

Fraser Valley Hawk Watch Monitoring Results from 2015-2023.

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Abstract

The Fraser Valley Hawk Watch was started by the author in September 2014 with a general scoping out of locations around the eastern Abbotsford region to gauge where the best results could be found. During the years 2015-2019 it became apparent that there were 2 very good collection sites and that is where the focus of the hawk watch continues. The data collected from 2015-2019 did follow almost all the protocols that were eventually implemented in the fall 2020 and as a result are included in this paper. Data collected from the fall of 2020-2023 incorporated a couple of new protocols and these protocols are now the final standard for collecting all migration data on all future hawk watches.

Methodology

Important factors to conduct the surveys were put into data collection protocols. These protocols are standard to all hawk watches across North America (HMANA 2006). All survey days were conducted on non-rainy days with varying degrees of cloud cover. Surveys were conducted from 11:00am to 3:00pm to achieve best results of detecting migrating birds. Temperatures were also perfect during the middle of the day to allow for thermals and maximum lift for birds migrating. Our surveys found that the best results at either location occurred from 11:30am -1:30pm when temperatures in the spring were around 15-18°C or higher and the fall when the temperature was 20°C or higher. Winds conditions were also important for achieving excellent results. Our surveys found in the spring winds over 25 km/hr from the southwest or southeast pushed higher concentrations of birds northward than on calm non-windy days. Of note the day after a big storm was often very good for producing migrant numbers. In the fall, the best survey results occurred on days when the winds were northeast and over 25 km/hr. The days after the first frosts occurred in Northern BC often produced excellent migration results as well. We used the Environment Canada weather app for weather updates and the Windy.com app for a bigger picture of where the winds would originate. These winds seem to streamline birds moving north or south allowing for easy counting as birds would go by and not come back continuing either on a northeast vector in the spring or a southwest vector in the fall. Our surveys also tried to measure height, in the case of Vedder Mountain from the valley floor to the ceiling, and in the case of Sumas Mountain the height above the ridge tops. Also critical in our data collection was the flight direction the birds would travel when detected which was entered as either along a ridge or in the valley bottom. Over the years it was found that most birds would use similar directions of travel in spring and fall. Most birds we detected were clearly migrant birds as they would pass by and not return and it was marked in the data as a migrant, when resident birds were suspected, resident was marked on the datasheet. The age, sex when possible was noted, number of birds and the time of detection

was all written down as well. We also made sure to add if there was any site disturbance to our study sites.

Study Sites

The first study site is located on Sumas Mt in Abbotsford at coordinates 49.109679 -122.178488. The site is an excellent overview location and capturing spring migration, but this site does especially well in the fall season. We also look from secondary spots near the base of the mountain in the Matsqui Prairie area sometimes as well to gauge if there are birds are on the move. These areas provide extra data on movement days and will often show the general direction of travel that birds are travelling on big movement days. The second location is along Vedder Mountain at coordinates 49.0529777-122.0511844 and is an excellent location as it gives a large viewpoint of Vedder Mountain and the eastern portion of Sumas Prairie. This area lines up excellent for spring and fall migration and often consistently gets very high numbers of birds travelling through the area. I called this area “the Vedder Express” due to the high volume of birds encountered in migration. In the spring we also look in Sumas Prairie from a couple of key locations where we capture movements of species such as Swainson’s Hawk.



View from the Sumas Mountain study site looking north on September 21, 2022. Photo © Rick Toochin.



View from the Vedder Mountain study site looking north on September 30, 2020. Photo © Rick Toochin.

Species Totals per Year and Protocols

From the spring of 2015 to the spring of 2020 most sighting data was collected through general observations conducted at 2 established study sites following basic data collection protocols. Daily counts were conducted from 2015 onwards, most counts were conducted on weekends, but during the week when it was possible. In these years the data collected followed standardized rules, but some protocols had to be worked out. More formalized protocols that follow the North American standard Hawk Watch Protocols written by HMANA are now standard for data collection with implantation in the fall of 2020 and have been used each year since.

The hawk watch now uses a more thorough standardized form of collecting the data. Surveys were conducted from 11:00am to 3:00pm at 2 locations. The first site was on Sumas Mountain and the other along Vedder Mountain. Surveys were conducted by the same individuals that would scan the sky in a clockwise rotation making counts accordingly and not double counting individuals. Telescopes and binoculars were used to identify raptors. All important information was collected including weather, sky cover, precipitation, wind direction, height of birds in meters, direction of travel, number of each species, age was also recorded, when possible, to determine. Whenever possible we do not double count birds, in the event we see what we believe to be the same Turkey Vulture, for example, heading in an opposite direction from when it was previously recorded, we choose to that second observation be not written down and was kept out of the data. This is done to avoid over counting and as a result inflating numbers which is not the purpose of the hawk watch. The following breaks down our results through more detailed species accounts that gives an overview of what was learned from the data collected.

Most years there were at least 15 days per month where numbers were counted. The numbers are included here as a general reference as the numbers do provide valuable general occurrence data. For each year studies were conducted from March 1 to May 31 and August 15- October 31. When looking at totals keep in mind that this reflects totals for the entire period not the individual months the data was collected. The highest totals are in bold below as are unusual species and subspecies for the area.



Swainson's Hawk adult dark morph flying low over Sumas Prairie on May 12, 2021. Photo © Rick Toochin.

Species Accounts: Spring Total Numbers

Species	2015	2016	2017	2018	2019	2020	2021	2022	2023
Turkey Vulture	601	772	666	777	742	893	641	624	636
Osprey	18	22	11	8	2	8	10	11	14
White-tailed Kite		1	1				1		1
Bald Eagle	1002	1068	975	1592	564	557	607	570	676
Northern Harrier	87	94	72	73	72	75	86	89	77
Sharp-shinned Hawk	53	60	55	58	65	68	65	57	64
Cooper's Hawk	88	90	122	56	30	89	135	138	112
American Goshawk	3	1	4	5	1	1	7	2	5
Red-shouldered Hawk						1			
Broad-winged Hawk	1	8	3	5	5	3	13	4	1
Swainson's Hawk	1	30	63	38	13	26	159	34	7
Red-tailed Hawk	722	820	468	404	659	741	563	579	601
"Harlan's Hawk"	8	9	3	11	1	4	6	7	6
Ferruginous Hawk		3	2			1	2	2	
Rough-legged Hawk	2	1	3	1	1	2	2	2	2
Golden Eagle	73	45	65	108	89	136	77	56	62
American Kestrel	58	42	61	44	42	43	52	48	51
Merlin	22	25	22	20	23	24	18	16	20
"Prairie Merlin"						1	1		
Gyr Falcon	2	6	4	1	2	1	1	1	1
Peregrine Falcon	36	48	35	34	36	54	40	32	39
Prairie Falcon		4	7	3	1	2	2		

Species Accounts: Fall Total Numbers

Species	2015	2016	2017	2018	2019	2020	2021	2022	2023
Turkey Vulture	1126	1416	1098	1156	1004	1530	1257	1483	1289
Osprey	53	49	51	52	63	65	64	63	58
White-tailed Kite									
Bald Eagle	259	288	276	299	287	301	234	257	296
Northern Harrier	233	241	201	213	202	256	230	143	251
Sharp-shinned Hawk	905	1098	1003	1076	1155	1305	1094	1004	1263
Cooper's Hawk	129	143	127	187	133	201	104	137	127
American Goshawk	18	2	2	1	1	4	4	3	7
Red-shouldered Hawk	2								
Broad-winged Hawk	40	15	13	5	3	16	25	18	76
Swainson's Hawk	10	12	4		5	10	9	7	50
Red-tailed Hawk	633	689	704	733	701	792	749	639	686
"Harlan's Hawk"	1	2	4	3	4	5	2	3	3
Ferruginous Hawk	1							1	
Rough-legged Hawk	6	7	2	2	3	6	2	5	2
Golden Eagle	8	6	7	8	8	10	5	7	5
American Kestrel	120	166	155	180	177	201	121	122	136
Merlin	49	66	55	87	80	102	82	94	89
"Prairie Merlin"	1								1
Gyr Falcon	2	2				3			1
Peregrine Falcon	36	42	39	48	35	50	37	33	32
Prairie Falcon	7	2	1		1	3	1	1	3

Species Accounts:

Turkey Vulture (*Cathartes aura*)

This is one of the most frequently encountered raptor species of both the spring and fall hawk watches at both locations. In the spring birds first appear in Sumas Prairie in late February and are normally present in small numbers by early March. When the hawk watch is activated in the beginning of March, Turkey Vultures are encountered frequently with numbers rising each week and peaking in mid-April into early to mid-May. After this period migrants continuing to move through the rest of May remaining in good numbers in the region by the end of the month. The highest spring count was in 2020 with 893 individual's total with all other years averaging 600 to almost 800 birds. Our highest single day count for the spring was 56 birds on Vedder Mountain on May 7, 2023. Average daily counts for the spring during April and May are between 12-22 individuals. In the fall Turkey Vultures are already present in good numbers when surveys commence in mid to late August. Numbers continuously build up by the third week of September with a peak in the last week of September. Then numbers fall dramatically by the end of the first week in October and steadily dissipate into the middle of October. By the third and fourth week of October very few birds are encountered. The highest fall count was in 2020

with 1530 individuals in total counted. The average total number of birds tallied averages between 1100 - 1200 birds per season. The highest single day total counted was 154 birds on Vedder Mountain on September 16, 2022. Average daily counts in the fall during the month of September are 25-35 individuals with many days of higher counts. The latest dates for the fall migration period come from the end of October with individual birds found for example as late as on October 26, 2023, on Sumas Mountain. Adults and immature birds are detected on the hawk watch.



Turkey Vulture adult over Vedder Mountain on September 22, 2022. Photo © Rick Toochin.



Turkey Vulture adult over Vedder Mountain on October 3, 2020. Photo © Al Russell.



Turkey Vulture immature over Vedder Mountain on September 24, 2022. Photo © Rick Toochin.



Turkey Vultures over Vedder Mountain on October 11, 2023. Photo © Don Cecile.

Osprey (*Pandion haliaetus*)

This species occurs in small but steady numbers on both the spring and fall hawk watches. Early birds arrive in the Fraser Valley throughout March but increase in numbers in April when the numbers peak. By May most birds are at their nesting grounds with only a few late migrants being detected. Most years average 10 -12 individuals in the spring period but a high count of 22 individuals was recorded 2016. Occurrence dates range from March 15 – May 31 with April showing a definite peak. Average daily counts for the spring occur from the first week of April and peak in mid April, but numbers are small averaging between 1-2 individuals and are not detected on every survey. The Osprey is an uncommon nesting species throughout the Fraser Valley during the breeding season. Fall migration has small but steady numbers detected with birds detected more frequently and as a result the totals are higher than the spring averaging between 53-57 individuals per season. Average daily counts in the fall during the month of September are 1-2 individuals. The highest count was of 65 individuals found in the fall of 2020. Occurrence dates range from August 15 – October 28. Most Ospreys are observed as single individuals on our surveys, but multiple birds have been observed for example 3 adults observed together on Sumas Mountain on September 5, 2022. There are a few examples of higher counts of birds seen together. A couple of examples include 4 adults found over Vedder Mountain on September 3, 2021, and 6 birds which included 2 adults and 4 immatures observed over Sumas Mountain on September 2, 2020. The peak of migration movement in the fall occurs during the first 2 weeks of September. Osprey numbers drop dramatically after the last week of September and are very rare into the later half of October. An example of a late record was an immature found on Sumas Mountain on October 28, 2017. Adult and immature birds have been found on the hawk watch.



Osprey adult over Sumas Mountain on May 14, 2021. Photo © Rick Toochin.



Osprey over Sumas Mountain on September 24, 2020. Photo © Paul Baker.



Osprey adult over Sumas Mountain on September 28, 2019. Photo © Paul Baker.



Osprey immature over Vedder Mountain on October 7, 2017. Photo © Al Russell.

White-tailed Kite (*Elanus leucurus*)

This species is a casually occurring species anywhere in British Columbia with 54 records (Toochin and Cecile 2023u). The species has been expanding northward from Oregon into Washington State since the 1980s and is now an established regularly occurring species in Washington State (Wahl et al. 2005). There have been four occurrences on the hawk watch with all records having occurred in Sumas Prairie in the spring and all in April when this species is expected as a spring overshoot. These records are as follows: an adult found by Rick Toochin along Whatcom Road and Lamson Road in Sumas Prairie April 16 & 24, 2016 (Toochin and Cecile 2023u), an adult found by Rick Toochin and Al Russell flying high over York Road in Sumas Prairie on April 14, 2017 (Toochin and Cecile 2023u), an adult found by Rick Toochin, and other observers in the Sumas Prairie area on April 18, 2021 (Toochin and Cecile 2023u), and sub-adult was found by Rick Toochin and Mark Russell along Angus-Campbell Road in Sumas Prairie on April 26, 2023 (Toochin and Cecile 2023u). It should be noted that the 2023 bird was found a week later by Phil Henderson, and many other observers at 84th Ave near 264th St., in Glenn Valley in north Langley from May 7-8, 2023 (Toochin and Cecile 2023u). The farmland currently present in Sumas Prairie is perfect hunting habitat for the White-tailed Kite and with birds continuing pushing northward in Washington State, it is very likely that this species will be found on future hawk watches.

Bald Eagle (*Haliaeetus leucocephalus*)

This species is a year-round resident in the Fraser Valley. Both the spring and fall migration period are pronounced with spring migration having higher numbers. Birds move in numbers into the Sumas and Matsqui Prairie areas each year from the Harrison Mills area in January with numbers remaining moderate until early March when numbers peak from mid-March to mid-April with lower numbers continuing through late April into early May when mostly local

breeding birds are detected. Numbers over the years of the hawk watch have been very large in the spring season with 500-1000 birds recorded with a high-count of 1592 birds found in 2018. The average daily counts have birds numbering between 35-55 individuals with the high counts of for example: 158 birds found on Sumas Mountain on March 9, 2018; 132 individuals detected along Vedder Mountain on March 16, 2019; 116 birds detected on Vedder Mountain April 6, 2018; 266 birds detected on along Vedder Mountain on March 21, 2018. Occurrence dates range from March 1 – May 31. There are several pairs of breeding Bald Eagles found in Matsqui Prairie and Sumas Prairie with many other breeding pairs found throughout the Fraser Valley. Fall migration has large numbers of birds encountered but less than the spring migration. Birds are already present when fall counting begins in mid-August making counting migrants difficult to determine at times. September has detection numbers like August with numbers building during the third week of September and from the later half of the month peaking throughout October into early November. Fall numbers average 234-296 individuals each year with high numbers found in 299 birds in 2018 and 301 birds in 2020. Daily counts average to be between 4-10 individuals with high counts of 12-22 birds often being encountered and very high counts of 33 individuals on Sumas Mountain on October 9, 2016; 33 birds detected on Vedder Mountain on October 10, 2016; and 35 birds detected on Sumas Mountain on October 23, 2023. Occurrence dates from August 15 – October 31. Sometimes flocks of birds are encountered in both migration periods with birds turning up as a migration push. These large number days are encountered during or just after large windstorms or some type of large weather system. All ages are encountered on the hawk watch with high numbers of immatures recorded during peak migration periods.



Bald Eagle adult over Sumas Mountain on April 14, 2022. Photo © Rick Toochin.



Bald Eagle adult over Sumas Mountain on May 24, 2022. Photo © Rick Toochin.



Bald Eagle immature over Vedder Mountain on January 14, 2023. Photo © Al Russell.



Bald Eagle immature over Vedder Mountain on March 11, 2023. Photo © Al Russell.



Bald Eagle immature with an adult Red-tailed Hawk flying over Vedder Mountain on March 27, 2022. Photo © Rick Toochin.

Northern Harrier (*Circus hudsonius*)

This species has a very pronounced migration through the Fraser Valley. Birds begin to move north in mid-March and continue to move through early April with birds peaking in number in mid-April with numbers dropping in number by early May becoming scarce by the end of May. Number of birds are generally high during each spring count period with spring averaging 70-90 birds each season and a high count 94 birds counted in 2016. The average daily counts have birds numbering between 2-6 individuals with the highest counts of 12 birds found on multiple occasions in the early half of April. Occurrence dates range from March 1 – May 31. The Northern Harrier is a rare breeder in the Fraser Valley region in the summer months with both historic and a few recent breeding records. Fall migration starts in early August with numbers staying steady until the last week of September when numbers start to build up as migration peaks in early to mid-October with both wintering birds and migrants being found in the later half of October into November. The fall has very high numbers in comparison to the spring with numbers averaging between 200-250 individuals each season with the highest count of 256 birds in 2020. Daily counts average between 2-8 individuals with high counts of 10-12 birds often being encountered in late September into early October with an exceptional high count of 26 birds counted along Vedder Mountain on September 27, 2015. Occurrence dates range from August 15 – October 31. Most birds encountered in the fall are immatures or female birds with most adult males coming later in the fall, usually in the later half of October and into November.



Northern Harrier immature male over Sumas Mountain on August 26, 2023. Photo © Mark Russell.



Northern Harrier immature male over Sumas Mountain on August 26, 2023. Photo © Mark Russell.



Northern Harrier immature over Vedder Mountain on September 24, 2023. Photo © Rick Toochin.



Northern Harrier immature over Vedder Mountain on September 24, 2023. Photo © Rick Toochin.

Sharp-shinned Hawk (*Accipiter striatus*)

This species is well represented on the Fraser Valley Hawk watch in both spring but especially in the fall. Numbers in the spring are modest but have been consistent showing that birds are using a likely more easterly route. There are a few birds that winter and linger in the region into the spring each year. Numbers begin to appear in mid-April and peak in late April into early May with numbers dropping by mid-May and taper off throughout the later half of May. The total number of birds in the spring each year is steady each with numbers averaging between 53-65 individuals with a high count of 68 individuals in 2020. Daily counts average between 2-12 birds with examples of high counts including: 19 birds along Vedder Mountain on April 10, 2020, and 22 individuals on Sumas Mountain on May 4, 2017. Occurrence dates range from March 15 – May 31. This species is an uncommon breeding species at higher elevations in the eastern regions of the Fraser Valley region. This is one of the most numerous raptor species detected in the fall on the Fraser Valley Hawk watch. Fall migration is detected from mid-August into the second week of September when migrant number of birds build significantly and continue to build up and peak at the end of September into the second week of October and start to drop in numbers into the third week of October and taper off into the end of October into November. The number of birds detected each fall is very remarkable with an average of 1003-1155 individuals recorded with low count years of 905 birds detected in the fall of 2015; and high counts of 1263 birds recorded in 2023 and 1305 birds recorded in 2020. Daily counts average 28-30 birds with many days exceeding 45-50 or more birds tallied in one day. This species dates

of occurrence in the fall are from August 15-October 31. This species likes to migrate at high elevations which makes finding them at first a bit harder to detect than other raptor species. The discovery that large numbers of this species are travelling through the mountains of the Fraser Valley was one of the more fun discoveries of the survey. All ages are encountered on the hawk watch with very large numbers of immature birds detected during fall surveys.



Sharp-shinned Hawk immature over Sumas Mountain on August 26, 2023. Photo © Al Russell.



Sharp-shinned Hawk immature over Vedder Mountain on September 9, 2023. Photo © Al Russell.



Sharp-shinned Hawk immature over Sumas Mountain on September 26, 2022. Photo © Rick Toochn.

Cooper's Hawk (*Accipiter cooperii*)

This species is present throughout the year in the Fraser Valley. Spring migration begins to pick up in mid-April with numbers peaking in late April into early May and continuing into mid-May before dropping considerably by the later half of May. Numbers per season are generally high but variable during spring migration counts with numbers averaging between 88-122 individuals; with low counts of 30 birds in 2019, 56 birds counted in 2018; and high counts of 135 birds counted in 2021 and the highest count of 138 birds counted in 2022. Daily counts average between 2-6 birds recorded with high counts of 33 individuals found on Sumas Mountain on May 4, 2017, and 12 birds recorded on Vedder Mountain on April 20, 2020. The dates of occurrence are from March 1 – May 31. This species is very adaptable in the breeding season, easily breeding in suitable habitat in urban areas and rural areas. As result there are always Cooper's Hawks present in good numbers during the breeding season throughout the Fraser Valley region. Fall migration has small numbers present in mid-August into early September with migration picking up in the second week of September, continuing to peak into the later half of September into mid-October before numbers begin to dramatically drop in the later part of October. Likely many birds seen in the later part of October end up wintering in the region. Numbers counted on the hawk watch in the fall period are considerably higher than numbers counted in the spring but have remained consistent over the years. The numbers recorded have averaged between 101-187 individuals with a high count of 201 individuals detected in 2020. Daily counts average between 2-12 individuals with some examples of high counts include: 33 on Sumas Mountain on September 30, 2022, 22 individuals on Sumas Mountain on September 27, 2015, and 16 individuals on Sumas Mountain on October 9, 2016. The dates of occurrence are from August 15 – October 31. All ages are encountered on the hawk watch with very large numbers of immature birds detected during fall surveys.



Cooper's Hawk adult on Sumas Mountain on May 1, 2022. Photo © Rick Toochin.



Cooper's Hawk adult on Sumas Mountain on August 17, 2019. Photo © Keelan Toochin.



Cooper's Hawk immature over Sumas Mountain on October 7, 2017. Photo © Al Russell.

American Goshawk (*Accipiter atricapillus*)

This species is frequently encountered on the Fraser Valley hawk watch but not normally found in any large numbers. Birds tend to move through starting in March and this movement dissipates in mid April. The spring migration counts average 1-5 birds per season with a high count 7 individuals in 2020. Almost always when encountered on any daily counts as single bird observed. The lack of birds could reflect the low elevation of our monitoring stations as this species does like to move at higher elevations. The dates of occurrence are from March 1 – May 17. This species is known to breed in the Cascades in Oldgrowth forest tracks and therefore is found sporadically throughout the mountain regions during the summer months. The American Goshawk starts to move through the region early in the fall with birds recorded in mid-late August into September and into the last week of October. The numbers are like the spring with 2-4 birds recorded each season with the highest counts of 18 birds occurring in 2015 and 7 individuals being recorded in 2023. Almost all recorded occurrences are of single individuals, but 2 birds have been found on the same day; for example, 2 immatures observed together on Sumas Mountain on September 21, 2015. The dates range from August 15- October 31. Birds encountered are predominantly immatures, but some adults are recorded as well.



American Goshawk immature on Sumas Mountain on September 28, 2019. Photo © Keelan Toochin.



American Goshawk immature on Vedder Mountain on October 3, 2020. Photo © Al Russell.

Red-shouldered Hawk (*Buteo lineatus*)

This is a casually occurring raptors species in British Columbia with only 12 records for the province (Toochin et al. 2023xyx). The species has been expanding northward from Oregon into Washington State since the 1980s and is now an established regularly occurring species in coastal Washington State (Wahl et al. 2005). There have been three occurrences on the hawk watch. All have occurred in the Sumas Prairie area. The first was an adult found by the author on Marion Road, in Sumas Prairie on September 21, 2015 (Toochin 2023zo). The second was of an immature found and photographed by the author along Cole Road, in Sumas Prairie October 13, 2015 (Toochin 2023zo). This bird was with a few Turkey Vultures and 2 Red-tailed Hawks. The third record was of a sub-adult found by Rick Toochin and Al Russell observed flying along Vedder Mountain on May 9, 2020 (Toochin 2023zo). The Red-shouldered Hawk is a species that should be watched for in the future and likely will be detected again on the hawk watch as this species in continuing to expand north in Washington State.



Red-shouldered Hawk immature at Cole Road, Sumas Prairie on October 13, 2015. Photo © Rick Toochin.

Broad-winged Hawk (*Buteo platypterus*)

This species has undergone a rapid range expansion in British Columbia in the past 40 years and continues to increase every year (Toochin et al. 2023r). Since the first year of the hawk watch in the spring of 2015, detection of Broad-winged Hawks has been increasing and is rapidly becoming an expected passage migrant in both the spring and especially in the fall with 193 records total for the region by 2023 (Toochin et al. 2023xx) All but three of these records have occurred on the Fraser Valley Hawk watch (Toochin et al. 2023xx). Records in the spring have all involved light morph birds. Spring birds are much tougher to find than birds in the fall. 8 years of raptor surveys has produced 43 spring records found while conducting the hawk watch (Toochin et al. 2023xx). Exceptionally early spring migrants include an adult bird found by David Baker and Rick Toochin on Eagle Mountain in Abbotsford on March 25, 2016 (Toochin et al. 2023r), and an adult found by Rick Toochin on Vedder Mountain on March 31, 2021 (Toochin et al. 2023r). Most spring records span from April 2 – May 18, with the peak of spring records occurring in early to mid-May (Toochin et al. 2023xx). There are to date, 16 records for April and

23 records for May (Toochin et al. 2023xx). The highest count per spring period occurred in 2021 with 13 individuals recorded. This species is not found in the region with any regularity in the breeding season. There are a couple of summer records, but no breeding records have been recorded. The Broad-winged Hawk is annual in the fall occurring in small but increasing numbers each year. Most birds are light morphs but there are a few records involving the rarer dark morph birds with all ages having been detected. Almost all the Fraser Valley's records are for the fall period and are the result of the authors conducting methodical hawk-watches at several locations around the Fraser Valley over the past 8 years. These surveys produced records with dates that span from August 15 to October 23 with the bulk of birds found in mid to late September (Toochin et al. 2023xx). There are 7 mid-late August records, 124 records from the month of September with the peak occurring in the middle to latter half of the month, and 17 records for early October (Toochin et al. 2023r). The highest count per fall period occurred in 2023 with 76 individuals. Most observations involve single birds but sometimes observations involving 2 or 3 birds seen together are encountered. High counts of birds observed in one day or together include: 5 birds (2 adults and 3 immatures) found together flying over Sumas Mountain on September 21, 2015 (Toochin et al. 2023xx) and 12 birds in total [10 adults and 2 immature all light morphs] found moving south over Vedder Mountain on September 17, 2022, 28 birds total [13 adults and 15 immatures, including 3 adult dark morphs and 2 immature dark morphs] found moving south over Vedder Mountain on September 24, 2023, and 19 birds total [13 immature light morphs, 1 immature dark morph, 5 adult light morph] on Sumas Mountain on September 30, 2023 (Toochin et al. 2023xx). The overall trend has been that this species is increasing in detection and will likely continue to increase into the future.



Broad-winged Hawk adult dark morph over Sumas Mountain on September 16, 2021. Photo © Dave Baker.



Broad-winged Hawk adult dark morph over Sumas Mountain on September 16, 2021. Photo © Dave Baker.



Broad-winged Hawk over Sumas Mountain on September 18, 2021. Photo © Dave Baker.



Broad-winged Hawk over Sumas Mountain on September 18, 2021. Photo © Dave Baker.



Broad-winged Hawk adult light morph (1 of 28!) over Sumas Mountain on September 30, 2023. Photo © Al Russell.



Broad-winged Hawk adult light morph (1 of 28!) over Sumas Mountain on September 30, 2023. Photo © Al Russell.



Broad-winged Hawk immature light morph over Sumas Mountain on August 26, 2020. Photo © Dave Baker.



Broad-winged Hawk immature dark morph over Vedder Mountain on October 3, 2020. Photo © Al Russell.



Broad-winged Hawk immature dark morph over Vedder Mountain on October 3, 2020. Photo © Al Russell.

Swainson's Hawk (*Buteo swainsoni*)

This species is an uncommon to common regular migrant in the spring and uncommon to rare migrant in the fall period (Toochin et al. 2023). All color morphs have been detected, but light morphs are much rarer than dark morphs and are less frequently encountered. All ages have been detected. Birds start showing up in the spring in mid-April, increasing in frequency by the end of the month with the peak of occurrence occurring by the end of the first week of May into mid-month. Swainson's Hawks normally come through in waves all at once making detection tricky as it can be easily missed if the hawk watch is off by a day or 2. High counts (birds seen all together) for this period include 15 birds on May 10, 2017 in Sumas Prairie, 15 birds on May 9, 2021 in Sumas Prairie, 10 birds on May 14, 2021 in Sumas Prairie, 17 birds on May 2, 2018 in Sumas Prairie, and over 23 birds on May 15, 2021 in Sumas Prairie (Toochin et al. 2023). After mid-May numbers of birds drop dramatically and by the end of May this species has normally moved through with the odd straggler, often 1st year birds, turning up at the end of the month (Toochin et al. 2023). Numbers vary from year to year but 3 out of 8 years (2016, 2018, 2022) had over 30 birds detected with 26 in 2020. Other years had very low numbers such as 1 individual in 2015 and 7 individuals in 2023. Low number years are likely due to either odd weather which directed the spring migration elsewhere or it is more likely birds were missed as they moved through on days the hawk watch was unable to be conducted. Swainson's Hawks migrate through the Fraser Valley as a wave with most birds detected almost all at once, often over a couple of days, before disappearing. This makes detection harder and low number years likely means the movement day was simply missed by the observers rather than fewer birds being detected. We expanded our hawk watch into Sumas Prairie in the spring to capture Swainson's Hawks moving northward. The highest count for spring occurred in 2021 with 159 individuals with most birds occurring that year from late April into mid-May. There are a few summer records of 1st year birds found in various locations in the Fraser Valley, but they do not breed in the region. Fall migration is more sporadic with birds occurring throughout September in small numbers with 5-12 individuals detected with a few individual birds being detected into the first week of October with the odd straggler being detected after that period. The highest count for any fall to date occurred in the fall of 2023 with a staggering 50 birds detected. Most were found in September with a handful occurring into October. The single highest day for Swainson's Hawks in the fall was 26 individuals on Sumas Mountain on September 30, 2023. It should be noted that in spring and fall when Swainson's Hawks are detected, Broad-winged Hawks are often also detected on the same day. It is documented that these species travel together and this migration phenomena have been documented in other regions of North America (Wheeler 2018a).



Swainson's Hawk adult dark morph over Sumas Prairie on April 30, 2022. Photo © Al Russell.



Swainson's Hawk intermediate morph (1 of 3) over Sumas Prairie on May 14, 2021. Photo © Rick Toochin.



Swainson's Hawk intermediate morph (1 of 20!) over Sumas Prairie on May 15, 2021. Photo © Rick Toochin.



Swainson's Hawk intermediate morph (1 of 20!) over Sumas Prairie on May 15, 2021. Photo © Rick Toochin.



Swainson's Hawk adult (1 of 7!) over Sumas Prairie on May 22, 2022. Photo Rick Toochin.



Swainson's Hawk adult (1 of 7!) over Sumas Prairie on May 22, 2022. Photo Rick Toochin.



Swainson's Hawk (1 of 4 together!) over Sumas Mountain on September 2, 2021. Photo © Rick Toochn.



Swainson's Hawk adult dark morph over Vedder Mountain on September 3, 2023. Photo © Al Russell.



Swainson's Hawk adult over Sumas Mountain on September 21, 2019. Photo © Al Russell.



Swainson's Hawk adult dark morph over Vedder Mountain on September 24, 2023. Photo © Rick Toochin.



Swainson's Hawks adult dark morphs (2 of 4!) over Sumas Mountain on September 30, 2023. Photo © Al Russell.



Swainson's Hawk adult dark morph (1 of 5!) over Sumas Mountain on September 30, 2023. Photo © Al Russell.



Swainson's Hawk immature light morph (1 of 6!) over Sumas Prairie May 12, 2021. Photo © Rick Toochin.

Red-tailed Hawk (*Buteo jamaicensis*)

This species is a year-round resident in the Fraser Valley. Our hawk watches through both careful observations and photographs have shown that different identifiable subspecies populations move through the region. The predominant subspecies is Western Red-tailed Hawk (*Buteo jamaicensis calurus*) with small numbers of the subspecies Harlan's Hawk (*Buteo jamaicensis harlani*) occurring in the region each year. Other possible subspecies such as the odd Eastern Red-tailed Hawk (*Buteo jamaicensis borealis*) or Alaskan Red-tailed Hawk (*Buteo jamaicensis alascensis*) are suspected to have been photographed in the region but require banding to confirm their presence at this time. What is clear is that there is more to going on than our current observation-based knowledge can tell us. Hopefully banding can be set up in the future to answer some of these questions. Both light morph and dark morph birds are encountered as are adult and immature birds.

Western Red-tailed Hawk (*Buteo jamaicensis calurus*) numbers in spring and fall are about equal in total number of birds detected and these numbers are consistent each season. Migration in the spring is early beginning at the end of February and early March with birds consistently moving through till the end of the month when numbers peak from late March into mid April with numbers leveling off into late April and then dropping down throughout May. Spring numbers each year average between 400 - 750 individuals with a high count of 820 individuals in 2016. Daily counts average between 12-25 birds detected with high counts of 32 birds on Vedder Mountain on March 17, 2019; 34 birds on March 16, 2017 on Sumas Mountain; 36 birds on Sumas Mountain on March 26, 2016; 36 birds on Vedder Mountain on May 29, 2021; 40 birds recorded on Vedder Mountain on April 14, 2021; 43 birds on Vedder Mountain on April 4, 2016; 50 birds on Vedder Mountain on March 12, 2017; and 60 birds on Sumas Mountain on April 9, 2016;. This species is recorded on almost everyday of the hawk watch from March 1 –

May 31. Red-tailed Hawks breed throughout the Fraser Valley and are a common species throughout the summer months throughout the region and our study areas such as Sumas Prairie, Vedder Mountain, Matsqui Prairie, and on Sumas Mountain. In the fall, Red-tailed Hawks are recorded steadily from mid-August into late September then numbers dramatically increase at the end of September into the beginning of October and remain high throughout the month before waning in the last week of the month with many late birds likely wintering in the region. Birds are recorded in the fall with high frequency and seasonal totals reflect this fact with numbers averaging 600 -750 individuals recorded with a high count of 792 birds detected in 2020. The average daily count is between 5-15 individuals from mid-August to mid-September with numbers jumping 18-25 counts per day in the last half of September into early October with numbers reaching 33-55. High counts of 60 birds have been recorded on Vedder Mountain on September 28, 2015; 63 birds on Vedder Mountain on October 21, 2020; and 86 birds counted on Sumas Mountain on September 30, 2023. It is not unusual to have multiple birds present together at one time when conducting the hawk watch. This species is recorded on almost everyday of the hawk watch with occurrence dates recorded from August 15 – October 31.

Harlan's Hawk (*Buteo jamaicensis harlani*) is a subspecies of Red-tailed Hawk that has been recorded annually on the Fraser Valley Hawk watch. Most are the more encountered dark morph, but a handful of light morph birds have been recorded over the years. Harlan's Hawks appear early with most records coming from the month of March with a small number occurring throughout April and a handful of records coming from May. Late records include: an adult dark morph bird photographed along Vedder Mountain on April 28, 2023, and a sub-adult dark morph bird photographed along Vedder Mountain on May 15, 2021. Numbers are small but consistent each season with 1-9 individuals recorded over the years and a high count of 11 birds detected in 2018. This subspecies is not encountered on any kind of daily basis but based on the observational data, March is the best month in the spring to find this subspecies. This subspecies is absent in the summer months from the Fraser Valley. Fall numbers are small with a couple of records occurring in mid-to-late September, but most are from the month of October. Numbers are small but consistent each season with 1-4 individuals recorded over the years and a high count of 5 birds detected in 2020. This subspecies is not encountered on any kind of daily basis but based on the observational data, October is the best month in the fall to find this subspecies on the Fraser Valley Hawk watch.



Red-tailed Hawk adult over Vedder Mountain on April 15, 2021. Photo © Rick Toochin.



Red-tailed Hawk adult over Vedder Mountain on May 13, 2022. Photo © Rick Toochin.



Red-tailed Hawk adult over Sumas Mountain on September 30, 2022. Photo © Rick Toochin.



Red-tailed Hawk adult over Vedder Mountain on October 8, 2017. Photo © Al Russell.



Red-tailed Hawk immature over Sumas Mountain on September 2, 2021. Photo © Rick Toochin.



Red-tailed Hawk immature over Vedder Mountain on September 16, 2023. Photo © Rick Toochin.



Red-tailed Hawk immature over Sumas Mountain on October 5, 2023. Photo © Rick Toochin.



Red-tailed Hawk immature over Sumas Mountain on October 5, 2023. Photo © Mark Russell.



Red-tailed Hawk immature over Vedder Mountain on October 29, 2023. Photo © Al Russell.



Harlan's Hawk adult dark morph over Sumas Mountain on April 6, 2022. Photo © Rick Toochin.



Harlan's Hawk adult dark morph over Vedder Mountain on October 13, 2023. Photo © Rick Toochin.

Ferruginous Hawk (*Buteo regalis*)

This species is a rarity anywhere in British Columbia with 75 provincial records (Toochin et al. 2023zp). There have been 12 occurrences of this spectacular raptor on the Fraser Valley Hawk Watch. The best time is spring when there has been a total of 10 records. The dates break down from March 19 – April 23 with an exceptionally late record of May 25. These records broken down by months of occurrence are 4 records in the month of March, 5 records in the month of April, and 1 record in the month of May (Toochin et al. 2023xx). The timing of these occurrences fits perfectly with records in Washington State (Wahl et al. 2005). This species does not breed in the Fraser Valley or anywhere in this region. Fall records are extremely rare with only 2 occurrences. The first was an immature found by Rick Toochin, Dave, and Paul Baker on Sumas Mountain on September 27, 2015 (Toochin et al. 2023xyx). The other record for the fall involves an immature dark morph found by the author over Vedder Mountain on September 3, 2022 (Toochin et al. 2023xyx). Birds recorded have been both light morphs and dark morphs with both adult and immature birds having been observed. This species does not occur every year but the best time to be on the lookout is in later half of March into mid April. Breeding records are extremely few in British Columbia, so it is unclear if birds recorded in the Fraser Valley are overshoots from Washington State or birds travelling along the cascades that are heading to presently unknown breeding sites in the southern interior. Though very rare in our region the Ferruginous Hawk should be watched for on all hawk watches in the future.

Rough-legged Hawk (*Buteo lagopus*)

This species is not recorded in any large number on the Fraser Valley Hawk watch. Spring numbers average 1-2 birds per season, with 2017 having 3 individuals recorded. Dates range from March 1 to May 1 with most birds being recorded from mid-March into mid-April. Fall birds are recorded with a little more frequency with 2-6 birds each fall with high count of 7 birds recorded in 2016. Dates range from September 27 – October 30. Both light and dark morphs have been recorded on the hawk watch with adults and immatures having been recorded. The low numbers in the spring likely reflect the species migration routes are further east of the Fraser Valley. Low fall numbers reflect that hawk monitoring doesn't go into November as they are a species that moves as a migrant through the coastal region in late October into early November. Though this species is hard to detect it occurs enough each season that it should be watched for on all hawk watches in the future.



Rough-legged Hawk dark morph over Sumas Mountain on October 16, 2016. Photo © Rick Toochin.



Rough-legged Hawk dark morph over Sumas Mountain on October 29, 2019. Photo © Rick Toochin.

Golden Eagle (*Aquila chrysaetos*)

This species was considered a rarity in the Fraser Valley prior to conducting hawk watches. One of the many surprises of the Fraser Valley hawk watch was the discovery of a Golden Eagle migration that occurs every spring throughout the region. There are always between 1-5 individuals wintering in the region. Numbers start to move through the area in mid-February and continue into March. Numbers peak in mid-March to the end of the month and start to drop in April with late birds lingering into May. Numbers average between 1-4 birds on most surveys. High counts include 18 birds with both adults and various immatures observed all at once on Vedder Mountain on March 21, 2018; other observations of multiple birds include 12 birds (4 adults and 8 immatures) along Vedder Mountain on March 30, 2017, and 12 birds (6 adults and 6 immatures) along Vedder Mountain on March 9, 2019. Late birds are sometime encountered into late April and early May with the latest bird, an immature, encountered along Vedder Mountain on May 8, 2022. Dates range from March 1 – May 8. Golden Eagles are not known to breed in the local mountains during the summer months. This species does breed in the high elevation areas of the Cascades Mountains, for example at the top of the Coquihalla Highway or on Mount Cheam (J. Walters Pers. Comm.) so occasional birds are recorded in the summer months in the lowland's region of the Fraser Valley but these occurrences are very rare. Fall migration of the Golden Eagle starts slow in mid-late September but truly picks up in early to mid-October and continues into early November sometimes mid-November. Surveys start in mid-August and end October 31. Numbers in the fall reflect the later migration period as there are not many detections. Numbers average 5-8 individuals each year with the highest count occurring in 2020 with 10 birds. Dates range from August 24 – October 31. There are only 2 records for August, including an adult on Sumas Mountain on August 24, 2017, and an immature on Sumas Mountain on August 29, 2020. Almost all records in September involve

single individuals with the odd exception, for example 2 birds involving an adult and an immature found along Vedder Mountain on September 21, 2015, with a few but increasing frequency of detection at the end of the month. Almost all fall records occur in the month of October. High counts in October include 2 immatures on Sumas Mountain on October 9, 2016, and the highest count of 4 birds (3 immatures and 1 adult) found on Vedder Mountain on October 22, 2020. Some birds that come later in November end up wintering the area. A good example of this involves 2 adult birds, likely a mated pair, which have spent at least 4 winters 2018-2023 along Tolmie Road in Sumas Prairie. All ages have been detected on the hawk watch with immatures numbering more than adult birds.



Golden Eagle immature over Vedder Mountain on March 26, 2022. Photo © Rick Toochin



Golden Eagle immature over Vedder Mountain on September 9, 2023. Photo © Al Russell.



Golden Eagle immature over Vedder Mountain on October 10, 2020. Photo © Al Russell.



Golden Eagle adult over Sumas Mountain on March 5, 2016. Photo © Al Russell.

American Kestrel (*Falco sparverius*)

This species is found as a year-round resident in the Fraser Valley. Numbers of birds show a definite migration surge in both the spring and the fall. In the spring birds start to increase in

number in the second week of March and consistently move in number till mid-April when numbers drop at the end of April and into May. The total counts for each year detected on the hawk watch remained consistent with numbers between 42-52 individuals with a high count 61 in 2017. The average daily counts averages 1-5 individuals with examples of high counts of 5 birds on Sumas Mountain on April 13, 2022, and 6 birds along Vedder Mountain on April 13, 2022. Dates range from March 1 – May 31. The American Kestrel breeds in small numbers in the Fraser Valley each year in areas such as Matsqui Prairie, Sumas Prairie, Deroche, and parts of Chilliwack to name a few. The fall migration begins during the last week of August and picks up in mid-September peaking in late September and early mid-October before numbers drop dramatically in the later half of October with wintering birds arriving at the end of October into early November. In the fall, the average overall seasonal counts from 2015-2023 are between 120-155 individuals with high counts of 177 in 2018 and 180 in 2019 with the highest count of 201 in 2020. Daily numbers average 2-7 birds with high counts of 13 along Vedder Mountain on September 17, 2022; and 33 birds along Vedder Mountain on September 27, 2015. Dates range from August 15 – October 31. Both adults and immatures are found on the hawk watch with many more immature birds detected during the fall than adults.



American Kestrel adult male over Sumas Mountain on September 6, 2016. Photo © Rick Toochin.



American Kestrel sitting in tree on Sumas Mountain on September 26, 2016. Photo © Rick Toochin.

Merlin (*Falco columbarius*)

This species is found throughout the year in the Fraser Valley. Spring migration has 20-24 individuals found each year with lower count years having 18 birds in 2021 and 16 birds in 2022. The highest year was 25 individuals in 2016. Counts average 1-2 birds with higher count days having up to 3 birds counted. Dates of detection range from March 1 – May 31. Numbers never spike as in other migrants, just remain steady and this species is not detected on each count day. Merlin are uncommon breeders in the Fraser Valley with birds nesting in appropriate habitat in urban neighbourhoods for example Abbotsford and Chilliwack. Fall migration numbers are more pronounced than spring numbers with counts averaging between 50-80 individual birds detected each year with high count years of 89 birds counted in 2023, 94 birds counted in 2022, and 102 birds counted in 2020. Bird numbers average 1-5 per count day in the fall with a high count of 11 individuals detected along Vedder Mountain on September 17, 2022. Migration dates on the hawk watch are from August 15 – October 31. Adults and immatures are both recorded on the hawk watch each year.

The Black Merlin (*Falco columbarius suckleyi*) is the most frequently encountered subspecies in the region as it breeds in humid forests of Pacific northwest from Washington State, north into British Columbia, and into south-eastern Alaska which is generally nonmigratory, but some individuals migrate as far south as southern California and New Mexico (Warkentin et al. 2020). Another subspecies that is detected is the Taiga Merlin (*Falco columbarius columbarius*) which is evenly divided between the spring migration count period and in the fall. This subspecies breeds in the northern regions from Newfoundland east to western Alaska (except the coast)

south into the north-eastern United States (Wheeler 2018b). This subspecies of Merlin is highly migratory and winters as far south as northern Peru and as far north as northern United States and southern Canada (Warkentin et al. 2020)

Of note there are three records on the hawk watch of the subspecies Prairie Merlin (*Falco columbarius richardsonii*) which are considered accidental in the entire region given the range of this subspecies is found east of the Rocky Mountains breeding in south-central Canada and the northern United States prairie states and migrates into the southern United States and Central America (Wheeler 2018a, Warkentin et al. 2020). Dates for these records include: an immature photographed along Vedder Mountain on October 17, 2015, and an adult photographed along Vedder Mountain May 8, 2020, and an adult photographed along Vedder Mountain on September 29, 2023.



Merlin adult on Vedder Mountain on March 13, 2021. Photo © Rick Toochin.



Merlin over Sumas Mountain on October 8, 2017. Photo Al Russell.

Gyrfalcon (*Falco rusticolus*)

This species is not recorded on the Fraser Valley Hawk watch with any frequency. The spring period is the most likely time to encounter this species as March is when Gyrfalcons move through the region heading northward. From 2015-2023 spring surveys usually only detect 1-2 individuals, almost always in the month of March with dates ranging from March 2 – April 1. Exceptional years include 6 individuals in the spring of 2016 and 4 individuals in the spring of 2017. This is a northern breeder, so it is absent in the summer months in the Fraser Valley. Fall records are not frequent but are recorded in some years, birds are mostly encountered in mid to late October with dates ranging from September 30 – October 31. Exceptional years include 2 individuals were encountered in 2015 and 2016 and 3 birds were recorded in the fall of 2020. However, in all other fall surveys this species was not recorded as most birds arrive at the Fraser Valley in the beginning of November and fall out of the time frame of the hawk survey. Both adults and immature birds have been recorded on the hawk watch. This species though infrequently encountered has occurred enough that it should be watched for in the future in either season.



Gyrfalcon adult on Vedder Mountain on March 22, 2016. Photo © Rick Toochin.

Peregrine Falcon (*Falco peregrinus*)

This species is a year-round resident in the Fraser Valley with a moderate but consistent migration of birds in both the spring and fall. Numbers in the spring mirror numbers in the fall. The average number of birds counted per spring season was between 32-48 birds with a high count of 54 birds in 2020. Average daily counts are low between 1-2 birds with higher counts of 3-4 birds occurring on several occasions and the highest counts involve 6 birds seen together on Sumas Mountain on March 6, 2021, and 6 birds seen together on Vedder Mountain on April 2, 2021. Occurrence dates are from March 1 – May 31 in the spring with no peak of numbers in any week during this period. This species is a breeder on Sumas Mountain with 2-3 established pairs and 1 known nesting pair on Vedder Mountain. Like the spring, the fall period has detections on a regular basis in small numbers. The average number of birds counted per fall season was between 32-48 birds with a high count of 50 birds in 2020. The Average daily counts are low between 1-4 birds with a high count of 6 birds seen together on Vedder Mountain on September 15, 2015. Both adults and juveniles are found on the hawk watch every year.

Peale's Peregrine Falcon (*Falco peregrinus pealei*) is the local subspecies that is most often encountered throughout the year. This subspecies is found breeding and in the winter from the coastal Pacific Northwest from Washington north to western Alaska, in the Aleutian and Commander Islands, and possibly Kamchatka and Kuril Islands (White et al. 2020). Small numbers of Tundra Peregrine Falcon (*Falco peregrinus tundrius*) which breed in the Arctic tundra of North America from Alaska to Greenland (White et al. 2020). This subspecies migrates

south to winter across the United States and southern Canada (Wheller 2018a). This subspecies has been encountered during spring migration, mostly in April, and in September in very small numbers.



Peregrine Falcon adult on Sumas Mountain on May 29, 2017. Photo © Rick Tochin.



Peregrine Falcon adult and a Turkey Vulture over Vedder Mountain on September 8, 2023. Photo © Al Russell.

Prairie Falcon (*Falco mexicanus*)

This species is a rare regular migrant on the Fraser Valley hawk watch with small numbers detected almost every year. Spring migration counts have had 3 years (2015, 2022, 2023) have no records. Numbers have varied from 1-4 individuals with 4 individuals in 2016, 3 individuals in 2018, 1 bird detected in 2019, 2 birds found in both 2020 and 2021. The year of the highest count was 7 birds detected in 2017. This species has been recorded in spring migration landing on nearby cliffs just across the border on the United States side of Vedder Mountain where a known pair Peregrine Falcons have nested in the past. It is unknown if the Prairie Falcon has bred in the region but there is at least a single record by the author of a photographed begging juvenile fledgling from McGuire Road near Banford Road in nearby Chilliwack on July 16, 2011 (Toochin et al. 2023). This species has been recorded in small numbers during every fall migration period except in 2018. Numbers are like those of the spring with 1-3 birds having been recorded. Highest count year is 7 birds from the fall of 2015. This species tends to turn up in September with 11 records recorded on the hawk survey and is by far highest month of detection. This species is detected frequently enough that it is expected each year in the spring with numbers higher especially in the fall. Observations have involved both adult and juvenile birds.



Prairie Falcon immature on Sumas Mountain on September 12, 2015. Photo © Dave Baker.

Conclusion

The findings of the Fraser Valley Hatch have all but proven that large numbers of raptors are migrating through the region using the local mountains to move north in the spring and south in the fall. The original reason for conducting the Fraser Valley hawk watch was to try and find out if the Broad-winged Hawk was moving through the region as the author found this species the first fall, he lived here in 2010 and wondered if there was a movement through the region. This has been accomplished beyond anything the participants could have originally thought when we started in 2015. It was decided we would look at every raptor species with a special focus on Broad-winged Hawks and Swainson's Hawks. Success was almost immediate as numbers of both species were found in the first year. The scope of the hawk watch was expanded rapidly as it was discovered that there was a large undiscovered migration of raptors moving through the region. Over the years this was proven season after season and year after year. We discovered an annual large spring migration of Golden Eagles through the region which was unknown prior to the hawk watch. Another important discovery was the large annual migration of Sharp-shinned Hawks in the fall that pass through the Fraser Valley. Another fun migration side note was that we discovered a large spring and fall migration of Common Ravens in the Fraser Valley. The numbers are significant, and we end up counting them as well. Our plan is to continue the

hawk watch into the future and potentially expand in the future to include more observers and possibly banding. Hopefully then we will understand even more about where the birds travel and end up after they pass through our region.

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Bibliography

- Brooks, A. 1900. Notes on some of the Birds of British Columbia. *The Auk* 17: 104-107.
- Brooks, A. 1904. British Columbia notes. *Auk* 21: 289-291.
- Brooks, A. 1917. Birds of the Chilliwack district, BC. *Auk* 34:28-50.
- Brooks, A. 1923b. Some recent records from British Columbia. *Auk* 40: 700-701.
- Brooks, A. 1942. Additions to the distributional list of the birds of British Columbia. *Condor* 44: 33-34.
- Brooks, A. and H. S. Swarth 1925. A distributional list of the birds of British Columbia. *Pacific Coast Avifauna* No. 17, Berkeley, California. 158pp.
- Campbell, R.W., N. K. Dawe, I. McTaggart-Cowan, J. M. Cooper, G. W. Kaiser, and M. C. E. McNall. 1990b. *The Birds of British Columbia – Volume 2 (Nonpasserines [Diurnal Birds of Prey through Woodpeckers])*. Victoria: Royal British Columbia Museum.
- Dunn, J. L., and J. Alderfer. 2011. *National Geographic Field Guide to the Birds of North America*. National Geographic Society, Washington D.C. 574pp.
- Dunne, P., D. Sibley, and C. Sutton. 1988. *Hawks in flight*. Houghton Mifflin Press. Boston, Massachusetts.
- Environment Canada. 2023. Government of Canada: Environment and Natural Resources: Weather Information. Retrieved from <https://weather.gc.ca/> [Accessed: continuously during bird surveys]
- Fuller, M.R. and J.A. Mosher. 1987. Raptor survey techniques. Pp. 37 - 65 in *Raptor management techniques manual*. B.A. Giron Pendleton, B.A. Millsap, K.W. Cline, and D.M. Bird, eds. National Wildlife Federation, Washington, D.C.

- Goodrich, L. J., and J. P. Smith. 2008. Raptor migration in North America. Pages 37–150 *in* K. L. Bildstein, J. P. Smith, E. Ruelas Inzunza, and R. R. Veit (Editors), *State of North America's birds of prey*. Series in Ornithology No. 3. Nuttall Ornithological Club, Cambridge, Massachusetts, and American Ornithologists' Union, Washington, DC.
- HMANA. 2006. Hawk Migration Association of North America Standard Data Collection Protocol for Raptor Migration Monitoring. Retrieved from <http://www.hmana.org/forms.php> [Accessed: February 6, 2020]
- Hoffman, S. W., and J. P. Smith. 2003. Population trends of migratory raptors in western North America, 1977–2001. *Condor* 105:397-419.
- Hoffman, S. W., J. P. Smith, and T. D. Meehan. 2002. Breeding grounds, winter ranges, and migratory routes of raptors in the Mountain West. *Journal of Raptor Research* 36:97–110.
- Howell, S.N.G., C. Corben, P. Pyle, and D.I. Rogers. 2003. The first basic problem: A review of molt and plumage homologies. *The Condor* 105: 635-653.
- Hutchinson, G.E. 1978. *An introduction to population biology*. Yale University Press. New Haven, Connecticut.
- Kerlinger, P. 1989. *Flight strategies of migrating hawks*. University of Chicago Press, Chicago
- Liguori, J. 2005. *Hawks from Every Angle: How to Identify Raptors in Flight*. Princeton University Press, Princeton and Oxford.
- Liguori, J. 2011. *Hawks at A Distance: Identification of Migrant Raptors*. Princeton University Press, Princeton and Oxford.
- Mueller, H. C., and D. D. Berger. 1967. Wind drift, leading lines, and diurnal migrations. *Wilson Bulletin* 79:50-63.
- Munro, J. A., and I. McTaggart-Cowan. 1947. *A review of the bird fauna of British Columbia*. Victoria: British Columbia Provincial Museum, Special Publication No.2., Victoria. 285pp.
- Sibley, D. A. 2000. *The Sibley field guide to birds*. Alfred A. Knopf, New York. 545pp.
- Smith, J. P., C. J. Farmer, S. W. Hoffman, G. S. Kaltenecker, K. Z. Woodruff, and P. Sherrington. 2008a. Trends in autumn counts of migratory raptors in western North America. Pages 217–252 *in* K. L. Bildstein, J. P. Smith, E. Ruelas Inzunza, and R. R. Veit (Editors), *State of North America's birds of 7 prey*. Series in Ornithology No. 3. Nuttall Ornithological Club, Cambridge, Massachusetts, and American Ornithologists' Union, Washington, DC.

- Smith, J. P., P. Grindrod, and S. W. Hoffman. 2001. Migration counts indicate Broad-winged Hawks are increasing in the West: evidence of breeding range expansion? Pages 93–106 in K. L. Bildstein and D. Klem (Editors), *Hawkwatching in the Americas*. Hawk Migration Association of North America, North Wales, Pennsylvania, USA.
- Toochin, R. 2023zo. The Status and Occurrence of Red-shouldered Hawk (*Buteo lineatus*) in British Columbia. Revised: June 20, 2023. [Online Resource] Retrieved from <https://bcrarebirdrecords.ca/species/red-shouldered-hawk> [Accessed: July 29, 2023].
- Toochin, R. 2023zp. The Status and Occurrence of Ferruginous Hawk (*Buteo regalis*) in British Columbia. Revised: June 20, 2023. [Online Resource] Retrieved from <https://bcrarebirdrecords.ca/species/ferruginous-hawk> [Accessed: July 29, 2023].
- Toochin, R. and D. Cecile. 2023u. The Status and Occurrence of White-tailed Kite (*Elanus leucurus*) in British Columbia. Revised: June 15, 2023. [Online Resource] Retrieved from <https://bcrarebirdrecords.ca/species/white-tailed-kite> [Accessed: July 29, 2023].
- Toochin, R., E. A. Russell, D. Baker, P. Baker, and L. Haviland. 2023r. The Status and Occurrence of Broad-winged Hawk (*Buteo platypterus*) in British Columbia. Revised: October 12, 2023. [Online Resource] Retrieved from <https://bcrarebirdrecords.ca/species/broad-winged-hawk> [Accessed: October 12, 2023].
- Toochin, R., E. A. Russell, D. Baker, and P. Baker. 2023xx. RARE BIRDS OF THE UPPER FRASER VALLEY (The Official List) November 21, 2023: 5th Revised Edition. Retrieved from <https://bcrarebirdrecords.ca/pages/upper-fraser-valley-rare-bird-list> [Accessed: November 26, 2023.]
- Toochin, R., and D. Cecile. 2023xyx. British Columbia Rare Bird List: Casual and Accidental Records November 21, 2023: 8th Edition. Retrieved from <https://bcrarebirdrecords.ca/pages/bc-rare-bird-list> [Accessed: November 26, 2023.]
- Warkentin, I. G., N. S. Sodhi, R. H. M. Espie, A. F. Poole, L. W. Oliphant, and P. C. James (2020). Merlin (*Falco columbarius*), version 1.0. In *Birds of the World* (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. Retrieved from <https://doi.org/10.2173/bow.merlin.01> [Access: December 2, 2023].
- Wheeler, B. K. 2018a. *Birds of Prey of the West*. Princeton: Princeton University Press.
- Wheeler, B. K. 2018b. *Birds of Prey of the East*. Princeton: Princeton University Press.
- Wheeler, B. K., and W. S. Clark. 2003. *A photographic guide to North American raptors*. Princeton University Press. Princeton, New Jersey

White, C. M., N. J. Clum, T. J. Cade, and W. G. Hunt (2020). Peregrine Falcon (*Falco peregrinus*), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. Retrieved from <https://doi.org/10.2173/bow.perfal.01> [Accessed: December 4, 2023].

Windy.Com. 2023. British Columbia winds. Retrieved from <https://www.windy.com/?49.170,-122.735,5> [Accessed: continuously during bird surveys]