

2021 Fall Report

Canada Jay Research Project

Paradise Meadows, Strathcona Provincial Park

Dan Strickland, September 28, 2021

(Updates and replaces “2021 Interim Report, Canada Jay Research Project, Paradise Meadows, Strathcona Provincial Park”, dated July 23, 2021)

This year (2021) marked the fifth year of field work aimed at investigating the social and breeding behaviour of the Pacific morphotype of the Canada Jay (*Perisoreus canadensis obscurus/griseus*) in and adjacent to the Paradise Meadows area of Strathcona Provincial Park on Mount Washington, Vancouver Island. Thanks to salary support provided by Ryan Norris (U. of Guelph) I had the assistance of Éléonore Lebeuf-Taylor from March 5 to mid-April and then unofficially on an as-needed basis until mid-July. Especially during the latter period Éléonore was also able to familiarize herself with the social behaviour of the local jays using an apparatus kindly built for us by Jamie Baker of Comox, BC and an observation protocol developed in Sweden. She will make similar observations in her PhD work on Siberian Jays (*P. infaustus*) in Sweden under the supervision of Michael Griesser (U. of Konstanz, Germany) and Karl Cottenie (U. of Guelph). In September I made follow-up observations on the June-to-fall survival of young fledged in 2021 and Éléonore obtained ca 60 fecal samples that she will use to assess the relationship between the social status and the microbiome of individual jays.

This year’s work on Vancouver Island also greatly benefitted from the observations of Roberta Press at her condo overlooking Paradise Meadows, and those of intrepid off-trail hikers, George and Sharon McLeod. Guelph M. Sc. student, Roxan Chicalo, a Vancouver Island native, also spent a day helping with nest finding in March and another with banding juveniles in June. I am very grateful for the interest and support of all those who assisted in any way.

Principal Findings in 2021

1. In the breeding season of 2021 the study area was deemed to include 24 distinct social groups and territories, two more than in 2020 (Figure 1, Table 1). The increase resulted from the addition of a neighbouring territorial group (the “FarGroup”) to the study and from a new pair (“Trailhead Budoff”) forming and attempting to nest in one of the interstices in the territorial mosaic. We found 26 nests on 20 territories, including two nests on each of 6 territories, and we also reliably knew that second nesting attempts were made on another 5 of the 20 territories. Of the 20 territories where we found at least one nesting pair, therefore, just over half (eleven) had a second nesting pair as well. Counting the 4 nests where we did not find a nest but assume there was at least one nesting pair (and in one case two), a minimum of 35 nesting attempts were therefore made on the 24 territories.
2. Of the 35 attempts, 14 succeeded in reaching the stage of having free-flying juveniles as part of the social group moving about on their respective territories in June. Thirty-six juveniles were banded in June and early July 2021, appreciably more than the 24 that were produced in 2020 but considerably fewer than the record 53 produced in 2019 from the same study area. In that year there were clearly at least four cases where fledglings were produced from two broods on the same territory but this year, and in 2020, there were no cases where more than one pair on a territory succeeded in producing fledglings that survived until June.

3. Since 2020 at least 7 primary breeding males have disappeared and been replaced, several actually during the 2021 breeding season. In one case the replacement was a secondary male from a neighbouring territory but in all the other cases the replacement was the No. 2 male from the same social group. But not only did the No. 2 male move up to the No. 1 position, he also acquired the No. 1 female and in at least one case left his former mate, the No. 2 female, to be acquired by the former No. 3 male. We had assumed this was a result of male choice (i.e., the No. 2 male, no longer subservient to a No. 1, was free to court and win over the No. 1 female). In fact, the change seems to come about through the actions of the No. 1 female. She violently objects when the No. 2 female tries to continue her close relationship with her former mate (i.e., Male No. 2, now the *de facto* No. 1) and, since she is dominant over female No. 2, she is able to replace female No. 2 at the side of the new male no. 1 (former male no. 2). The new no. 1 male seems indifferent to the struggle between the two females so he is unlikely to play a role in his presumed eventual “acquisition” of the primary female.

Looking Ahead

Especially given our usual inability to access the mostly very high nests in this population and the possibility of mixed parentage of fledgling broods, the importance of genetically confirming the presumed relationships between breeders and offspring was recognized from the outset of the study. This work, based on blood and feather samples collected from all jays at the time of banding will be finished this year by Dr. Brendan Graham, a post-doc in the lab of Dr. Theresa Burg at the University of Lethbridge. The findings will constitute an important part of a projected paper comparing the distinctly different social organization of the Pacific morphotype (western race) of the Canada Jay with that of the much more widespread (Alaska to Newfoundland) Boreal morphotype.

A second development on the horizon, but already partly begun by Éléonore Lebeuf-Taylor, will be detailed observations on the hierarchical relationships between members of large social groups and their possible relation to possible differences in the microbiomes (gut floras) of individual group members. It is intended that this work be mainly focused on Siberian Jays but also, that it will include work on Canada Jays for comparative purposes. Éléonore made a start on the Canada Jay work by obtaining approximately 60 fecal samples from Paradise Meadows jays, in the period Sept 5-20 of this year.

Associated Developments

Two papers dealing in part with the Pacific morphotype of the Canada Jay (the race found on Vancouver Island) were published earlier this year. Both suggest, on genetic and morphological grounds that consideration should be given to restoring the status of full species to our western birds. I will be happy to provide pdfs to anyone interested.

Graham, B. A., C. Cicero, D. Strickland, J. G. Woods, H. Coneybeare, K.M. Dohms, I. Szabo, and T. M. Burg, 2021. Cryptic genetic diversity and cytonuclear discordance characterize contact among Canada jay (*Perisoreus canadensis*) morphotypes in western North America. *Biological Journal of the Linnaean Society*. XX; 1-16.

Strickland, D. and S. M. Doucet. 2021. A bird that changes colour without moulting: how the *wiskicâhk* (Canada Jay, *Perisoreus canadensis*) tricked the taxonomists. *Can. J. Zool.* 99: 183-195.

A third paper, “Investigating factors that set the lower elevational limit of Canada jays (*Perisoreus canadensis*) on Vancouver Island” (Quarrel, Strickland, and Norris) based on the M.Sc. thesis of U. of Guelph student N. Quarrell has been accepted for publication by the *Canadian Journal of Zoology*:

Table 1. Adults and juveniles on 24 territories in Paradise Meadows Canada Jay study area in June and in the fall (September) of 2021.

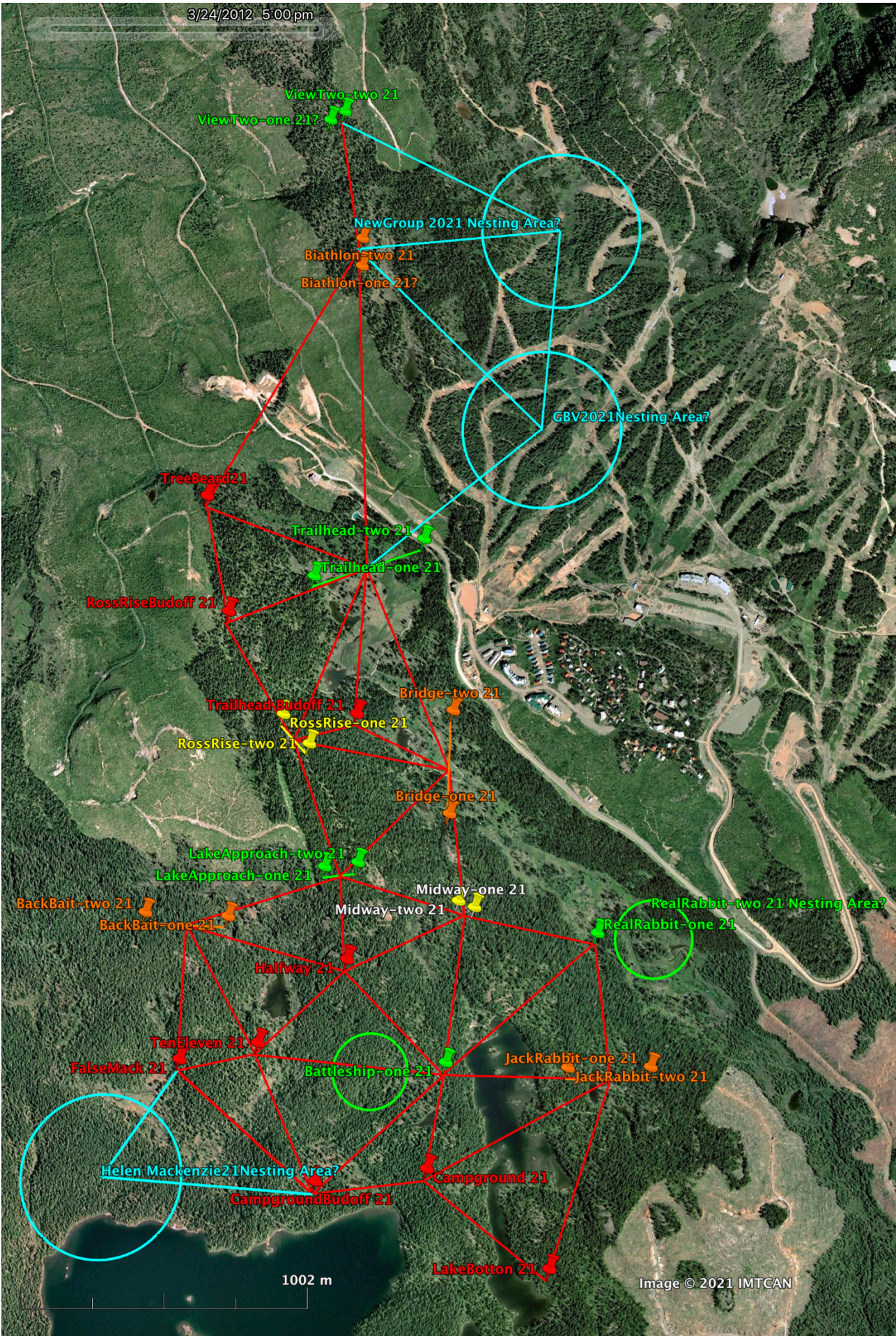
June-Fall Composition of Paradise Meadows Canada Jay Social Groups ¹ 2021 (Please send observations to Dan Strickland: perisoreus1@gmail.com)																
2021	ViewTwo ²		Biathlon ²		NewGroup		GreatBigView		Trailhead ²		Trailhead Budoff ⁶		TreeBeard		RossRise Bud-off	
	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall
"ADULTS"	PLPOSR POSLTR RLWOSR ₁₇ ROPLBOSR ₁₉ KOPLYOSR ₁₉ GOYLROS ₂₀	POSLTR ROPLBOSR ₁₉ KOPLYOSR ₁₉ GOYLROS ₂₀	LOSLRR TLPOSR BOSLWR ₁₇ OOSLWOPR ₁₈ TOSLROBR ₁₉ GOSLYOPR ₂₀	LOSLRR TLPOSR BOSLWR ₁₇ OOSLWOPR ₁₈ TOSLROBR ₁₉ GOSLYOPR ₂₀	TOYLPOSR ₁₉ OOSLPBR ₁₉ ROSLPOYR ₁₉ OOSLKOB ₁₉ WOTLLOS ₁₉ BOSLKOTR ₁₉ GOSLYOLR ₁₉ YOSLGORR ₁₉ LOSLPOK ₁₉ ⁵ KOPLBOBR ₁₉	TOYLPOSR ₁₉ OOSLPBR ₁₉ ROSLPOYR ₁₉ OOSLKOB ₁₉ WOTLLOS ₁₉ BOSLKOTR ₁₉ GOSLYOLR ₁₉ YOSLGORR ₁₉ LOSLPOK ₁₉ ⁵ KOPLBOBR ₁₉	BORLKOSR GOSLRORR ROSLLOBR OOSLWOSR ₂₀ LOBLYOSR ₂₀ (ROLLKOSR ₂₀) (POSLKOLR)	BORLKOSR GOSLRORR ROSLLOBR OOSLWOSR ₂₀ LOBLYOSR ₂₀ (ROLLKOSR ₂₀) (POSLKOLR)	PLBOSRm LOSBRF TORLWOSR _{18m} TOSLRORW _{19f} LOSLOYR ₁₉	PLBOSRm LOSBRF TORLWOSR _{18m} TOSLRORW _{19f} LOSLOYR ₁₉	BOSLYOTR ₁₉ ROBLPOSR ₁₉		WLKOSR ₁₇ YOSLWOSR ₁₈ BOSLWOSR ₁₉ BOSLWOSR ₁₉ BOTLOOSR ₁₉	WLKOSR ₁₇ YOSLWOSR ₁₈ BOSLWOSR ₁₉ BOSLWOSR ₁₉ BOTLOOSR ₁₉	WLLOSR KOSLRORR ₁₉ ROSLLOYR ₁₉ KOOLGOSR ₁₉	WLLOSR KOSLRORR ₁₉ ROSLLOYR ₁₉ KOOLGOSR ₁₉
Local Young Hatched in 2021	WOLLKOSR ₂₁ TOSLGOTR ₂₁ YOTLWOSR ₂₁	WOLLKOSR ₂₁ TOSLGOTR ₂₁	ROSLTOLR ₂₁	ROSLTOLR ₂₁	None WOYLGOSR ₂₁	None YOGLWOSR ₂₁ ⁴	None	None	BOOLPOSR ₂₁ YOSLGOKR ₂₁ PORLPOSR ₂₁	BOOLPOSR ₂₁ YOSLGOKR ₂₁ PORLPOSR ₂₁	None	None	GOSLLOS ₂₁ POWLTOBR ₂₁	GOSLLOS ₂₁ POWLTOBR ₂₁	None	None
Hatched Elsewhere									WOLLTOSR ₂₁ ⁴				WOLLTOSR ₂₁ ⁴			
2021	Campground Budoff		HelenMackenzie		FalseMack		BackBait ^{2,3}		TenEleven		Halfway ⁴		LakeApproach ^{2,3}		Rossiter's Rise ²	
"ADULTS"	(BO)SLPR ROSLWOTR ₁₉	(BO)SLPR ROSLWOTR ₁₉	ROSLPR OOBLOS KORLBOBR ₁₉ LORLPOSR ₁₉ ROSLTOPR ₂₀	ROSLPR OOBLOS KORLBOBR ₁₉ LORLPOSR ₁₉ ROSLTOPR ₂₀	RLROSR LOSLLR ₁₇ (LOSLYOBR ₁₉)	RLROSR LOSLLR ₁₇ (LOSLYOBR ₁₉)	GOSLTR KLROSR (ROBLYOSR ₁₉) (TOSLYOBR ₁₉) (TOSLYOBR ₁₉) (TOSLYOBR ₁₉)	GOSLTR KLROSR (ROBLYOSR ₁₉) (TOSLYOBR ₁₉) (TOSLYOBR ₁₉) (TOSLYOBR ₁₉)	TLOOSR GLGOSR ₁₇ POSLOYR ₁₉ BOSLOOPR ₂₀	TLOOSR GLGOSR ₁₇ POSLOYR ₁₉ BOSLOOPR ₂₀	PLROSR ₁₇ PLWOSR	PLROSR ₁₇ PLWOSR	(GLRO)SR (SOBLOKR) (LLPOSR ₁₇) KLWOSR ₁₇ TOSLBOYR ₂₀ BOSLYOTR ₁₉	(GLRO)SR (SOBLOKR) (LLPOSR ₁₇) KLWOSR ₁₇ TOSLBOYR ₂₀ BOSLYOTR ₁₉	LOPOSL ₁₉ BLKOSR TOSLKR KLGOSR LOSLYOSR ₁₉ YOSLBOBR ₂₀	LOPOSL ₁₉ BLKOSR TOSLKR KLGOSR LOSLYOSR ₁₉ YOSLBOBR ₂₀
Local Young Hatched in 2021	KOLLWOSR ₂₁ TOSLYOPR ₂₁ GORLKOSR ₂₁	KOLLWOSR ₂₁ TOSLYOPR ₂₁	None	None	None	None	None	None	ROSLPOWR ₂₁ BOLLKOSR ₂₁	ROSLPOWR ₂₁ BOLLKOSR ₂₁	None	None	None	None	None	None
Hatched Elsewhere									POSLLOBR ₂₁ ⁴ YOSLROPR ₂₁ ⁴							
2021	Campground ³		LakeBottom		FarGroup		JackRabbit ²		RealRabbit ²		Battleship ^{2,3}		Midway ²		Bridge ^{2,3}	
"ADULTS"	(YO)SLGR POSLOKR ₁₈ TOSLLOBR ₁₈ YOSLBOBR ₁₉	(YO)SLGR POSLOKR ₁₈ TOSLLOBR ₁₈ YOSLBOBR ₁₉	POSLOKR ₁₈ OOSLPOTR ₁₉ ROSLROKR ₁₈ GOWLBOBR ₁₉	POSLOKR ₁₈ OOSLPOTR ₁₉ ROSLROKR ₁₈ GOWLBOBR ₁₉	TOOLBOSR POSLOBR ROSL(BOYR) UBadult	TOOLBOSR POSLOBR ROSL(BOYR) UBadult	WLPOSR TOSLGR ROLLWOSR ₁₉ YOBLOSR ₁₉ LOGLROSR ₁₉ KOGLYOSR ₂₀ YOSLLOSR ₂₀	WLPOSR TOSLGR ROLLWOSR ₁₉ YOBLOSR ₁₉ LOGLROSR ₁₉ KOGLYOSR ₂₀ YOSLLOSR ₂₀	LOSLWOSR ₁₉ POPLOSR BOSLBOBR ₂₀	LOSLWOSR ₁₉ POPLOSR BOSLBOBR ₂₀	GLKOSR ₁₇ TOSL(DR)	GLKOSR ₁₇ TOSL(DR)	ROSLR ₁₇ KLBOSR GOTLOOSR ₁₉	ROSLR ₁₇ GOTLOOSR ₁₉	(WO)SLKR GLWOSR ROSLPOKR ₁₉ SORLGR YOSLPOLR	(WO)SLKR GLWOSR ROSLPOKR ₁₉ SORLGR YOSLPOLR
Local Young Hatched in 2021	None	None	ROTLLOS ₂₁ WOSLTOKR ₂₁	ROTLLOS ₂₁ WOSLTOKR ₂₁	GORLTOBR ₂₁ TOYLROSR ₂₁ UBJ UBJ	GORLTOBR ₂₁ TOYLROSR ₂₁ UBJ UBJ	BOOLWOSR ₂₁ KOSLWOPR ₂₁ POTLKOSR ₂₁ WOSLLOSR ₂₁	BOOLWOSR ₂₁ KOSLWOPR ₂₁ POTLKOSR ₂₁ WOSLLOSR ₂₁	YOSLKOBR ₂₁ ROSLOOTR ₂₁ KOWLBOBR ₂₁	YOSLKOBR ₂₁ ROSLOOTR ₂₁ KOWLBOBR ₂₁	ROLLLOS ₂₁ POOLROS ₂₁	ROLLLOS ₂₁ POYLWOSR ₂₁	TOPLYOSR ₂₁ LOSLOBR ₂₁	TOPLYOSR ₂₁ LOSLOBR ₂₁	LOBLOOSR ₂₁ BOWLPOSR ₂₁ KOWLTOBR ₂₁ TOSLKOYR ₂₁	LOBLOOSR ₂₁ BOWLPOSR ₂₁ KOWLTOBR ₂₁ TOSLKOYR ₂₁
Hatched Elsewhere																

¹ Year of birth indicated by subscript after name. A minus sign following the year indicates that indicated year is latest possible year of birth. No year indication usually means bird was hatched in 2016 or earlier.
² Two pairs known to have attempted nesting on this territory in 2021
³ Brackets indicate lost bands or, when around full name, birds present at beginning of breeding season and possibly still present (but not actually seen) in June
⁴ A 2021 juvenile that originated on a different territory
⁵ LOSLPOKR and KOPLBOBR were the only birds on the NewGroup territory known to have nested and to have produced juveniles that survived until June (LOSLTOWR and WOYLGOSR)
⁶ Two 2-year olds (BOSLYOTR from Trailhead and ROBLPOSR from RossRise) nested unsuccessfully but by fall seemed to have reverted to nonbreeder status on separate territories

Canada Jay Naming System
Name is based on bird's unique combination of coloured bands
O = Over (when 2nd letter or 3rd last) or Orange
L = Left (when 2nd or 4th letter) or Light Green
R = Right (when last letter) or Red
K = pinK
Y = Yellow
T = light T blue
N = brown
S = Standard
B = dark Blue
D = grey
P = Purple
G = dk Green
W = White
Example: ROSLTOGR₁₉ = Red Over Standard Left, light T blue Over dark Green Right (hatched in 2019)

Figure 1. (below) Nest locations (or suspected nesting areas) on 23 Canada Jay territories, Paradise Meadows 2021. Cyan circles indicate 4 territories where no nests were found. Green circles indicate suspected nest locations of two secondary pairs that definitely had eggs but no clues were obtained concerning the nest locations. Pairs of nest locations in non-red colours indicate primary and secondary nest locations on the same territory. The suspected nesting area of a 24th territorial group (the FarGroup; see Table 1) is not shown but is probably near the beginning of Nordic Way and equidistant from the JackRabbit and RealRabbit nest locations.

3/24/2012 5:00 pm



1002 m

Image © 2021 IMTCAN



Figure 2. Élénore holding YOSLPOLR, a newly banded female that had joined the Bridge group, May 9, 2021.



Figure 3. Éléonore watching jays at an apparatus modelled after a similar one used in Sweden to determine dominance relationships among Siberian Jays, June 1, 2021.



Figure 4. Éléonore at the Trailhead nest tree on June 15. She placed the orange flagging tape on the tree (at shoulder height above the snow surface) on March 15 when we discovered the nest early in its construction.

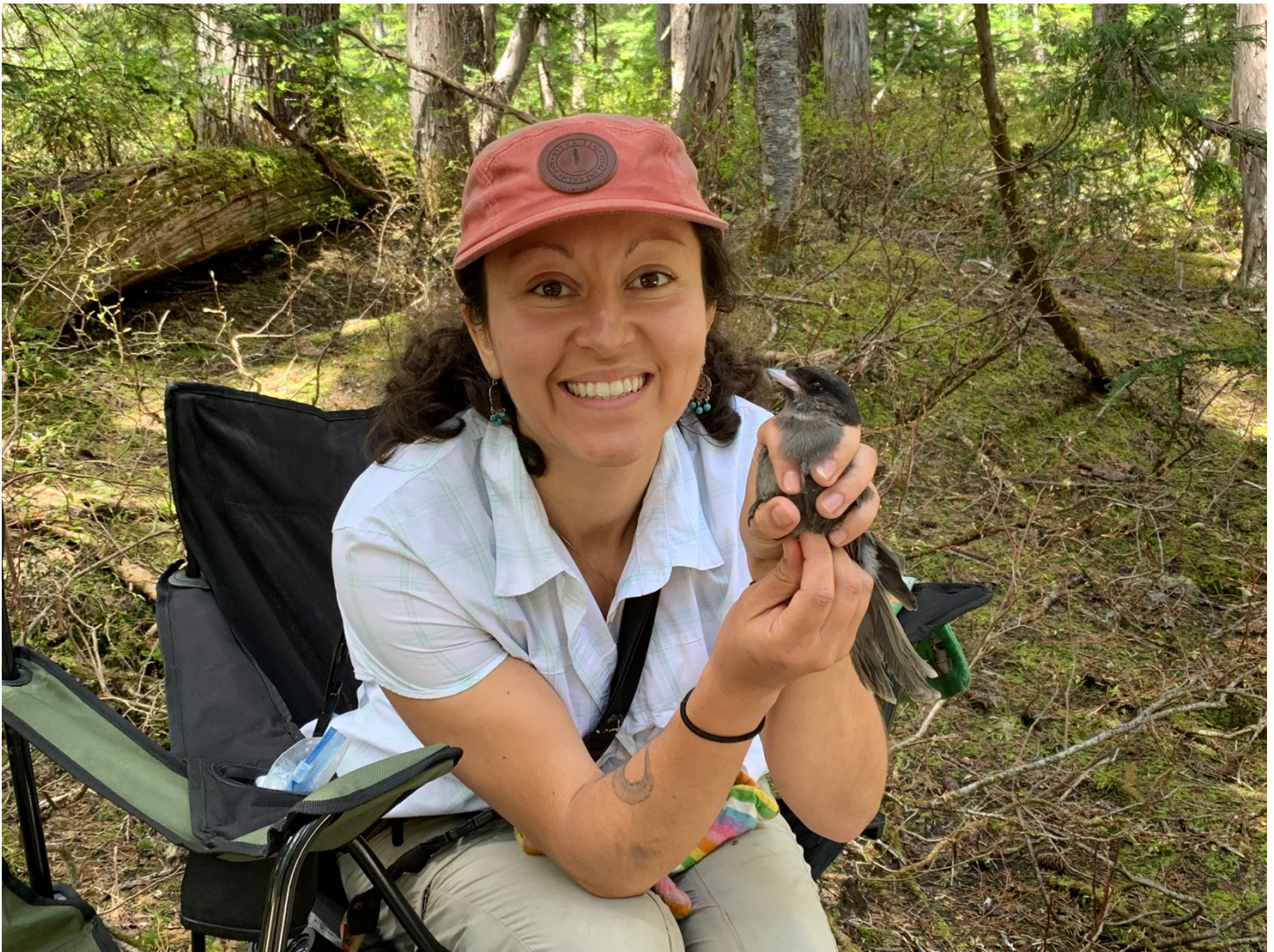


Figure 5. Roxan Chicalo, U. of Guelph M. Sc. student, holding one of 7 fledglings she helped band, measure and blood-sample, June 20.



Figure 6. A piece of bread crust (orange) partly visible where a jay had just hidden it in a strand of the ubiquitous lichen, *Alectoria sarmentosa*, April 16, 2021.



Figure 7. Alas, poor GOSLBR, we knew him well. By the time we found his remains (April 22) his position as the No. 1 male on the BackBait territory, and KLROSR, the No. 1 female, had both been taken over by GOSLTR, the No. 2 male.



Figure 8. Erica McLaren of BC Parks and an authority on Goshawks, showing us how to conduct a survey for them, June 16, 2021.



Figure 9. For several weeks in late May and early June, LOPOSL, originally banded in April 2010 by Brendan Graham, and the primary male on the Rossiter's Rise territory since at least 2016, had a conspicuous patch of disturbed dorsal plumage.



Figure 10. TOPLYOSR (light blue Over Purple Left, Yellow Over Standard Right) one of two fledgling juveniles banded on the Midway territory, photographed five days later on a neighbouring territory, June 20, 2021. Photo by Roxan Chicalo.



Figure 11. A stomach casting (mostly arthropod exoskeletal fragments?) regurgitated by one of the marked jays, June 17, 2021.



Figure 12. Spring comes to Paradise Meadows, June 10, 2021.

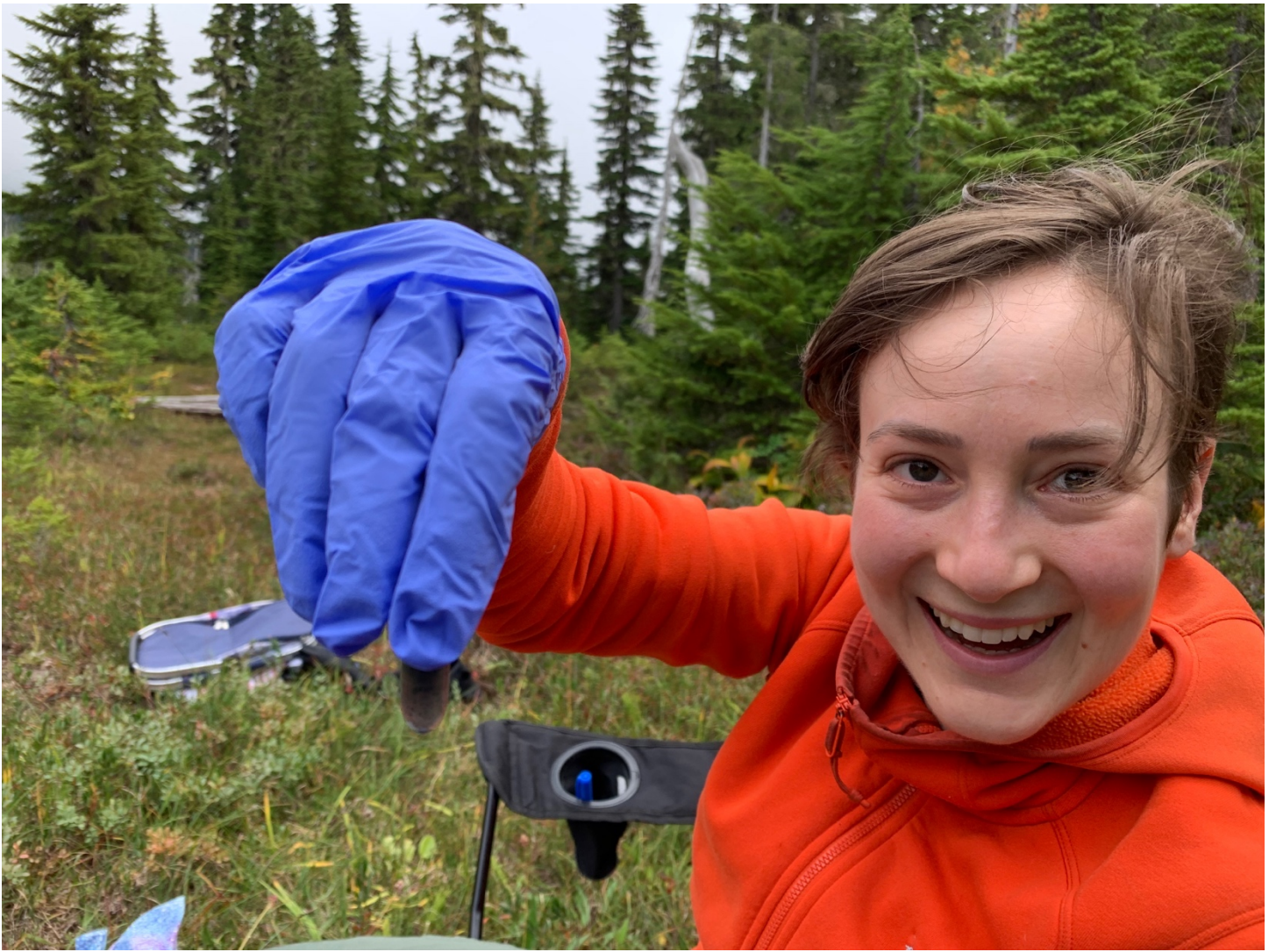


Figure 13. Success! First fecal sample collected September 8, 2021