



Vancouver Avian Research Centre

Research - Conservation - Education

Vancouver Avian Research Centre – Raptor Migration Banding

Project Title: Improving the understanding of raptors migrating in British Columbia

Introduction

Raptors migrate through British Columbia (BC) in the spring and fall with many stop-over sites along their migration routes. Well-known viewing sites in Langford on Vancouver Island and Kamloops draw bird watchers, but an established monitoring network across the province does not yet exist; there is no dedicated wild raptor banding program of free-living birds in BC. The exact migratory pathways and migration patterns for individual species are not well documented in BC. Capturing and banding raptors with well-established techniques will provide invaluable data and information on raptor distribution, movement patterns, dispersal, plumage variation, and life span. The Vancouver Avian Research Centre (VARC) has been conducting bird-monitoring activities in BC for over 25 years. During that time, VARC has successfully banded raptorial bird species in rehabilitation facilities, deployed and monitored an array of mist-nets for passerine and incidental raptor banding, conducted active bird surveys based on acoustic and visual detections including raptors, nest box monitoring programs for passerines and owls, bird banding training programs, public education, and more. VARC is well positioned in the Lower Mainland to expand its current banding activities to the Fraser Valley to begin raptor banding along a local migration route that has been monitored very successfully for the last 9 years. VARC is equipped with local professionals and a volunteer trainee network to conduct this new project safely (for birds and humans), and effectively.

Locations

Proposed raptor banding sites are located on Sumas Mountain in Abbotsford at coordinates 49°06'34.8"N, 122°10'42.6"W overlooking the Matsqui Prairie area, and Vedder Mountain in Chilliwack at coordinates 49°03'10.7"N 122°03'04.3"W adjacent the eastern edge of Sumas Prairie (Figure 1). The sites were established as the high-altitude monitoring sites for raptor migration monitoring in 2015 organized by Rick Toochin and collaborators E. Allan Russell, David Baker, Paul Baker, and Mark Russell.

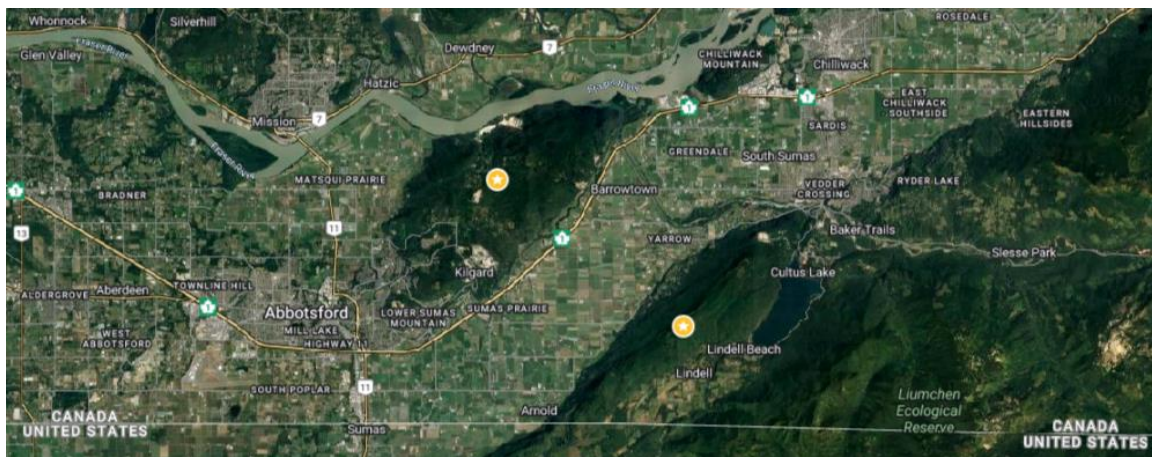


Figure 1: Google map of the two site coordinates marked by yellow stars, the upper left being Sumas Mountain, and the lower right Vedder Mountain.

Potential Species

We expect to capture and band a variety of raptors and passerines at the two mountain-top locations. The most commonly sighted raptors are the most likely to be captured, such as Cooper’s Hawk, Sharp-shinned Hawk, Red-tailed Hawk, Turkey Vulture, Northern Harrier, American Kestrel, and Bald Eagle (Table 1).

Table 1: Annual spring and fall totals for migrating raptor species at the proposed new banding sites, counted following standard hawk-watch protocols (HMANA 2006), from 2015 - 2023. Species that did not have annual occurrence are excluded. For each year counts were conducted from March 1 to May 31 (spring) and August 15- October 31 (fall), from 11:00am to 3:00pm, on at least 15 days per month, and recorded by Rick Toochin, unpublished data.

Species	2015		2016		2017		2018		2019		2020		2021		2022		2023	
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Cooper’s Hawk (<i>Accipiter cooperii</i>)	88	129	90	143	122	127	56	187	30	133	89	201	135	104	138	137	112	127
Northern Goshawk (<i>Accipiter gentilis</i>)	3	18	1	2	4	2	5	1	1	1	1	4	7	4	2	3	5	7
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	53	905	60	1098	55	1003	58	1076	65	1155	68	1305	65	1094	57	1004	64	1263
Golden Eagle (<i>Aquila chrysaetos</i>)	73	8	45	6	65	7	108	8	89	8	136	10	77	5	56	7	62	5
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	722	633	820	689	468	704	404	733	659	701	741	792	563	749	579	639	601	686
Harlan’s Red-tailed Hawk (<i>B. jamaicensis harlani</i>)	8	1	9	2	3	4	11	3	1	4	4	5	6	3	7	2	6	2
Rough-legged Hawk (<i>Buteo lagopus</i>)	2	6	1	7	3	2	1	2	1	3	2	6	2	2	2	5	2	2
Broad-winged Hawk (<i>Buteo platypterus</i>)	1	40	8	15	3	13	5	5	5	3	3	16	13	25	4	18	1	76
Swainson’s Hawk (<i>Buteo swainsoni</i>)	1	10	30	12	63	4	38	0	13	5	26	10	159	9	34	7	7	50
Turkey Vulture (<i>Cathartes aura</i>)	601	1126	772	1416	666	1098	777	1156	742	1004	893	1530	641	1257	624	1483	636	1289
Northern Harrier (<i>Circus hudsonius</i>)	87	233	94	241	72	201	73	213	72	202	75	256	86	230	89	143	77	251
Merlin (<i>Falco columbarius</i>)	22	49	25	66	22	55	20	87	23	80	24	102	18	82	16	94	20	89
Prairie Falcon (<i>Falco mexicanus</i>)	0	7	4	2	7	1	3	0	1	1	2	3	2	1	0	1	0	3
Peregrine Falcon (<i>Falco peregrinus</i>)	36	36	48	42	35	39	34	48	36	35	54	50	40	37	32	33	39	32
Gyrfalcon (<i>Falco rusticolus</i>)	2	2	6	2	4	0	1	0	2	0	1	3	1	0	1	0	1	1
American Kestrel (<i>Falco sparverius</i>)	58	120	42	166	61	155	44	180	42	177	43	201	52	121	48	122	51	136
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	1002	259	1068	288	975	276	1592	299	564	287	557	301	607	234	570	257	676	296
Osprey (<i>Pandion haliaetus</i>)	18	53	22	49	11	51	8	52	2	63	8	65	10	64	11	63	14	58

Methods

Possible capture methods include bal-chatri trap, dho-gaza trap, noose carpet, bow net, mist net and box trap. All require the use of a live lure animal that will not be harmed in the trapping process.

Each captured bird will be extracted from the trap and transferred to an adjacent banding table for banding and processing. The banding process will involve the following steps: species identification, band application, age and sex determination, assessment of crop fullness, measurement of biometrics (e.g., wing and tail length, body mass) and photography (if applicable). Each captured bird will be fitted with a uniquely numbered metal band supplied by the Bird Banding Office of the Canadian Wildlife Service sized by measuring the bird’s tarsus with a tarsus gauge to ensure that the right-sized band is used. Captured birds will then be safely released at the same location they were captured.

The methods used to capture and restrain for the purpose of banding have very little risk to the welfare of raptors (Bloom 1987, Hull and Bloom 2001) when completed by well-trained and supervised handlers, and when completed quickly and in the shade. This project will be conducted in accordance with procedures established in the VARC Banding Station Protocol, which agree with accepted practices established by the North American Banding Council (NABC 2001a,b), the Raptor Research Foundation in the volume Raptor Research and Management Techniques (Bird and Bildstein 2007), the Ornithological Council's *Guidelines for the Use of Wild Birds in Research* (Fair et al. 2023), and follow The North American Banding Council's manual for raptor banding techniques (Hull and Bloom 2001), with the animal care and welfare issues directly related to birds of prey as discussed by Boal et al. (2010) in mind.

Scientific Permits and Animal Care Approval Bird banding activities will be conducted under Canadian Wildlife Service Bird Banding Office Scientific Master Permit No. 10720 issued to Derek Matthews (Vancouver Avian Research Centre). In addition, this project will be conducted in accordance with the University of the Fraser Valley Animal Use Protocol and Standard Operating Procedures ACC-010 and ACC-011.

Objectives and Research Questions

- Define flight path, wintering areas, and origins of migrating raptors in southwestern BC.
- Identify seasonal timing of migration for individual raptor species.
- Assess the health and condition of migrating raptors.
- Define the morphometric characteristics of particular raptor species, including subspecies and populations, utilizing this particular migratory route in spring and in fall.
- Monitoring variation in all of the above over time.

Conservation of any wildlife requires a good understanding of the species, including population dynamics, migratory or other movements, habitat preferences, stopover ecology and site loyalty. As relatively little is known about most of these aspects of the raptorial species transiting and living in southwestern BC, we hope to increase our understanding of these important questions in aid of conservation strategies for these species.

References

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