MOUNT LORETTE, FALL 2016

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

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Summary and highlights

This was the 25th consecutive year that some form of fall count has been conducted by RMERF observers at Mount Lorette where the weather and observing conditions were generally good and only 1 day was completely lost to inclement weather. The November weather was especially summer-like at all three sites. The combined species total of 3499 is 13.8% below the long-term average for valid counts and the Golden Eagle count of 2973 is 14.2% below the long-term average. Sixteen raptor species were recorded, but only 6 occurred in above average numbers. November produced the highest ever combined species count of 731 and a Golden Eagle count of 591 that included the highest ever November single-day counts of 111 on the 4th and 7th. The Golden Eagle immature:adult ratio of 0.39 is the highest ever and indicates a successful breeding season. Seven species moved later than normal and 5 moved earlier, and the combined-species median passage date of October 13 was 1 day later than average.

The Vicki Ridge count in SW Alberta produced 2868 migrants of 17 species in 43 days, including a November count of 785: 139 migrants occurred on November 5 including 121 Golden Eagles. The mild late October and November weather also produced exceptionally late records for 6 species.

The Steeples site on the western flanks of the Rocky Mountains near Cranbrook, BC produced a record 629 birds of 14 species over 37 days, 10 of which occurred in record numbers. The Golden Eagle immature:adult ratio of 0.5 also indicated an excellent breeding season for the species

Introduction

The Mount Lorette site is located in the Kananaskis Valley in the Front Ranges of the Rocky Mountains (50°58'N 115°8'W) 70 km due west of Calgary and immediately 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 1A summarizes the fall counts from 1992 to 2016 at the principal observation count for each year, while **Table 1B** summarizes the counts conducted solely at the Mount Lorette site. Migrating Golden Eagles were first seen moving to the NW over Mount Lorette on March 20, 1992, and the first extended (33 day, 280 hour) count was conducted there the following fall and yielded 2661 migrant raptors of which 2044 were Golden Eagles[1]. Subsequently full-season fall counts (averaging 88 days, 865 hours) were conducted annually at Mount Lorette to 2005 with the exceptions 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 Frank in 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 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 57-day 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 18 years 1993-1996, 1998-2001, 2003-2005 and 2009-15.

At Mount Lorette this season observers spent a total of 56 days (577.1 hours) of a possible 57 days at the site between September 20 and November 15 **(Table 2),** the days and hours being 2.6% and 2.7% 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 43 days (282.6 hours) between September 23 and November 15 (**Table 8**). 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 27 days (161.8 hours) between September 20 and November 15 (**Table 11**).

Table 14 summarizes the results from all three counts.

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

Mount Lorette, Alberta

Weather

Table 3 summarizes the season's weather. One day, October 7, was lost because of the weather, but 6 days, September 22, October 8, 10 and 17, and November 14 and 15, were shortened because of the conditions. The overall average daily maximum temperature was 8.3 ºC which is 7.4% lower than the average of the last five years. The average high temperature in September was 12.3 ºC (27.3% below average), in October it was a cool 5.9 ºC (-38.2%) and in November it was a remarkably warm 10 ºC (+226%). The highest maximum temperature was 20 ºC on September 27, the lowest minimum temperature was -9 ºC on October 12, and on only 2 days, October 9 and November 15, did the temperature fail to rise above freezing (65.3% below the average of the last 5 years). Precipitation of some form fell on 17 active days (30.4%: 16.1% above average) and it included persistent periods of rain and/or snow on 13 of these days including the 6 days of shortened observation. Ten days (17.9%: 13.4% above average) involved mainly rain and 7 days (12.5%: 20.4% above average) involved mainly snow. On October 8 fog persisted in the valley all morning. The eastern ridges were 40-100% occluded on 15 days (98.2% above average) and the western ridges were 40-100% occluded on 19 days (20.7% above average).

Hourly 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 73.2% (just 0.5% above average), WNW-NW 3.6% (68.4% below average), NW-NE 5.4% (82.4% above average), NE-S 10.7% (890.7% above average) and variable 3.8% of the time. It was impossible to assign a direction on 3.6% of days because of cloudless or overcast conditions. Most of the time wind directions favourable to migration prevailed. Observers assessed these winds as light (1-10 km/h) 8.9% of the time (47.8% below average), as light to moderate (1-40 km/h) 26.8% of the time (68.6% above average), as moderate (11-40 km/h) 23.2% (78.5% above average), as moderate to strong (11-100+ km/h) 26.8% (1.8% below average), and as strong (40-100 km/h+) 10.7% (50.6% below average). Wind velocities were either very variable or were not able to be assessed 3.6% of the time (21.9% below average).

Four days (7.1%, close to an average figure) were either completely cloudless or had a maximum cloud cover of up to 20%, and 6 days (10.7%: 0.4% above average) experienced a cloud cover that was between 80 and 100%. Most other days saw wide diurnal variation in percentage cloud cover with 57.1% (14.2% 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 with a higher than average percentage of NE-SE winds, October was much cooler than average and November was significantly warmer than average with persistent moderate to strong SW winds. Overall precipitation was above average falling mainly in the form of rain with the most persistent precipitation falling in the first half of October. As usual SSW-W winds were dominant but velocities were lower than normal with significantly more days with moderate winds. The eastern ridges were significantly more occluded than average. Weather conditions were generally conducive to raptor movement throughout the count and the only persistent adverse weather conditions were between October 7 and 10.

General flight dynamics *September 20 to November 15*

The combined species total of 3499 is 13.8% below the long-term average for valid counts. **(Table 4)**. The September count of 640 (**Table 5A**) was 28.4% above average; the October count of 2128 **(Table 5B)** was the second lowest ever and 33, 5% below average, while the November count of 731 **(Table 5C)** was the highest ever and 133.9% above average. Migrant raptors were recorded on 54 of the 57 days between September 20 and November 15, with September 22, and November 15 as the only active days that failed to yield migrants, and October 7 when bad weather prevented observation (**Table 2**). A total of 14 days (25%) had a passage of at least 100 migrants that occurred between September 23 and November 7. The highest single-day count was 318 on October 13 which is 26.2% below the average fall high count. As with last year 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. The exception to this was the largest movement of 731 birds on 3 days between October 12 and 14 that followed the longest period of persistent poor weather between October 7 and October 10. The secondary peak of 508 birds on 4 days between October 20 and 23 did not appear to be weather-related (at least not locally). November counts of 118 on the 4th, 121 on the 7th and 95 on the 10th were exceptional and contributed to the highest ever November count of 731 raptors.

The combined species median passage date of October 13 is one day later than the average for the count period September 20-November 15. Of the 13 species that occurred in sufficient numbers to calculate median passage dates (**Table 7**), 5 were earlier than average: Cooper's Hawk and Red-tailed Hawk (1 day early), Sharp-shinned Hawk (3 days early), Broad-winged Hawk (10 days early) and Northern Goshawk (13 days early); and 7 were later than average: Northern Harrier and Golden Eagle (1 day late), Osprey and Rough-legged Hawk (4 days late), Bald Eagle (6 days late) and Merlin and Peregrine Falcon (11 days late). Interestingly, as last year, the combined species median passage date excluding Golden Eagle data is only one day earlier, this year on October 12.

Of the 16 species recorded **(Table 4)**, only 6 occurred in above average numbers: Osprey 5 (+91.5%), Swainson's Hawk 1 (+200%), Ferruginous Hawk 1 (+200%), American Kestrel 4 (+63.6%), Merlin 8 (+2.9%) and Peregrine Falcon 10 (+74.8%). Nine species occurred in below average numbers: Bald Eagle 213 (-11.5%), Northern Harrier 9 (-15.2%), Sharp-shinned Hawk 133 (-3.5%), Cooper's Hawk 11 (-52.9%), Northern Goshawk 32 (-29%), Broad-winged Hawk 5 (-21.1%), Red-tailed Hawk 27 (-20.3%), Rough-legged Hawk 24 (-54.9%) and Golden Eagle 2973 (-14.2%). The total of 2 Prairie Falcons was an average count, and Turkey Vulture and Gyrfalcon were not recorded having occurred previously on 1 and 15 previous counts within the current period respectively.

The final count was Turkey Vulture 0, Osprey 5, Bald Eagle 213, Northern Harrier 9, Sharp-shinned Hawk 133, Cooper's Hawk 11, Northern Goshawk 32, *Accipiter* sp. 13, Broad-winged Hawk 5, Swainson's Hawk 1, Red-tailed Hawk 27, Ferruginous Hawk 1, Rough-legged Hawk 24, *Buteo* sp. 9, Golden Eagle 2973, eagle sp. 11, American Kestrel 4, Merlin 8, Gyrfalcon 0, Peregrine Falcon 10, Prairie Falcon 2, *Falco* sp. 3, and indeterminate raptor 5, for a total of 3499 migrant raptors of 16 species.

Golden Eagle

Observers counted a total of 2973 migrating Golden Eagles on 51 days between September 23 and November 14 **(Table 2** and **Figure 1).** The count is 14.2% below the long-term average of counts that are considered valid, and the number of days on which they occurred is close to

average (-0.3%). The highest single-day count was 311 on October 13, which equals the fourth lowest maximum count (with 1995), and is 22.7% below the average maximum count. There were 10 days between October 2 and November 7 which saw movement in excess of 100 birds including 111 on both November 4 and 7 which are the latest 100+ days ever at the site. As last year the migration was reasonably 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 peak movement of 707 birds between October 12 and 14 followed the only prolonged period of poor weather this season.

The monthly counts (**Table 5**) show that 640 birds moved in September, which is 28.4% above average; 2128 moved in October (-33.5%) which is the second lowest ever total for valid counts, but was compensated by 731 birds moving in November (+133.9%) which is by far the highest ever November count and 263 more than the previous highest November count in 2001. Golden Eagles comprised 85% of the total count this season, mainly resulting from below-average counts of most of the other more common raptor species. The flight comprised 1581 adults, 172 subadults, 438 juveniles, 1 undifferentiated immature bird and 781 birds of unknown age yielding an immature:adult ratio of 0.39 that is 37.1% above average. The ratio of juvenile birds to subadults and adults was 0.25 which is 65.1% above average. Both ratios indicate a productive breeding season.

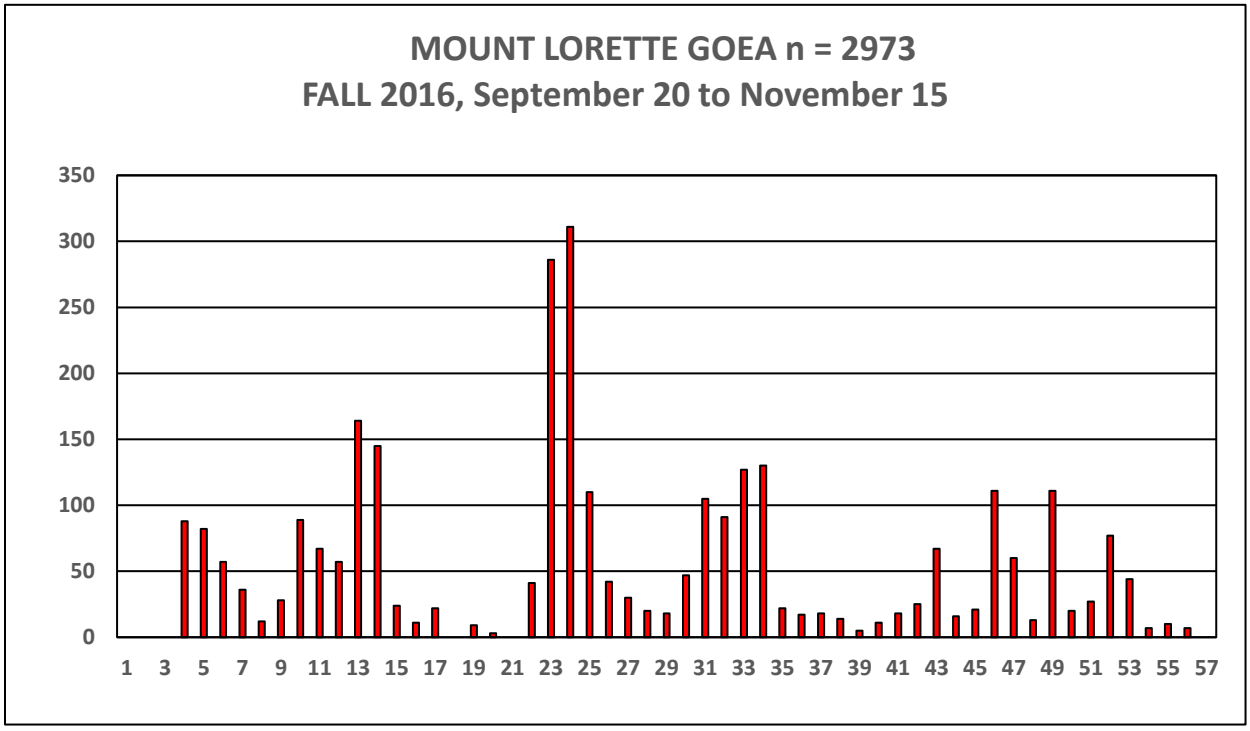
The highest cumulative hourly counts were 554 (1500-1600), 506 (1400-1500), 423 (1300-1400) and 398 (1600-1700) MST. No birds were recorded between 0600 and 0700 while 16 birds occurred after 1800. (**Figure 2** and **Table 6**). The 3 highest single hour counts all occurred on October 12 when 13-14, 14-15 and 15-16 produced 86, 75 and 68 birds respectively. The fourth-highest hour was 59 between 1000 and 1100 on October 13.

This is the third 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**). Both show 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 2016 count is only the third time this pattern has been observed since 2005. The species median passage date of October 13 was 1 day later than the average date, adult birds were 3 days later than average on October 17, while immature birds were 4 days later than average on October 12.

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 2005[2]. 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.



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

Figure 1

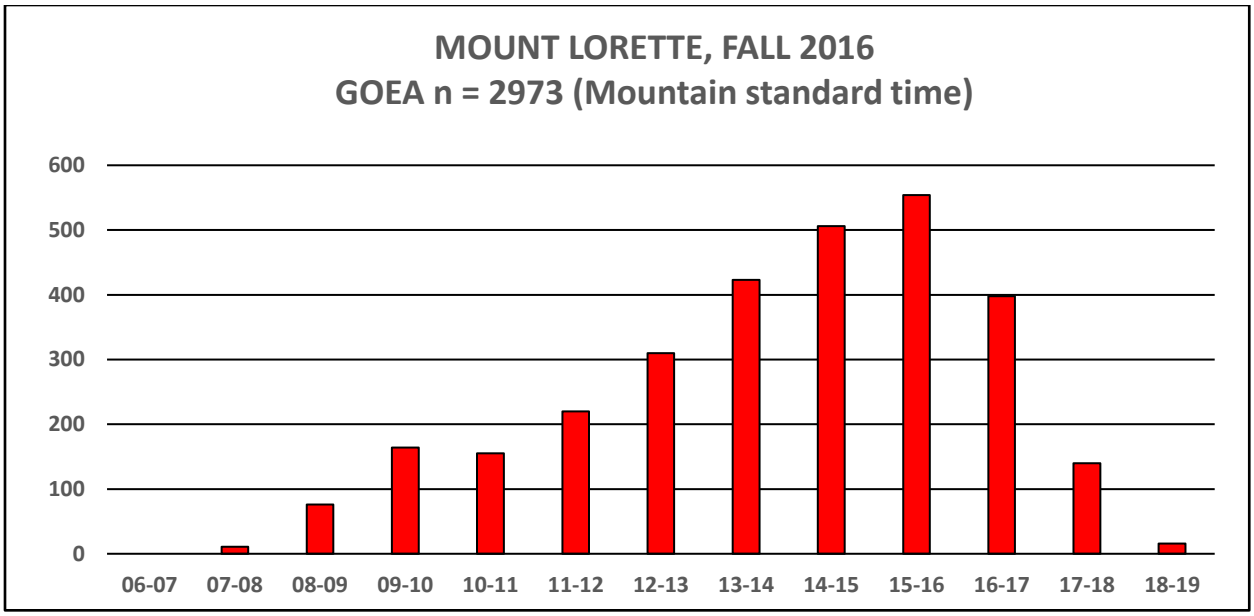


Figure 2

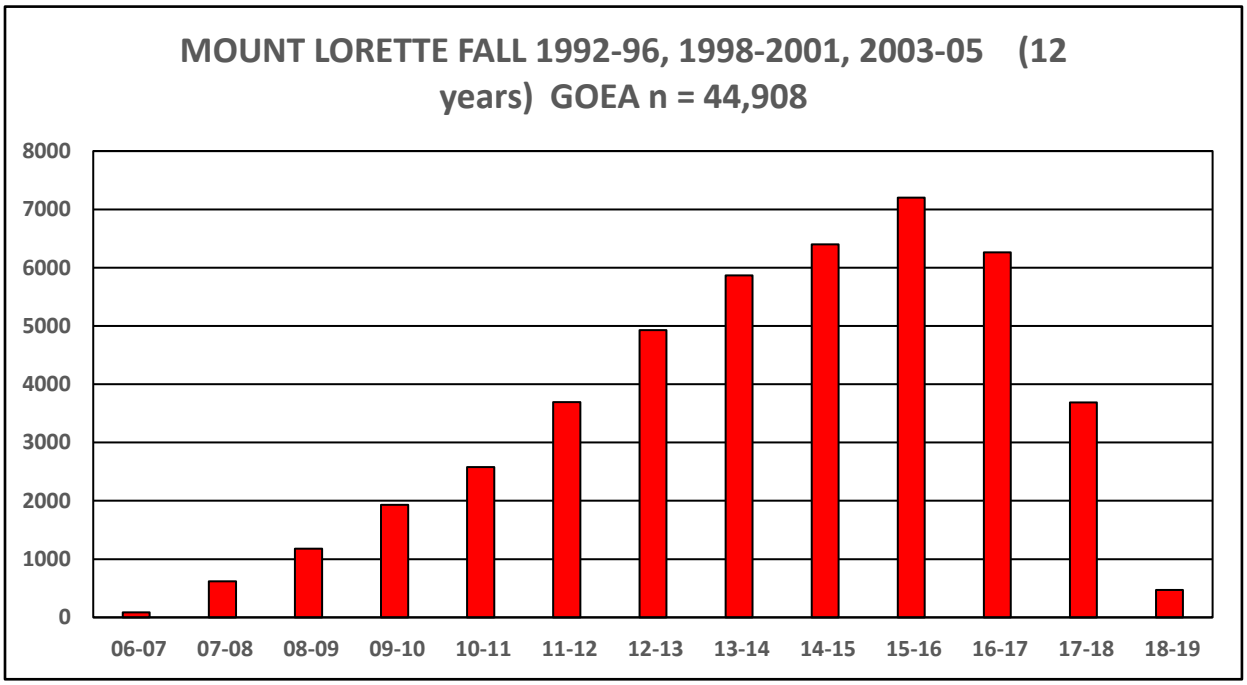


Figure 3

Fall Golden Eagle Trend

Figure 4 shows the linear trend of all counts from 1993-2016 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. After the previous three-year' increasing trend this season's count marks a slight diminution 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 2005[2]. 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.

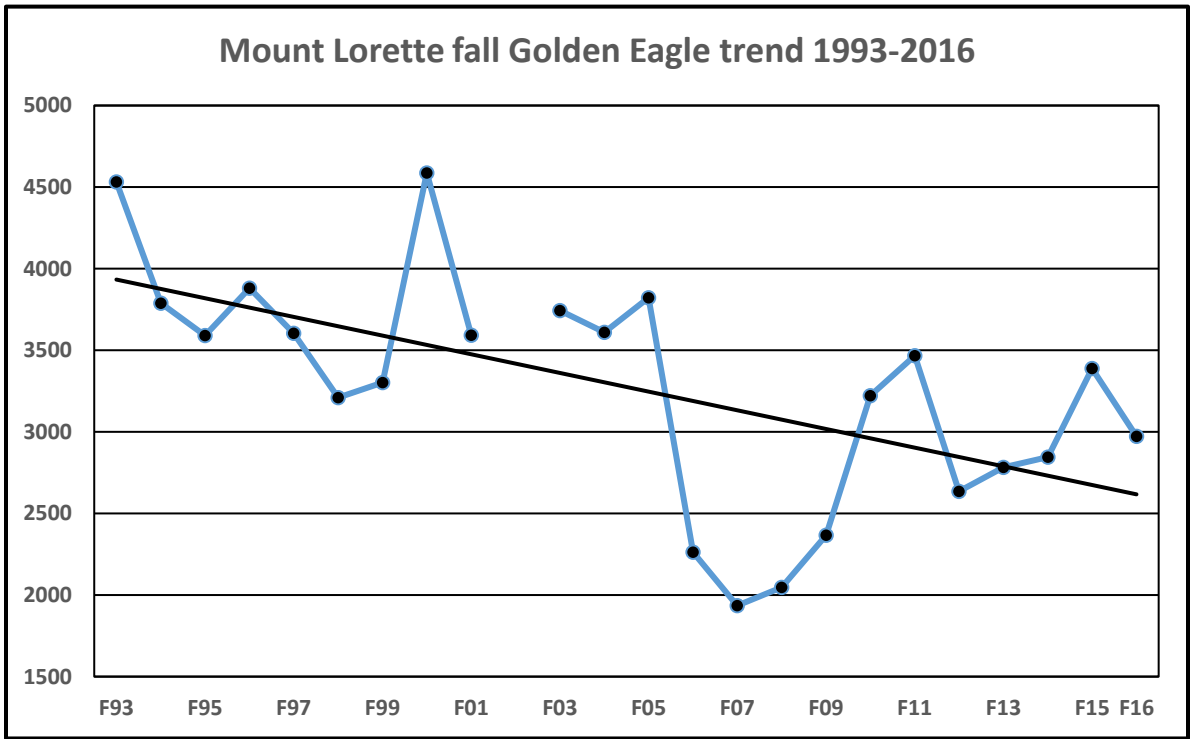


Figure 4

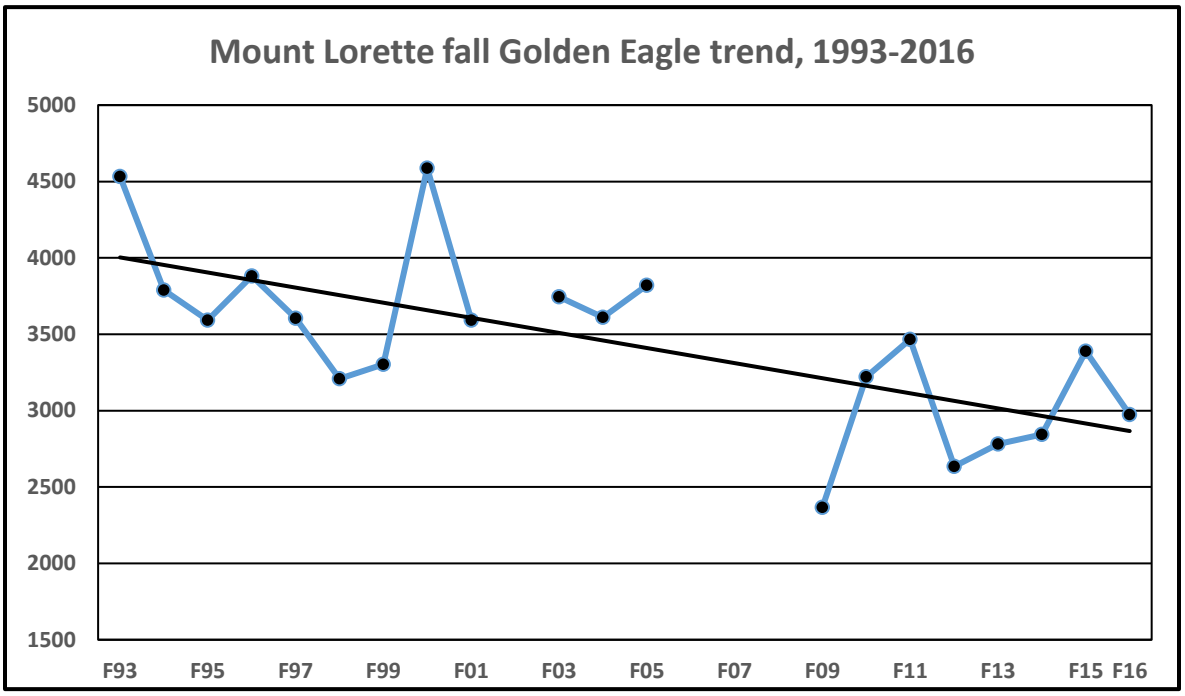


Figure 5

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 were 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 the start of the next rising trend the ratio and, after a slight decline last year, the 2016 ratio continues this rising trend. This trend (which is weakly 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 will be interesting to

see if the current rising trend will continue or if 2016 will mark the peak of the cycle. If so the cycle peaks seen during the 25 years of Alberta Front Ranges counts will be 1999, 2007 and 2016 with 8 and 9 years respectively between the peaks.

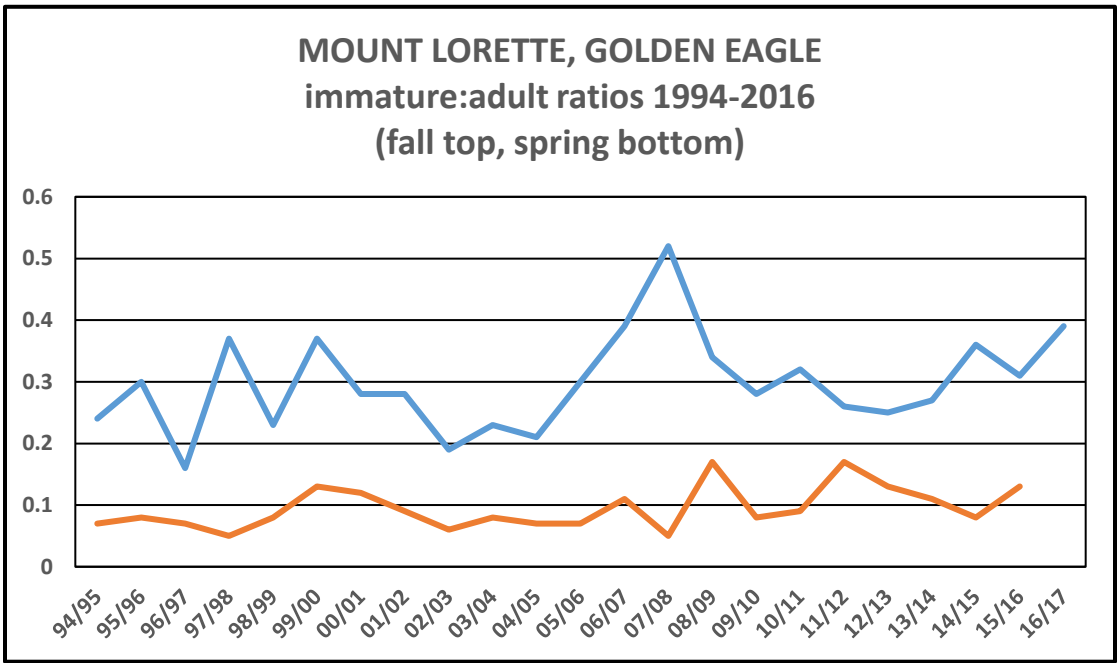


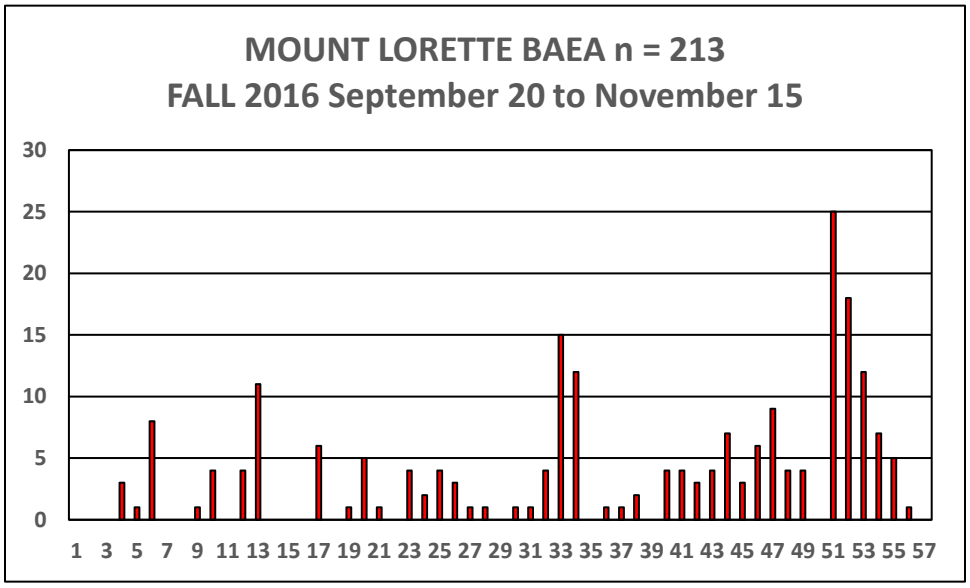
Figure 6

Bald Eagle

The count of 213 birds seen on 42 days between September 23 and November 14 was the highest count since 2005 but was still 11.5% below average **(Figure 7)**. The 8 counts since 2009 have all been lower than those of 1993-2005 with the exception of 1999 (193 birds), 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 southward 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 17 in September (-6.7%), 91 in October (-37.6%), and 105 in November (+39.3%) which is the highest November count at the site since 2004. Fifty-five birds

moved between November 9 and 11 including the highest single-day counts of 25 on November 9 which is 10% above the average high count. The only other double figure counts were 11 on October 2, 15 on October 22 and 12 on October 23. The flight comprised 115 adults, 42 subadults, 47 juveniles, 4 undifferentiated immature birds and 5 birds of indeterminate age giving an immature:adult ratio of 0.81. This is the highest ratio ever recorded at the site and 51.4% above average, indicating that the species had an excellent breeding season. The median passage dates for the species, for adults and for juvenile birds were October 23, October 24 and October 20 which were 8 days, 10 days and 3 days later than average respectively, which are the latest median dates ever for both the species and for adult birds.



(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 A total of 5 single birds were counted on 5 days between September 24 and October 5. The count equals that of 2014 as the highest for the count period and is 91.5% above average. The median passage date of September 29 is 4 days later than average.

Northern Harrier A total of 9 birds were seen on 7 days between September 23 and October 26, which is 15.2% below average. The highest daily count was 2 on September 23 and October 9,

and the median passage date for the species was October 3 which was 1 day earlier than the long-term date. The flight comprised 7 adult birds (4 males and 3 females), 1 undifferentiated female/juvenile and 1 indeterminate bird.

Sharp-shinned Hawk The total of 133 birds were counted on 37 days between September 20 and November 2; the count is 3.5% below average but the number of days on which it occurred is 11.6% above average. The highest single-day count was 25 on September 30 (-2.4%), which was coincident with the species median passage date which was 3 days earlier than usual. The flight comprised 35 adults, 10 juveniles and 88 birds of unknown age. Adult birds were also 3 days earlier than average on October 1 and juveniles were 7 days early on September 23. The immature:adult ratio of 0.29 is 29.1% below average although, as usual, the high percentage of unaged birds means that this figure should be treated with caution. The monthly counts were 85 in September (+52.8%) which is the highest September count since 1996, 42 in October (-45.8%), and 6 in November (+200%) which equals the November high count set in 2010.

Cooper's Hawk A total of only 11 birds moved on 9 days between September 2 and the relatively late date of November 12 with a maximum passage of 2 birds each on September 10 and November 12. The count was 52.9% below average and was only 1 more than the lowest ever count in 2009. The September count of 6 birds was 48.6% below average, the October count of 3 birds was 72.3% below average and equaled the lowest ever count for the month, and the November count of 2 was 142.9% above average. The flight comprised 6 adults, 2 juveniles and 3 birds of indeterminate age giving an immature:adult ratio of 0.33 which is 27.8% below average. The median passage date for the species was September 30, 1 day earlier than average, and for adults was October 15, 12 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 so this year's date (on a low count) was the earliest since 2009.

Northern Goshawk A total of 32 goshawks migrated on 16 days between September 21 and November 12, which is 29% below average for the site. The highest single-day count was 7 on September 24 which is 26% above the average high count. The September count of 19 was 171.4% above average and the second highest ever for the month, the October count of 9 was 71% below average and is the second lowest ever for the month and the November count of 4 was 39.3% below average. The flight comprised 20 adults, 7 juveniles and 5 birds of unknown age giving an age ratio of 0.35 which is 45.8% above average. The median passage date for both the species and adult birds was September 29, 13 days and 12 days earlier than average respectively, while juvenile birds were 12 days early on September 30.

Broad-winged Hawk A total of 5 Broad-winged Hawks were seen on 2 days: 3 on September 25 and 2 on October 1. The count is 21.1% below average. The flight comprised 4 light morph birds: 3 adults and 1 juvenile, and 1 dark morph adult giving an age ratio of 0.33 which is 53.6% below average. The median passage date for the species was September 25, 10 days earlier than average.

Swainson's Hawk A single adult light morph bird was seen on September 28. It has only previously occurred in the current count period on 5 fall counts at the site and apart from two

birds that occurred in 1995 only single birds were involved. This is the first record here since 2005.

Red-tailed Hawk The count of 27 birds on 14 days between September 23 and the late date of November 12 was 20.3% below average. The highest daily count was 8 on September 23, which is 11.6% above average. The September count of 17 was 6.4% below average, the October count of 9 was 37.19% below average and the November count of 1 was 30.8% above average. The median passage date for the species was 1 day earlier than average on September 28, adults were 2 days early on September 27 and juveniles were 5 days early on September 25. The flight comprised 23 birds of the race *B.j.calurus*, 17 of which were light morphs (10 adults, 5 juveniles and 2 indeterminate birds), 2 were adult rufous (intermediate) morphs and 4 were dark morph adults; 3 very light juveniles were considered to be "Krider's Hawks" (*B.j. borealis* var *krideri*) and there was also 1 indeterminate light morph bird. The overall immature:adult ratio was 0.46 which is 7.8% below average.

Ferruginous Hawk An adult light morph bird was recorded on October 22. Single birds have been recorded on six previous counts including last year.

Rough-legged Hawk A total of 24 birds moved on13 days between September 28 and November 14, which is 54.9% below average and the 3rd lowest ever fall count at the site. The single-day high count was only 4 on October 9 and 11, which is 60.7% below the average high count. The September count of 2 was 12.5% above average, the October count of 17 was 60.8% below average and the November count of 5 was 22% below average. The median passage date for the species was 4 days later than average on October 21. The flight comprised 20 light and 4 dark morphs giving a dark:light ratio of 0.28, which is 29.6% below the average ratio.

American Kestrel Four birds were seen on 4 days between September 20 and the relatively late date of October 22. Two birds were male, 1 female and 1 was of undetermined sex. The total is 63.6% above average.

Merlin The total of 8 Merlins occurred on 8 days between September 25 and November 12 was 2.9% below average. Two birds moved in September (-32.1%), 5 in October (+10.5%) and 1 in November (+142.9%). The median passage date for the species was October 15, 11 days later than average. The flight comprised 6 birds ascribed to the race *F.c.columbarius* (1 adult male, 1 unsexed juvenile and 4 birds of unknown age or sex), and 2 birds of the race *F.c.richardsonii*: 1 adult male and 1 bird of indeterminate age or sex.

Gyrfalcon The species was not recorded this year. A total of 53 Gyrfalcons have been seen in the fall at the site since 1993, and this was only the 4th year that it has not been recorded.

Peregrine Falcon A total of 10 birds was counted on 8 days between September 24 and November 17. The count is 74.8% above average and equals the previous second highest count at the site. Two birds moved in September (+16.1%), 6 in October (+83.9%) and 2 in November (+325%). The highest daily count was 3 on October 15 (+54.3%). The flight comprised 5 adults, 2 juveniles and 3 birds of indeterminate age, giving an age ratio of 0.4. The species median passage date of October 15 was 11 days later than the long-term average date.

Prairie Falcon The total of 2 Prairie Falcons seen on 2 days, October 15 and November 1, is average for the site.

Observers at Mount Lorette

Principal Observers Jim Davis (9 days), Joel Duncan (8 days), Brian McBride (8 days), Terry Waters (8 days), Bill Wilson (8 days), George Halmazna (7.5 days), Blake Weis (6.5 days) and Cliff Hansen (2 days).

Assistants Cliff Hansen (14 days), Ruth Morrow (8 days), Rick Robb (8 days), Blake Weis (8 days), Dan Parliament (7 days), Lori Anderson (7 days), Diane Stinson (6 days), Patrick Farley (4 days), Caroline Lambert (4 days), Jennifer Waters (4 days), Cindy Parliament (3 days), Eric Langshaw (2 days), Peter Perren (2 Days), Miles Tindal (2 days), Heinz Unger (2 days), Angela Luck (1 day), Rosemary Power (1 day), Jim St. Laurent (1 day), James and Teresa Bannon (1 day), Brian Spence (1 day) and Chris Hunt (1 day).

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Vicki Ridge extended 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 1670 m and most observation was conducted near the south end of the ridge at 1533 m (49^{o} 27' 59" N 114^{o} 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 1418 m. 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^{o} 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)**. In 2015 a second count was conducted

on the ridge with a fairly continuous coverage of 32 days (134.8 hours) between September 22 and November 15 during which time 1340 raptors of 15 species were counted at a rate of 9.94 raptors/hour **(Table 13)**. A fairly complete count was planned for the fall of 2016, but because of an unexpected but important circumstance I had to be away for 12 days between September 29 and October 10 and only 1 day's count was conducted during this period. The final count comprised 43 days (282.5 hours) between September 23 and November 15 but because of the aforementioned gap the statistical usefulness of the count is limited but it served as a useful extended reconnaissance.

Weather and count summary

Table 9 summarizes the weather at the site. The start of the count was delayed until September 23 because of rain and low cloud, and steady snow on October 10 delayed the resumption of the count by one day, but otherwise no significant time was lost because of poor weather conditions. The high temperature in September ranged from 11 to 19.5 ^{o}C, and winds were generally moderate to strong W-WSW. In October the only day that failed to rise above freezing was October 11 when the temperature was -1 ^{o}C as the previous day's storm diminished, but otherwise the rest of the month saw maximum daily highs between 3 and 11.5 ^{o}C with again mainly moderate to strong W-WSW winds and occasional but generally brief rain showers. November was even warmer with temperatures on November 8 and 9 reaching 16 ^{o}C with again predominantly moderate to strong W-WSW winds. 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. On several days observation was simultaneously conducted on the ridge, from the wellsite and on the ridge immediately to the west which proved to be very instructive. The daily observation locations are noted on **Table 9**.

The final count was 2868 migrant raptors of 17 species at an average rate of 10.15 raptors/hour (**Tables 8** and **10**), with high daily counts for each month of 175 birds on September 24, 211 on October 15, and 139 on November 5. All active viewing days produced migrant raptors with an average daily count throughout the season of 66.7 birds. The final count was 1 Turkey Vulture, 3 Ospreys, 253 Bald Eagles, 16 Northern Harriers, 521 Sharp-shinned Hawks, 49 Cooper's Hawks, 77 Northern Goshawks, 6 unidentified *Accipiters*, 7 Broad-winged Hawks, 0 Swainsons Hawks, 117 Red-tailed Hawks, 3 Ferruginous Hawks, 313 Rough-legged Hawks, 4 unidentified *Buteos*, 1424 Golden Eagles, 15 unidentified eagles, 17 American Kestrels, 33 Merlins, 1 Gyrfalcon, 13 Peregrine Falcons, 5 Prairie Falcons and 1 unidentified *Falco*.

One remarkable feature of the count was the number of surprisingly late records that probably resulted from the summer-like weather that persisted throughout most of the count. These include an adult Turkey Vulture on October 28, an Osprey on November 9, single Northern Harriers on November 10 and 11, a juvenile Ferruginous Hawk on October 25 and a female American Kestrel and 2 Peregrine Falcons on November 7. Maybe with climate change this is now the new normal.

Turkey Vulture A single adult bird was seen on the rather late date of October 28.

Osprey Only 3 birds were seen in the count period: 2 on September 28 and the third on the very late date of November 9, which is the latest Osprey ever seen on a RMERF count. It also reflected the summer-like conditions at the time.

Bald Eagle A total of 252 birds moved on 35 days with 156 of the birds (62%) recorded in November including a single-day count of 64 on November 10. The flight comprised 171 adults, 34 subadults, 41 juveniles and 6 indeterminate birds.

Northern Harrier Sixteen birds were counted on 12 days with late single birds passing on November 10 and 11. The flight comprised 5 adults (4 males, 1 female), 5 juvenile birds (3 males, 2 females), 2 unaged female birds and 4 unsexed juveniles.

Sharp-shinned Hawk A total of 521 birds occurred on 37 days throughout the count period, with a high single-day count of 102 on September 24 and significant movements of 65 and 46 birds on September 25 and October 21 respectively. The count comprised 263 adults, 27 juveniles and 231 indeterminate birds.

Cooper's Hawk A total of 49 birds were seen on 14 days up to October 29 with high single-day counts of 11 on September 24 and 10 on September 25. The flight comprised 28 adults, 8 juveniles and 14 indeterminate birds.

Northern Goshawk Seventy-five goshawks were seen on 30 days up to November 11. The highest daily count was 7 birds on October 19. The count comprised 61 adults, 12 juveniles and 2 indeterminate birds.

Broad-winged Hawk A total of 7 birds were seen on 4 days up to October 15 with 3 of the birds occurring on October 11. The flight comprised 6 light morph birds (3 adults and 3 juveniles) and 1 dark morph adult. The dark morph adult Broad-winged Hawk was a female that passed low directly overhead at 1331 on September 26 and had an unusual tail pattern. The broad bands were clearly visible but the white bands in this case were a medium grey colour which still contrasted with the black bands but not as conspicuously as the white of a normal plumaged bird. What made the sighting more interesting was that Jim Davis had seen the same plumaged female at 1310 the previous day at Mount Lorette. The plumage is so unusual that it was almost certainly the same bird.

Swainson's Hawk This was the only raptor species that was not recorded.

Red-tailed Hawk A total of 117 birds occurred on 26 days up to November 15 (the last day of the count), with a highest single-day count of 15 on October 15. Also of note were the 6 birds that occurred on the late date of November 10. The flight comprised 96 birds of the race *B.j.calurus*, 61 of which were light morphs (50 adults, 7 juveniles and 4 indeterminate birds), 1 adult was a rufous (intermediate) morph, 34 were dark morphs (29 adults, 4 juveniles and 1

indeterminate bird); 18 birds were of the race *B.j.harlani*, 17 of which were dark morphs (13 adults, 3 juveniles) and 1 was an adult intermediate morph bird, and 3 were indeterminate dark morph Red-tails.

Ferruginous Hawk A total of 3 light morph birds comprised 2 adults on September 27 and a juvenile on the very late date of October 25.

Rough-legged Hawk A total of 313 birds were observed on 39 days between the rather early date of September 23 and November 15 when 5 birds were seen. The highest single-day count was, like last year, 24 which surprisingly occurred on 3 different days: October 23 and 28, and November 10. The flight consisted of 277 light morphs, 31 dark morphs and 5 undetermined morphs.

Golden Eagle Golden Eagles were seen on every active observation day, with a final count of 1424 birds that comprised 947 adults, 160 subadults, 188 juveniles and 129 indeterminate birds. The highest daily count was 159 on October 15 and other high counts were 121 on October 13, 104 on October 14 and, most surprisingly, 121 on November 5.

American Kestrel Seventeen birds occurred on 7 days. Not surprisingly 15 of these moved between September 24 and 28, 1 was seen on October 18, but the last bird, a female, flew south on November 7. The count comprised 5 adult males, 6 adult females, 2 juveniles and 4 birds of undetermined sex or age.

Merlin Twenty-two Merlins were seen on 17 days up to the last day of the count on November 15, with daily high counts of 3 on September 23 and October 22. The flight comprised 21 birds ascribed to the race *F.c.columbarius* (10 adult males, 5 adult female and 6 birds of unknown age or sex) and 1 adult male of the race *F.c.richardsonii*.

Gyrfalcon A single adult grey morph male bird was seen on November 7.

Peregrine Falcon Only 1 bird was seen last year, but this season 13 were counted on 9 days with 2 birds occurring on September 23, October 25 and November 7, which were the last birds seen. The flight comprised 7 males (5 adults and 2 juveniles), 3 females (2adults, 1 juvenile), 2 adults of indeterminate sex and 1 indeterminate bird.

Prairie Falcon Single birds were seen on September 23, October 11, 21 and 26, and November 6.

Also recorded were 6 undifferentiated *Accipiters*, 4 undifferentiated *Buteos*, 15 undifferentiated eagles and 1 undifferentiated *Falco*.

Observers at Vicki Ridge

Peter Sherrington (41 days), Raymond Toal (8 days), Gordon Petersen (4 days), Denise Cocciolone-Amatto (3 days); assisted by Hilary Atkinson (13 days),), Raymond Toal (11 days), Denise Cocciolone-Amatto (10 days), Merilyn Liddell (6 days), Gordon Petersen (2 days), Pat Lucas (2 days), Janne Aikins (1 day), Carol Bruder (1 day), Judy Cook (1 day), Doug and Teresa Dolmen (1 day), Shirley Enzsol (1 day), Dan and Charlene Lee (1 day), Keith Linton (1 day), David McIntyre (1 day), Geoffrey Martens (1 day), Miles Tindal (1 day), Patricia Waagner (1 day).

Steeples 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 that forms part of the 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 and 1 day at the Horseshoe Lake site, all counts were conducted at the Bill Nye site (49 º 45’ 11.10’’N, 115 º 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 2016 season is the eighth reconnaissance count at the site (**Table 13**).

Weather and count summary

A total 37 days (161.75 hours) were spent observing between September 20 and November 15. The days and hours are 30.8% and 62.7% above average respectively. A total of 12 days were lost because of inclement weather, and another 7 days were missed due to previous teaching commitments of the Principal Observer. **Table 12** summarizes the weather at the site. A total of 12 days (September 22, October 5, 7, 8, 13, 17, 20, 21, November 11, 14 and 15) were lost to inclement weather which mainly consisted of persistent rain and low cloud which obscured the ridges. Snow only fell on November 15 which was the last day of the count. Warm temperatures prevailed throughout the count and, on active days at least, the temperature did not fall below freezing. The average high temperature for September was 18.6 ^{o}C with a season high 25 ^{o}C on September 27; the average high temperature for September was 9.7 ^{o}C and for November was a remarkable 11 ^{o}C with highs of 15 ^{o}C on November 3 and 9. Winds blew from the S-SW 43.2% of the time, S-SE 29.7%, N-NE 5.4% and W and SW-SE 2.7%. On 11 days (29.7%) wind direction could not be assessed. These winds were assessed to be calm to light 45.9% of the time, strong 21.6%, moderate 16.2%, light to moderate 10.8% and moderate to strong 5.4%. Most of the strong winds occurred in late October and November. On active days rain showers occurred 16.2% of the time and the ridges were partially obscured 24.3% of the time but this only occasionally interrupted the migration.

A total of 629 raptors were counted which is a fall record and 116% above average, at a rate of 3.89/ hour which is also a new high and 28.4% above average (**Table 13**). For the third consecutive year the peak movement occurred on October 11 when 85 migrant raptors moved south. Maximum movement occurred between October 6 and 17 when 336 birds were counted that comprised 53.4% of the count. This movement coincided with a period of warm stable weather.

The count included 428 eagles (68%) which is the lowest percentage ever for a fall count. Also, unlike the last two years when Bald Eagles predominated, this year saw an even distribution of the two species with 222 Bald Eagles (52%) and 206 Golden Eagles (48%). The Bald Eagle total is the second highest for the site and the Golden Eagle count is a new high. There were also record counts of Osprey (7), Northern Harrier (8), Sharp-shinned Hawk (103), Northern Goshawk (9), Red-tailed Hawk (49), American Kestrel (6), Merlin (2) and Peregrine Falcon (2) and a Prairie Falcon was a first record for the site.

The final count was 1 Turkey Vulture, 7 Ospreys, 222 Bald Eagles, 8 Northern Harriers, 103 Sharp-shinned Hawks, 2 Cooper's Hawks, 9 Northern Goshawks, 49 Red-tailed Hawks, 11 Rough-legged Hawks, 206 Golden Eagles, 6 American Kestrels, 2 Merlins, 2 Peregrine Falcons and 1 Prairie Falcon.

Turkey Vulture The only record was a single bird on October 4.

Osprey A record 7 birds moved between September 20 and the late date of November 1. Three birds were seen on October 4.

Bald Eagle The 222 birds counted between September 23 and November 13 was the second highest count at the site. The highest single-day counts were 33 on October 6 and 27 on November 1. The flight comprised 131 adults, 38 subadults, 51 juveniles and 2 indeterminate birds giving an immature:adult ratio of 0.69, compared to a ratio of 0.81 at Mount Lorette. This is the first time that the age ratio for the species has been lower than that at Mount Lorette.

Northern Harrier The total of 8 birds counted between September 20 and November 4 was a new high for the count and 250% above average. Three of the birds occurred on October 11. The flight comprised 3 adult females, 4 unsexed juveniles and 1 indeterminate bird.

Sharp-shinned Hawk The total of 103 birds seen between September 20 and November 1 was by far the highest ever count for the site and 377% above average. The highest single-day counts were 19 on October 18, 18 on October 9 and 17 on October 11. The flight comprised 31 adults, 2 juveniles and 70 indeterminate birds.

Cooper's Hawk Two adult birds were counted on September 24. This is only the third count on which they have been recorded: 4 were seen in 2009 and 2 in 2015.

Northern Goshawk Nine birds, 3 adult females, 4 unsexed juveniles and 1 indeterminate bird, were counted between October 11 and November 1. This is a new high count and 215% above average. High single-day counts were 3 on October 11 and 18.

Broad-winged Hawk Never recorded on the count.

Swainson's Hawk Never recorded on the count.

Red-tailed Hawk A record total of 49 birds (281% above average) occurred between September 23 and November 4 comprising 40 birds of the race *B.j.calurus* (32 light morphs: 21 adults, 8 juveniles, 1 unaged; 7 dark morphs: 6 adults, 1 juvenile and 1 adult rufous (intermediate) morph), 3 adult dark morph *B.j.harlani,* and 6 birds of unknown race, morph or age. High daily counts were 8 on September 14 and 7 on October 6.

Ferruginous Hawk Never recorded on the count.

Rough-legged Hawk The total of 11 birds, 9 light morphs and 2 dark morphs, seen between October 11 and November 4 was the second highest count for the site and 120% above average. Four of the birds occurred on October 11.

Golden Eagle The record total of 206 birds counted between September 20 and November 13 comprised 132 adults, 15 subadults, 51 juveniles and 8 indeterminate birds giving an immature:adult ratio of 0.5, compared to a ratio of 0.39 at Mount Lorette. The highest single-day counts were 36 on October 18, 33 on October 11 and 30 on October 6.

American Kestrel A record count of 6 birds was made between October 9 and October 16, with 2 birds occurring on both October 9 and 14. The count is 500% above average and comprised 4 females, 1 male and 1 indeterminate bird.

Merlin Single adult males of the race *columbarius* were seen on September 29 and October 4 producing a record count that was 1300% above average, the species having only been recorded once before.

Gyrfalcon Never recorded on the count.

Peregrine Falcon Two birds, 1 adult and 1 juvenile, were also a record count (+1300%), the only previous record being a single bird seen in 2011. The juvenile bird was seen on September 29 and the adult on October 9.

Prairie Falcon The first ever record of the species at the site occurred on October 14.

Observers

Vance Mattson (37 days), assisted by Virginia Rasch (3 days), Gaby Zezulka (2 days).

Appendix (separate attachment)

List of Tables