to W winds and we were not disappointed with 26 of 30 days (87%) from October 6 experiencing such winds which gusted to over 100 km/h on 3 days. The remaining 4 days experienced upslope conditions with light to moderate winds from ENE to SSE. Because of the prevalence of downslope winds most days saw 70-100% generally chinook-type cloud cover (altostratus, altocumulus, lenticular and cirrus) with cloudless days only occurring on October 17 and 27. Rain and snow fell on 7 days after October 30, and the count on November 3 was abandoned when fog enveloped the ridge at 1130 for the rest of the day. On October 20,

November 2 and November 7 the Livingstone Range to the north was shrouded in cloud but Vicki Ridge remained clear; raptor movement on those days was predictably thin.

A total of 1340 migrant raptors of 16 species were counted, with daily high counts of 144 birds on October 6, 135 on October 13, 122 on October 10 and, most remarkably, 125 on November 15 which was the last day of the count (**Table 12**). This last date followed 6 days of very poor weather during which time only 2 migrants were seen, and the count included 45 Golden Eagles and 70 Bald Eagles which was a single-day record for any RMERF count. A similar surge was also experienced at Mount Lorette that day.

Turkey Vulture Two birds of indeterminate age were seen from my house near the ridge on October 22

Osprey Only 2 birds were seen in the count period on September 24 and October 9, and a 3rd bird was recorded on September 12.

Bald Eagle A total of 135 birds moved on 22 days between October 6 and November 15 when 70 were seen. The flight comprised 80 adults, 17 subadults, 36 juveniles and 2 indeterminate birds.

Northern Harrier Ten birds were counted on 9 days between October 8 and November 8 comprising 5 adults (2 males, 3 females) and 5 juvenile birds.

Sharp-shinned Hawk A total of 253 birds occurred on 21 days between September 22 and November 5, with a high single-day count of 48 on October 13. A further 15 birds were seen on September 12. The count comprised 149 adults, 3 juveniles and 101 indeterminate birds.

Cooper's Hawk A total of 32 birds were seen on 12 days between September 22 and November 2, with a high single-day count of 9 on September 24, a number that was also counted on September 12. The flight comprised 8 adults and 24 indeterminate birds.

Northern Goshawk Thirty-nine goshawks were seen on 15 days between September 22 and November 15. The highest daily count was 5 birds on October 7, 13 and 21. The count comprised 26 adults, 6 juveniles and 7 indeterminate birds.

Broad-winged Hawk Two birds were seen on September 24 and single birds on October 13 and 21. Two were light morphs (adult and 1 juvenile) and 2 were indeterminate. A single bird was also seen on September 3.

Swainson's Hawk Not seen.

Red-tailed Hawk A total of 60 birds occurred on 17 days between September 22 and November 7 with the highest single-day count of 11 on the rather late date of October 24. Nine birds were also seen on September 12.

Ferruginous Hawk Not seen.

Rough-legged Hawk A total of 110 birds were observed on 22 days between the rather early date of September 22 and November 15 when 5 birds were seen. The highest single-day count was 24 on October 11. The flight consisted of 100 light morphs, 8 dark morphs and 2 undetermined morphs.

Golden Eagle A rather disappointing total of 635 Golden Eagles occurred on 29 days between September 22 and November 15. The highest daily count was 110 on October 6 and other high counts were 82 on October 10, 57 on October 17, 46 on October 12 and 45 on November 15. Four birds were also noted on September 12. The flight comprised 397 adults, 61 subadults, 97 juveniles and 80 birds of indeterminate age. It appears that most of the Golden Eagles migrating south from the Livingstone Ridge pass to the west of Vicki Ridge.

American Kestrel Nine birds occurred between September 22 and October 11, with 4 counted on September 22. A single bird was also seen on September 12. The count comprised 2 male birds and 7 of undetermined sex.

Merlin Twelve Merlins were seen on 7 days between October 7 and October 19, with 3 birds moving on September 19. The flight comprised 11 birds ascribed to the race *F.c.columbarius* (8 adult males, 1 adult female, 1 undifferentiated female/juvenile and 1 of unknown age or sex) and 1 adult male of the race *F.c.richardsoni*

Gyrfalcon Single grey morph birds were seen on October 21 and 23.

Peregrine Falcon Not seen this year although 1 occurred last year.

Prairie Falcon Four single birds were seen between November 7 and 15, but the lateness and spacing of the sightings suggest that they might have been resident birds, or a single resident bird.

Also recorded were 12 undifferentiated *Accipiters*, 1 undifferentiated *Buteo*, 9 undifferentiated eagles and 9 undifferentiated raptors.

Observers at Vicki Ridge

Peter Sherrington (28 days), Doug and Teresa Dolman (4 days), Gordon Petersen (4 days) Raymond Toal (4 days), Denise Cocciolone-Amatto (2 days), assisted by Hilary Atkinson (1 day), Shirley Ensol (1 day), Keith McClary (1 day) and Cornell and Carol Van Ryk (1 day).

Appendix

List of Tables

Table 1 RMERF Front Ranges fall counts: principal sites, 1992-2015

Table 2 Mount Lorette daily counts September 20 to November 15, fall 2015

Table 3 Mount Lorette summary weather, fall 2015

Table 4 Mount Lorette summary counts 1993-2015 (excluding short counts)

Table 5 Mount Lorette monthly summary counts 1993-2015 (excluding short counts): 4A September, 4B October, 4C November

Table 6 Mount Lorette, Golden Eagle passage by hour, fall 2015

Table 7 Median passage dates and age ratios, Mount Lorette fall 2015

Table 8 Steeples summary fall counts 2009-2015

Table 9 Steeples daily counts September 20 to November 15, fall 2015

Table 10 Steeples summary weather, fall 2015

Table 11 Vicki Ridge daily counts September 22 to November 15

Table 12 Vicki Ridge summary weather, fall 2015

Table 13 Vicki Ridge summary fall counts 2014-2015

TABLE 1

RMRERF ALBERTA FRONT RANGES FALL COUNTS: PRINCIPAL SITES 1992-2015

	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	SITE
1992	33	280.4	0	0	194	3	194	36	136	3	0	29	0	16	2044	2	3	1	0	0	0	0	0	0	0	2661	L
1993	55	474.8	0	2	455	13	217	46	82	5	0	47	1	59	4532	1	4	8	4	1	2	0	0	1	0	5480	L
1994	83	737.2	0	1	370	8	210	40	32	15	1	63	0	42	3836	11	21	2	5	7	5	4	1	0	0	4674	L
1995	82	671.7	0	9	378	37	309	39	11	9	2	71	0	69	3704	4	16	4	4	3	1	5	0	1	0	4676	L
1996	83	701.5	0	6	297	20	219	42	9	27	0	59	1	65	3913	20	13	0	5	4	1	6	0	0	0	4707	L
1997	85	858.1	0	4	607	66	589	39	11	0	1	100	1	210	3853	23	22	15	9	6	7	5	0	7	5	5580	PM
1998	95	850	1	5	317	30	152	44	32	20	1	131	2	89	3395	18	8	6	3	4	8	5	1	2	4	4278	L
1999	101	1007	0	14	312	35	238	41	30	26	4	76	0	70	3475	7	12	13	6	1	15	3	1	2	13	4394	L
2000	94	623.6	0	2	510	15	175	25	140	3	0	17	0	68	4587	1	12	2	1	1	7	0	1	1	6	5574	L
2001	101	1112	0	9	448	15	291	41	118	5	1	109	0	56	3683	9	22	6	7	2	15	2	0	3	2	4844	L
2002	14	83.75	0	0	54	4	35	12	4	0	0	1	0	10	1522	1	5	0	0	0	3	2	1	0	1	1655	L
2003	82	896.9	0	11	276	17	198	46	61	6	3	62	0	34	3783	6	19	1	5	1	20	4	2	0	13	4568	L
2004	96	1095	0	18	418	24	179	50	69	6	1	41	0	71	3774	14	13	9	14	4	19	2	5	1	20	4752	L
2005	75	844.2	0	5	304	7	96	22	46	6	1	18	1	80	3949	2	7	3	2	3	16	2	2	2	10	4584	L
2006	84	892.4	0	11	482	76	1247	220	154	10	2	283	1	141	4400	33	45	6	14	18	45	6	6	3	14	7217	P-SL
2007	100	1048	0	17	700	56	1219	191	166	13	1	188	4	83	5445	37	27	9	35	18	57	2	12	2	7	8289	P-SL
2008	95	1037	0	27	466	49	1452	235	245	20	3	209	1	97	5209	18	32	3	35	17	59	11	32	3	15	8238	P-SL
2009	103	1143	0	49	684	100	1015	302	136	45	7	195	10	85	4293	65	29	10	48	12	35	7	4	3	11	7145	P-SL
2010	55	577.2	0	4	165	6	67	15	34	1	0	44	1	23	3222	2	2	0	4	4	16	9	12	1	10	3642	L
2011	55	590.8	0	3	137	2	113	33	42	0	0	28	0	41	3466	2	6	2	10	2	3	2	2	3	2	3899	L
2012	52	530.1	0	2	128	6	63	10	30	1	0	26	0	61	2635	0	5	1	6	2	5	2	2	1	1	2987	L
2013	51	516.9	0	1	95	7	97	18	25	0	0	20	0	32	2782	1	6	0	4	1	6	5	5	3	2	3110	L
2014	56	583.4	0	5	157	17	96	20	35	5	0	53	0	48	2845	2	7	3	9	1	8	5	12	3	1	3332	L
2015	57	599.5	0	1	188	14	255	31	43	6	0	30	1	59	3388	2	22	5	9	4	16	15	13	1	3	4106	L
TOTAL	1787	17754	1	206	8142	627	8726	1562	1691	232	28	1900	24	1609	87735	279	358	109	239	116	369	104	114	43	140	114392	
L	MOUNT LORETTE																										
PM	PLATEAU MOUNTAIN																										
P-SL	PITAISTAKIS-SOUTH LIVINGSTONE																										

TABLE 3

MOUNT LORETTE, FALL 2015
SUMMARY WEATHER

Day #			TEMP		RIDGE Direction	WIND Velocity	Max%	CLOUD		PRECIPITATION & NOTES	% TIME RIDGES OBSCURED		# migrant raptors
			Max	Min				Min%	type		East	West	
1	Sep	20	17	11	SW-WSW	S	100	10	Cu,St,As,Ci	light rain show ers after 1600	5	10	8
2	Sep	21	7	0	NW-W	M-S	80	20	Cu,St		40	60	28
3	Sep	22	14	-5	S-SW	S	tr	0	Ci,Cu				35
4	Sep	23	15.5	-4	SW	L-M	80	0	Ci,Cu				28
5	Sep	24	19	7	SW	M-S	30	10	As,lent,Ci	chinook arch			10
6	Sep	25	19	7	SW-SSW	S	100	30	Cu,Ci,As	light rain @0910 & after 1700			32
7	Sep	26	11	4	SW	L-S	100	10	Cu,Sc	heavy rain to 1100, drizzle to 1245	40	40	99
8	Sep	27	11	-5	WSW-WNW	M-S	80	0	Cu				48
9	Sep	28	15	-5	?	?	0	0					36
10	Sep	29	17	-5	?	L	70	0	As,Ac,lent,Cu				304
11	Sep	30	19	-4	W	L-M	10	0	Cu				124
12	Oct	1	17.5	-2	SW	L-M	90	10	Ci,Cs,As				228
13	Oct	2	17	-4	SW-NE	L	100	0	Ci,Cu,As,Sc	rain at 1730, heavy after 1800			83
14	Oct	3	-1	-2	?	?	100	100	fog	fog all day; snow to 1130, drizzle to 1320	100	100	9
15	Oct	4	5	-3	W	L	100	tr	St,Cu	trace of fresh snow in am	90	70	26
16	Oct	5	9	-4	NW	M-S	80	0	Ci				109
17	Oct	6	16	-2	W	L	100	60	As,Ac,lent,Ci				167
18	Oct	7	13	4	W	M	90	70	Cu,Cs				128
19	Oct	8	15	-3	SW	M-S	100	10	Cu,As,Ci			20	130
20	Oct	9	18	13	SW	S	100	70	As,Cu,Cs				296
21	Oct	10	16	14	SW-W	M	100	40	Cu,St	rain to 0900. heavy rain after 1600			66
22	Oct	11	10	6	W	S	100	tr	Cu,St	light to moderate rain in am	tr	30	111
23	Oct	12	10	5	SW	S	90	20	Ci,Cu,St	light rain show ers at 1500		30	48
24	Oct	13	12	3	W	M-S	50	0	Cu,As, Cs				178
25	Oct	14	11	-4	SW	M	40	0	Ci	cloudless to 1600			79
26	Oct	15	11	-5	SW	L-M	40	0	Ci,Ac				33
27	Oct	16	14	-5	SW	L	100	50	Ci,As,Cs				68
28	Oct	17	21	-4	var	L	40	tr	Ci,Cs				202
29	Oct	18	15	1	W	M-S	100	90	As,Cu				176
30	Oct	19	14	4	W	L-M	80	30	Cu				53
31	Oct	20	13	-2	NW	L	60	0	Ci,As,Sc	ridges clear after 0900	10	10	115
32	Oct	21	15	-3	SW	M	90	80	Cu,Ac, lent, Ci	chinook arch after 1500			135
33	Oct	22	12	4	SW	L-M	60	10	Cu,As,Ci				133
34	Oct	23	8	-6	SW	L-M	70	50	Cu,As,Ci				116
35	Oct	24	3	-6	NNE	M-S	20	10	Cu			tr	114
36	Oct	25	5.5	-9	S	L	100	60	Ac,As,Ci	hazy sun			29
37	Oct	26	8	-4	SW	M-S	100	80	Cu,Ac,Ci	ocnl gusts pm		10	30
38	Oct	27	6	-2	W	L	100	0	St	ridges obscured to 1300	60	60	29
39	Oct	28	5	-7	SW	L-M	100	0	Ci				28
40	Oct	29	7	2	SW	S	100	80	Cu,As,Ci	snow flurry at 1600		tr	127
41	Oct	30	5	4	SW	M-S	90	40	Cu,As,St	light rain show ers in pm	40	70	14
42	Oct	31	4	3	SW	M	100	100	As,Cu,Ci	heavy rain and fog after 1415	20	20	23
43	Nov	1	2	-2	SW	S	100	30	St,Cu,As	light-mod. rain & snow 0900-1300	30	40	20
44	Nov	2	-2	-3	SW	L	100	60	St,Cu,Ac	light-heavy snow	90	100	0
45	Nov	3	-2	-14	W-NE	L	30	0	Cu,As	22cm fresh snow	10	10	7
46	Nov	4	-1	-15	SW	L-M	80	0	Ci	10cm fresh snow			31
47	Nov	5	2	-8	SW-NW	S-M	100	30	Cu,As,Cs			20	8
48	Nov	6	1	-13	NW	S	100	0	Cu,lent,Ac	blow ing snow on ridges			9
49	Nov	7	9	6	WSW	VS-S	60	10	Cu,lent,Cs	blow ing snow on ridges		30	18
50	Nov	8	5	0	SW	S-M	100	80	Cu,Ci,St	light rain 0900-1500, then steady rain	10	30	16
51	Nov	9	-3	-4	NW	M	100	100	St,Cu	snow to 1300 (4 cm), then flurries	100	100	0
52	Nov	10	0	-13	SW	L-M	10	0	Ci,As	2 cm fresh snow ; blow ing snow on ridges			63
53	Nov	11	0	-3	SW-NW	M-S	100	60	Cu,Ac,As	light snow to 1000	20	60	26
54	Nov	12	-2	-6	SW	S	90	30	Cu,As,Ci,lent	blow ing snow on ridges		70	8
55	Nov	13	-1	-3	SW	L	100	100	St	heavy snow all day	100	100	0
56	Nov	14	0	-3	?	C	100	100	St	snow to1300, then rain	100	100	1
57	Nov	15	6	-4	SW	S	100	tr	Cu,As,lent	blow ing snow on ridges			64

TABLE 4

MOUNT LORETTE SUMMARY TOTALS, September 20 - November 15, 1993-1996, 1998-2001, 2003-2005, 2009-2015

	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	55	474.8	0	2	455	13	217	46	82	5	0	47	1	59	4532	1	4	8	4	1	2	0	0	1	0	5480	
1994	56	516.8	0	0	294	7	175	29	25	15	0	39	0	37	3788	2	15	2	5	4	1	2	1	0	0	4441	
1995	54	463.3	0	2	296	27	251	31	11	5	2	52	0	67	3591	4	12	3	4	2	1	3	0	1	0	4365	
1996	53	485.6	0	2	271	11	173	23	8	25	0	32	1	65	3881	8	9	0	5	2	0	4	0	0	0	4520	
1998	52	483.2	1	1	174	12	80	20	28	14	0	59	1	82	3209	8	2	5	5	1	6	2	0	1	3	3714	
1999	57	596.6	0	4	193	13	134	21	25	18	1	32	0	67	3302	1	6	5	8	1	5	1	1	2	7	3847	
2000	57	623.6	0	2	510	15	175	25	140	3	0	17	0	68	4587	1	12	2	2	1	7	0	1	1	6	5575	
2001	57	646.5	0	4	330	11	183	18	101	3	0	43	0	52	3592	2	9	5	6	0	4	2	0	3	0	4368	
2003	55	615.6	0	3	258	4	131	25	59	1	1	40	0	33	3744	3	8	1	5	1	11	2	2	0	10	4342	
2004	57	658.7	0	4	338	15	125	26	57	5	1	14	0	70	3610	2	8	9	11	4	10	1	4	1	16	4331	
2005	57	662.1	0	3	242	6	89	19	41	6	1	16	1	78	3821	2	3	1	2	3	14	2	2	2	8	4362	
2009*	46	492.3	0	4	100	5	57	10	25	1	0	18	0	16	2367	1	4	1	4	2	3	0	1	1	3	2623	
2010	55	577.2	0	4	165	6	67	15	34	1	0	44	1	23	3222	2	2	0	4	4	16	9	12	1	10	3642	
2011	55	590.8	0	3	137	2	113	33	42	0	0	28	0	41	3466	2	6	2	10	2	3	2	2	3	2	3899	
2012	52	530.1	0	2	128	6	63	10	30	1	0	26	0	61	2635	0	5	1	6	2	5	2	2	1	1	2987	
2013	51	516.9	0	1	95	7	97	18	25	0	0	20	0	32	2782	1	6	0	4	1	6	5	5	3	2	3110	
2014	56	583.4	0	5	157	17	96	20	35	5	0	53	0	48	2845	2	7	3	9	1	8	5	12	3	1	3332	
2015	57	599.5	0	1	188	14	255	31	43	6	0	30	1	59	3388	2	22	5	9	4	16	15	13	1	3	4106	
TOTAL	982	10117	1	47	4331	191	2481	420	811	114	6	610	6	958	62362	44	140	53	103	36	118	57	58	25	72	73044	
Av 93-14	54.4	559.8	0.059	2.71	244	10.4	131	22.9	45.2	6.353	0.353	34.1	0.294	52.9	3469	2.47	6.94	2.82	5.53	1.88	6	2.47	2.65	1.41	4.06	4055.2	
15 cf Av	4.8	7.1	-100.0	-63.0	-22.9	34.5	94.7	35.5	-4.8	-5.6	-100.0	-12.1	240.0	11.6	-2.3	-19.0	216.9	77.1	62.8	112.5	166.7	507.1	391.1	-29.2	-26.1	1.3	
*	Count ended Nov 9, but considered valid																										
1992	short reconnaissance count																										
1997	count at Plateau Mountain																										
2002	no systematic count																										
2006-08	anomalously low, short counts																										

TABLE 6

MOUNT LORETTE: GOLDEN EAGLE: PASSAGE BY HOUR, FALL 2015

	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	n	T
		13	99	111	194	225	279	399	485	415	469	425	228	46		
-	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		
SEP	20	0	0	0	0	0	1	2	0	0	0	0	0	-	3	3
	21	w	W	W	(W)	0	0	1	0	2	4	8	0	-	15	18
	22	0	1	0	1	0	2	0	1	1	0	1	4	4	15	33
	23	1	3	0	1	2	0	0	1	4	0	0	0	0	12	45
	24	-	-	0	0	0	2	0	3	0	0	4	0	0	9	54
	25	0	0	1	3	0	3	3	0	0	0	1	3	0	14	68
	26	w	w	w	w	W	W	9	8	5	25	14	18	3	82	150
	27	0	0	3	8	8	4	7	5	1	0	3	5	0	44	194
	28	0	0	0	0	0	1	4	5	5	5	2	2	-	24	218
	29	0	0	0	0	0	21	32	33	43	43	37	48	24	281	499
	30	0	3	1	2	5	5	11	20	21	15	21	4	3	111	610
OCT	1	0	0	0	0	7	8	43	26	9	11	6	0	0	110	720
	2	0	0	7	14	23	10	6	0	5	3	0	W	w	68	788
	3	w	w	(W)	(W)	(W)	(W)	1	W	W	w	w	w	w	1	789
	4	W	W	W	W	W	W	4	3	3	2	1	2	W	15	804
	5	-	0	0	1	0	0	19	15	26	19	13	0	-	93	897
	6	0	2	0	10	24	16	8	42	13	12	22	9	-	158	1055
	7	7	11	5	8	3	17	8	2	1	5	19	15	10	111	1166
	8	-	4	3	1	1	3	14	17	24	14	34	5	0	120	1286
	9	5	55	28	19	35	34	29	23	18	15	22	3	0	286	1572
	10	W	W	1	14	4	8	6	6	1	W	w	w	w	40	1612
	11	0	6	9	8	13	5	9	1	10	18	18	9	0	106	1718
	12	0	0	2	4	3	11	12	6	1	2	3	0	-	44	1762
	13	0	0	9	38	13	10	21	20	5	19	5	7	-	147	1909
	14	0	0	0	12	2	0	13	5	7	17	5	10	2	73	1982
	15	-	0	0	0	0	1	4	7	1	6	2	0	0	21	2003
	16	0	1	0	0	1	10	1	9	9	11	15	0	-	57	2060
	17	0	2	0	1	4	0	2	21	27	27	45	34	0	163	2223
	18	0	0	0	1	17	14	38	38	30	17	3	10	0	168	2391
	19	-	0	3	1	4	1	4	6	8	10	5	2	-	44	2435
	20	W	W	(W)	0	7	17	10	13	12	17	17	5	-	98	2533
	21	0	3	2	8	6	21	15	34	13	4	16	5	-	127	2660
	22	-	4	8	2	3	3	4	6	30	36	17	8	-	121	2781
	23	0	1	5	8	2	14	10	32	11	7	8	6	-	104	2885
	24	0	0	0	0	0	1	14	28	13	17	4	0	-	77	2962
	25	0	0	0	0	1	1	2	2	3	6	0	0	-	15	2977
	26	0	1	0	0	2	1	3	2	1	6	5	2	0	23	3000
	27	w	W	W	W	W	(W)	1	2	1	4	8	2	0	18	3018
	28	-	0	2	0	1	1	0	3	3	10	4	-	-	24	3042
	29	0	0	12	9	21	11	9	14	12	16	9	4	-	117	3159
	30	(w)	(W)	3	(W)	2	(W)	4	2	(W)	2	0	0	-	13	3172
	31	0	0	0	1	2	11	(W)	(W)	W	w	w	w	w	14	3186
	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		
	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		
NOV	1	0	0	0	0	W	W	W	3	3	2	2	3	-	13	3199
	2	w	w	W	W	W	W	W	W	W	(W)	W	w	0	3199	
	3	-	0	0	0	0	0	0	3	0	0	1	(W)	(w)	4	3203
	4	-	-	0	0	0	0	1	3	8	9	7	0	-	28	3231
	5	-	-	0	0	1	0	0	0	0	4	1	0	-	6	3237
	6	-	0	0	1	0	0	0	4	1	1	0	0	-	7	3244
	7	-	-	0	3	1	2	0	1	2	1	1	-	-	11	3255
	8	0	0	1	5	1	1	2	0	0	(W)	W	(W)	(w)	10	3265
	9	w	w	w	w	w	w	W	W	W	W	W	w	w	0	3265
	10	-	0	0	0	0	0	1	2	6	22	13	3	-	47	3312
	11	(w)	(w)	(W)	(W)	(W)	2	6	1	8	3	1	0	-	21	3333
	12	-	-	0	1	0	0	0	2	1	0	0	-	-	4	3337
	13	w	W	W	W	W	W	W	W	W	w	w	w	-	0	3337
	14	w	w	W	W	W	W	W	W	W	w	w	w	w	0	3337
	15	0	2	6	9	6	6	6	5	7	2	2	0	-	51	3388
TOTALS		13	99	111	194	225	279	399	485	415	469	425	228	46	3388	

W weather not conducive to raptor migration, directly observed.
w weather not conducive to raptor migration, not directly observed.
(W) weather with low probability of raptor migration, directly observed.
(w) weather with low probability of raptor migration, not directly observed.
- observer not present at site

TABLE 7

MEDIAN PASSAGE DATES AND AGE RATIOS, MOUNT LORETTE, FALL 2015

	Species		Adults		Immatures		immadult	
BALD EAGLE	22-Oct	1d early	23-Oct	1d early	18-Oct	2d early	0.53	=
NORTHERN HARRIER	4-Oct	1d early					0.63	-50%
SHARP-SHINNED HAWK	1-Oct	2d early	1-Oct	3d early	1-Oct	1d late	0.41	-30%
COOPER'S HAWK	12-Oct	12d late	13-Oct	11d late			0.29	-69%
NORTHERN GOSHAWK	9-Oct	3d early	9-Oct	2d early			0.12	-52%
BROAD-WINGED HAWK	10-Oct	6d late					0.67	-7%
RED-TAILED HAWK	2-Oct	3d late	5-Oct	6d late	1-Oct	1d late	0.41	-12%
ROUGH-LEGGED HAWK	22-Oct	5d late						
GOLDEN EAGLE	12-Oct	1d early	14-Oct	=	8-Oct	=	0.28	+9.6%
MERLIN	24-Oct	21d late						
GYRFALCON	24-Oct	1d late						
PEREGRINE FALCON	7-Oct	3d late						
COMBINED SPECIES	11-Oct	1d early						

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

TABLE 8

YEARLY SUMMARY FALL TOTALS, STEEPLES 2009-2015

	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	raptors/hr
2009	41	148	2	1	146	7	37	4	5	0	0	9	0	13	226	1	1	0	0	0	0	0	1	0	0	453	11.05
2010	34	145.5	0	1	191	2	18	0	2	0	0	7	0	8	162	0	0	0	0	0	0	4	4	0	0	399	11.74
2011	23	73.5	0	1	130	0	15	0	2	0	0	18	0	1	93	1	0	0	1	0	0	0	1	0	0	263	11.43
2012	12	36	1	0	74	1	3	0	2	0	0	0	0	5	22	0	0	0	0	0	0	0	0	0	0	108	9.00
2013	16	43	0	0	21	0	12	0	2	0	0	6	0	3	106	0	0	0	0	0	0	0	0	0	0	150	9.38
2014	37	126.5	0	2	128	3	31	0	5	0	0	38	0	2	64	4	0	0	0	0	0	0	0	0	0	277	7.49
2015	35	123.3	0	4	230	3	35	2	2	0	0	12	0	3	96	1	0	0	0	0	0	0	0	0	0	388	11.09
TOTAL	198	696	3	9	920	16	151	6	20	0	0	90	0	35	769	7	1	0	1	0	0	4	6	0	0	2038	
Av 09-14	27.2	95.42	0.5	0.83	115	2.17	19.3	0.67	3	0	0	13	0	5.33	112.17	1	0.17	0	0.17	0	0	0.67	1	0	0	275	10.01
15 cf Av	28.8	29.17			380	100	38.5	81	200	-33		-7.7		-44	-14.41	0										41.09	10.71

TABLE 9

Steeples, British Columbia fall 2015

September 20 to November 15 (34 days, 121.3 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	
2015/09/20	NO OBSERVATION																							0		
2015/09/21	NO OBSERVATION																							0		
1 2015/09/22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	VM	
2015/09/23	NO OBSERVATION																							0		
2015/09/24	NO OBSERVATION																							0		
2015/09/25	NO OBSERVATION																							0		
2 2015/09/26	3	0	1	6	2	6	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	17	VM
3 2015/09/27	4	0	2	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	VM
2015/09/28	NO OBSERVATION																							0		
4 2015/09/29	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	VM
2015/09/30	NO OBSERVATION																							0		
September	12	0	3	11	2	7	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	25	
2015/10/01	NO OBSERVATION																							0		
5 2015/10/02	3.5	0	0	16	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	18	VM
6 2015/10/03	4	0	0	8	0	5	0	0	0	0	2	0	0	6	0	0	0	0	0	0	0	0	0	0	21	VM
7 2015/10/04	5	0	0	15	0	3	0	0	0	0	1	0	0	10	1	0	0	0	0	0	0	0	0	0	30	VM
8 2015/10/05	4	0	0	9	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	10	VM	
9 2015/10/06	3	0	0	3	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	9	VM	
2015/10/07	NO OBSERVATION																							0		
10 2015/10/08	3	0	0	15	0	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	19	VM	
11 2015/10/09	4	0	0	2	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5	VM	
12 2015/10/10	4	0	0	2	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	6	VM	
13 2015/10/11	6	0	0	67	0	9	1	0	0	0	7	0	1	8	0	0	0	0	0	0	0	0	0	93	VM	
14 2015/10/12	4	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	VM	
15 2015/10/13	3.5	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	VM	
2015/10/14	NO OBSERVATION																							0		
16 2015/10/15	4	0	1	5	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	11	VM	
17 2015/10/16	5	0	0	1	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	7	VM	
18 2015/10/17	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	VM
19 2015/10/18	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	VM
2015/10/19	NO OBSERVATION																							0		
20 2015/10/20	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	VM	
21 2015/10/21	3	0	0	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5	PD	
22 2015/10/22	2.75	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	VM, PD	
23 2015/10/23	4.5	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4	VM	
24 2015/10/24	4.5	0	0	4	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7	VM, VR	
25 2015/10/25	4	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	VM	
2015/10/26	NO OBSERVATION																							0		
26 2015/10/27	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	VM
2015/10/28	NO OBSERVATION																							0		
27 2015/10/29	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	VM
2015/10/30	NO OBSERVATION																							0		
2015/10/31	NO OBSERVATION																							0		
October	85.25	0	1	169	0	27	2	1	0	0	11	0	3	50	1	0	0	0	0	0	0	0	0	265		
2015/11/01	NO OBSERVATION																							0		
2015/11/02	NO OBSERVATION																							0		
28 2015/11/03	3	0	0	35	1	0	0	0	0	0	0	0	0	28	0	0	0	0	0	0	0	0	0	64	VM	
29 2015/11/04	3	0	0	3	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	7	VM	
2015/11/05	NO OBSERVATION																							0		
2015/11/06	NO OBSERVATION																							0		
30 2015/11/07	4	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	8	VM	
31 2015/11/08	3	0	0	3	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	8	VM	
2015/11/09	NO OBSERVATION																							0		
32 2015/11/10	2.5	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	VM	
33 2015/11/11	4.5	0	0	5	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	7	VM	
2015/11/12	NO OBSERVATION																							0		
2015/11/13	NO OBSERVATION																							0		
2015/11/14	NO OBSERVATION																							0		
34 2015/11/15	4	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	VM	
November	24	0	0	50	1	1	0	1	0	0	0	0	0	45	0	0	0	0	0	0	0	0	0	98		
TOTALS	121.3	0	4	230	3	35	2	2	0	0	12	0	3	96	1	0	0	0	0	0	0	0	0	388		
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 OBSERVERS																										
VM	Vance Mattson																									
VR	Virginia Rasch																									
PD	Peter Davidson																									

TABLE 10

**STEEPLES, FALL 2015
SUMMARY WEATHER**

Day #		TEMP	RIDGE WIND		CLOUD		PRECIPITATION & NOTES	RIDGES	#
			Direction	Velocity	%	type			
	Sep 20		NO OBSERVATION						no
	Sep 21		NO OBSERVATION						no
1	Sep 22	?	calm		?	?	sunny		0
	Sep 23		NO OBSERVATION						no
	Sep 24		NO OBSERVATION						no
	Sep 25		NO OBSERVATION						no
2	Sep 26	18	W	M	40	Cu	sunny		17
3	Sep 27	16	W	C-L	0		sunny		8
	Sep 28		NO OBSERVATION						no
4	Sep 29	21	W	C-L	0		sunny		0
	Sep 30		NO OBSERVATION						no
	Oct 1		NO OBSERVATION						no
5	Oct 2	21	W	C-L	0-90	As,Ci,Cu	partially sunny		18
6	Oct 3	12-14		C	70-90	Cu,As		partially obscured	21
7	Oct 4	16		C-L	10-80	Ac	sunny		30
8	Oct 5	?		C		"few clouds"	sunny		10
9	Oct 6	18	C-E	C-L	30-100	Ac,As	sunny		9
	Oct 7		NO OBSERVATION						no
10	Oct 8	18	SE-C	C-M	100	As,Cu	cloudy		19
11	Oct 9	21	S-SE	S	100	As,Cu,Ac	cloudy		5
12	Oct 10	20	W-SW	S	60-100	As,Cu,Ac	cloudy		6
13	Oct 11	16	N,NE-W	S	80-40	Cu,Ac,As	partially sunny		93
14	Oct 12	12		C	100	As	cloudy		2
15	Oct 13	18		C	5-20	Cu	sunny		3
	Oct 14		NO OBSERVATION						no
16	Oct 15	12		C	20	thin Ac	sunny		11
17	Oct 16	9-14		C	20-60	thin As	sunny		7
18	Oct 17	16		C	30	thin As,Ac	sunny		0
19	Oct 18	9		C	100	As,Cu	cloudy		0
	Oct 19		NO OBSERVATION						no
20	Oct 20	17		C	0		sunny		3
21	Oct 21		NO WEATHER INFORMATION						5
22	Oct 22	15	C-W	C-M	5	Cu	sunny		10
23	Oct 23	5-10		C	5	Ci	sunny		4
24	Oct 24	6-10	C-W	C-L	0-40	thin As	sunny		7
25	Oct 25	6-9		C	40-60	thin As	sunny		2
	Oct 26		NO OBSERVATION				overcast w ith rain all day		no
26	Oct 27	10		C	100	Cu,As	cloudy	obscured	0
	Oct 28		NO OBSERVATION (WEATHER)						no
27	Oct 29	8	N-NW	S	70-100	As,Sc,Cu	cloudy		0
	Oct 30		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
	Oct 31		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
	Nov 1		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
	Nov 2		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
28	Nov 3	6	N-NE	M-S	40-20	Sc,Cu	sunny		64
29	Nov 4	0-2		C	60-80	Sc,Cu	mainly sunny		7
	Nov 5		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
	Nov 6		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
30	Nov 7	8-7	S	S	100	As,dark Cu	cloudy	mostly clear	8
31	Nov 8	7	S	M-S	80-100	As,dark Cu	light rain to 1530, then rain	mostly obscured	8
	Nov 9		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
32	Nov 10	2	C-NW	C-L	100-50	Sc,As	valley to west clear after 1430	obscured	2
33	Nov 11	4-3	SW	M-S	50-80	Cu	partially sunny		7
34	Nov 12		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
	Nov 13		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
	Nov 14		NO OBSERVATION (WEATHER)				overcast w ith rain all day		no
33	Nov 15	8	SW	M-S	90-70	As, Ac,Sc	mostly cloudy	partially clear	2
								TOTAL	388

TABLE 13

YEARLY SUMMARY FALL TOTALS, BEAVER MINES 2014-2015

	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	raptors/hr
2014	11	37.28	0	1	33	4	62	15	32	2	0	28	0	103	114	1	0	0	1	1	7	1	0	0	0	405	10.86
2015	34	134.8	2	2	135	10	253	32	39	4	0	60	0	110	635	9	12	2	0	4	12	1	9	0	9	1340	9.94
TOTAL	45	172	2	3	168	14	315	47	71	6	0	88	0	213	749	10	12	2	1	5	19	2	9	0	9	1745	