

2021 Interim Report

Canada Jay Research Project

Paradise Meadows, Strathcona Provincial Park

Dan Strickland, 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). 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 whatever 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 a new pair forming in each of two existing social groups and carving out, or “budding off”, new territories in relatively empty nearby areas 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 minimum 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 there were no cases where more than one pair 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.

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 *wîskicâhk* (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” based on the M.Sc. thesis of U. of Guelph student N. Quarrell has been accepted, pending revisions, by the *Canadian Journal of Zoology*:

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		NewGroup Budoff		GreatBigView		Trailhead ²		Trailhead Budoff		TreeBeard	
	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 GOYLROSr ₂₀		LOSRR TLPOSr BOSLWR ₁₇ OOSLWOPR ₁₈ TOSLROBR ₁₉ GOSLYOPR ₂₀		TOYLPOSr ₁₉ OOSLPOBR ₁₉ ROSLOPR ₁₉ OOSLKOBR ₁₉ WOTLLOSr ₁₉ BOSLKOTR ₁₉ GOSLYOLR ₁₉		LOSLOPKR ₀₉ KOPLBOSr ₁₉ YOSLGORr ₁₉		BORLKOSr GOSLRORr ROSLLORr OOGWOSR ₂₀ LOBLYOSr ₂₀		PLBOSRm LOSBRF TORLWOSR ₁₈ TOSLROWR ₁₉ LOSLOYR ₁₉		BOSLYOTR ₁₉ ROBLPOSr ₁₉		WLKOSr ₁₇ YOSLWOSR ₁₈ BOWLROSr ₁₉ BOSLWOSR ₁₉ BOTLOSr ₁₉	
YOUNG Hatched in 2021	WOLLKOSr ₂₁ TOSLGOTr ₂₁ YOTLWOSr ₂₁		ROSLTOLR ₂₁		None		LOSLOWR ₂₁ WOYLGOSr ₂₁		None		BOOLPOSr ₂₁ WOLLTOSr ₂₁ YOSLGORr ₂₁ PORLPOSr ₂₁		None		GOGLOSr ₂₁ POWLTOsr ₂₁ ⁴ TOOLPOSr ₂₁	
2021	Bridge ²		Midway ²		Battleship ²		RealRabbit ²		JackRabbit ²		LakeBottom		Campground		Campground Budoff	
	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall
"ADULTS"	(W)SLKR GLWOSr ROSLPOKR ₁₉ SORLGR YOSLPOLR		ROSLLR ₁₇ KLBOsr GOTLOSr ₁₉		GLKOSr ₁₇ TOSL(DR) GOTLYOSr ₁₈		LOSLOBRR ₁₉ LOSLOWBR ₁₉ POPLPOSr BOSLBOBR ₂₀		WLPOSr TOSLGR ROLLWOSr ₁₉ YOBLOSr ₁₉ LOGLROSr ₁₉ YOGLOSr ₂₀ KOGLYOSr ₂₀		POSGLOR ₁₆ OOSLPOTR ₁₉ ROSLROKRm ₁₆ GOWLBOSr ₁₉		(Y)SLGR POSLOBKR ₁₈ TOSLBOBR ₁₈ YOSLBOTr ₁₉		BOSLSPr ROSLWOTR ₁₉	
YOUNG Hatched in 2021	LOBLOSr ₂₁ BOWLPOSr ₂₁ KOWLTOsr ₂₁ TOSLKOYr ₂₁		TOPLYOSr ₂₁ LOSBOGR ₂₁		ROLLLOSr ₂₁ POOLROSr ₂₁		YOSLKOBR ₂₁ ROSLOOTR ₂₁ KOWLBOsr ₂₁		WOGLOSr ₂₁ POTLKOsr ₂₁ KOSLYOPR ₂₁ BOOLWOSr ₂₁		ROTLLOSr ₂₁ WOSLTOKR ₂₁		None		KOLLWOSr ₂₁ TOSLYOPR ₂₁ GORLKOsr ₂₁	
2021	RossRise Bud-off		Rossiter's Rise ²		Halfway ⁴		LakeApproach ²		BackBait ²		TenEleven		FalseMack		HelenMackenzie	
	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall
"ADULTS"	WLLOSr KOSLROLR ₁₉ ROSLOYR ₁₉ KOOLGOSr ₁₉		LOPOSr ₀₉ BLKOSr TOSLKR KLGOSr LOSLYOGR ₁₉ YOSLBOBR ₂₀		PLROSr ₁₇ PLWOSr		(GLRO)SR (SOBLOKR) (LLPOSr ₁₇) KLWOSr ₁₇		GOSLTR KLROSr (ROBLWOSr ₁₇) (TOSLYOBR ₁₇) (TOSLYOGR ₁₉)		TLOSr GLGOSr ₁₇ POSLYOLR ₁₉ BOSLOOPR ₂₀		RLROSr LOSJKR ₁₇ (LOSLYOOR ₁₈)		ROSLPR OOBLOSr KORLBOsr ₁₉ LORLPOsr ₁₉ ROSLTOPR ₂₀	
YOUNG Hatched in 2021	None		None		KOBLTOsr ₂₁ ⁴		None		None		ROSLPOWR ₂₁ BOLLKOSr ₂₁		None		None	

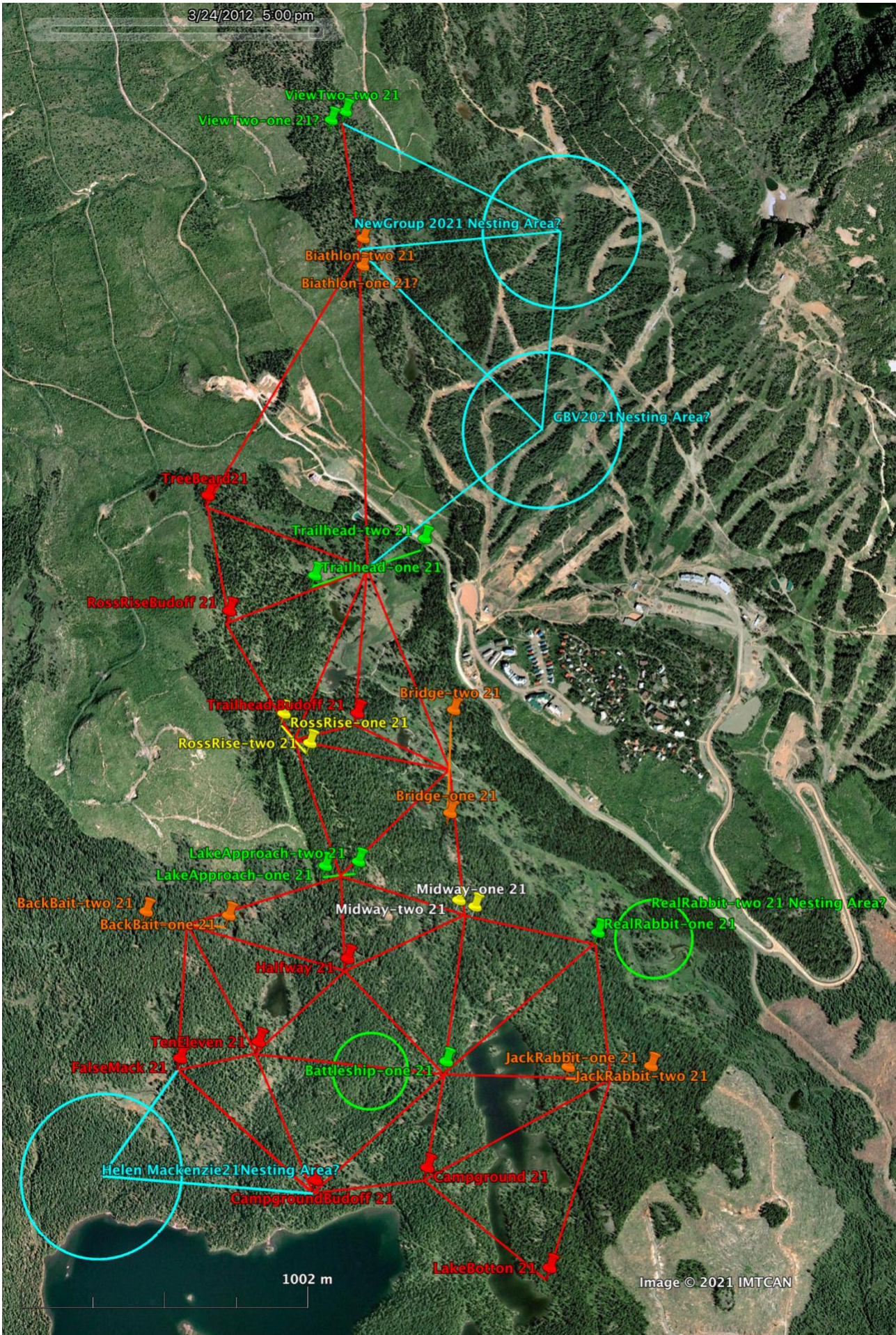
¹ Year of birth indicated by subscript after name. A minus sign following the year indicates that indicated year is latest possible year of birth. No year indication usually means bird was hatched in 2016 or earlier.
² Two pairs known to have attempted nesting on this territory in 2021
³ Brackets indicate 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 juvenile banded on this territory but that probably originated elsewhere.

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 blue
S = Standard	B = dark Blue
P = Purple	G = dk Green
	W = White
Example: ROSLTOGR ₁₉ = Red Over Standard Left, light blue	
Over dark Green Right (hatched in 2019)	

Table 1. Adults and juveniles on 24 territories in Paradise Meadows Canada Jay study area, June 2021. The table and this report will be completed when survival is assessed in all the social groups this coming September-October.

Figure 1. (below) Nest locations on 24 Canada Jay territories, Paradise Meadows 2021. Cyan circles indicate 4 territories (including the New Group and New Group Budoff territories in one area) 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.

3/24/2012 5:00 pm



1002 m

Image © 2021 IMTCAN



Figure 2. Éléonore 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.

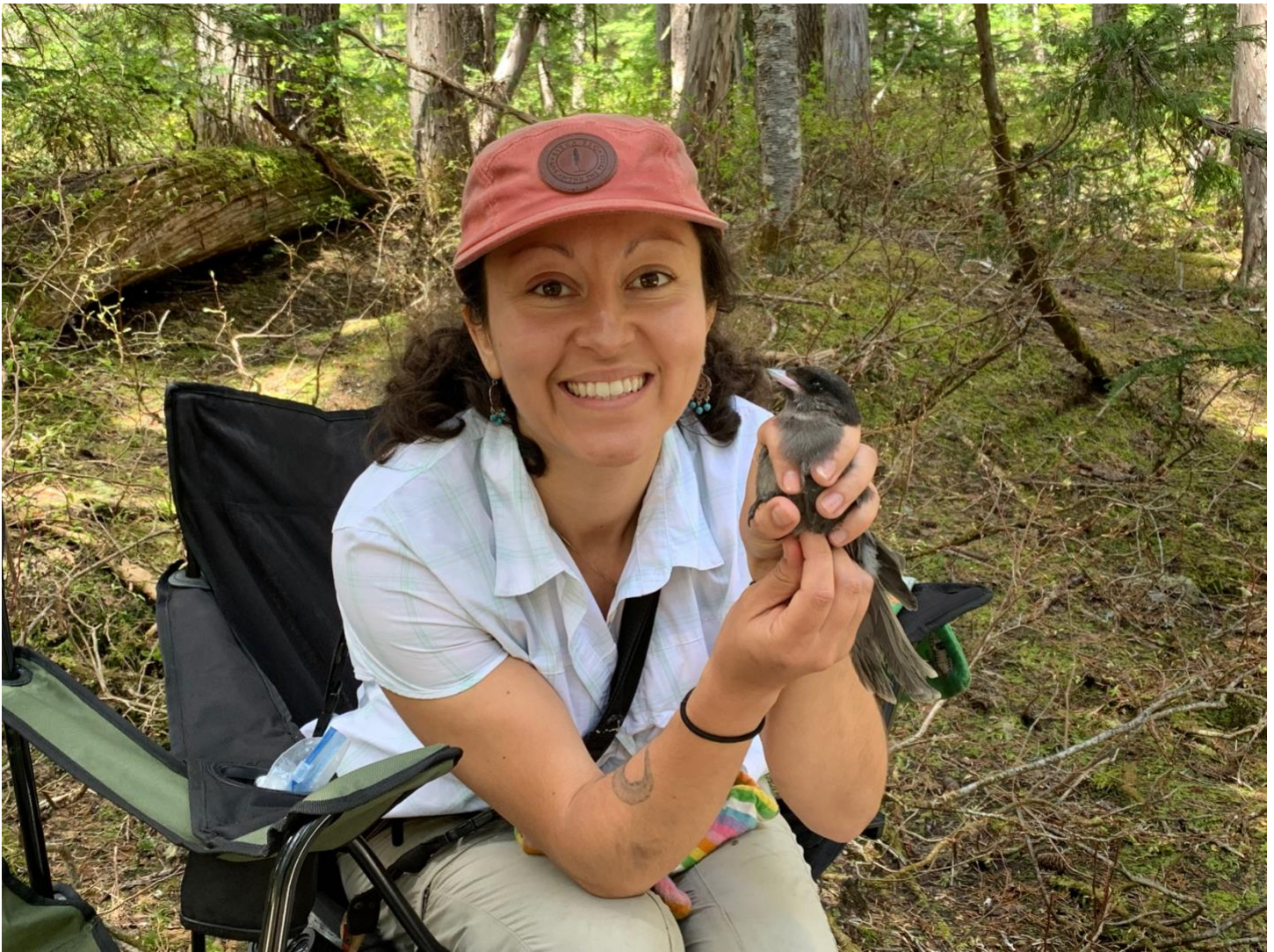


Figure 5. Roxan Chicalo, U. of Guelph M. Sc. student, holding one of 7 fledglings she helped band, measure and blood-sample, June 20.



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.