

2020 Report

Canada Jay Research Project

Paradise Meadows, Strathcona Provincial Park

Dan Strickland, October 7, 2020

This year (2020) marked the fourth year of field work aimed at documenting and understanding the social 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. Given the concurrent coronavirus epidemic, the work might not have taken place at all but, fortunately, I and assistants Blair Dudeck and Megan Buers were already living in, and working out of, my Courtenay condominium when the covid-19-inspired shutdown took place in mid-March. This allowed us to keep living, travelling, and working together as a *de facto* “family unit” through March and April. Just as important, BC parks quickly gave us a dispensation from the sudden closure of Strathcona Provincial Park and we lost only one day in the field.

Principal Findings in 2020

1. The study area was expanded slightly to now include 22 territorial groups (Table 1). Group size ranged from 2 to 12, with a mean of 5.9 on March 1 (beginning of the nesting season), 6.7 in June (when social groups included free-flying fledglings), and 6.2 on October 1 (after some attrition over the summer, mostly of first-year birds).

2. Twenty-three nests were found on 18 of these territories (Figure 1). Plural nesting (two or three nesting pairs on a single territory) was proven on 6 of the 18 territories and quite likely, though not proven, on several more (Figure 2). In addition, as was noted for the first time in 2019, there were several cases where young, nonbreeding males persistently fed the breeding females in the days leading up to clutch initiation (Figures 3 and 4). Such behaviour may help females meet the demands of egg production in wintry conditions but whether or not the young males fathered any of the subsequently produced nestlings will have to await genotyping of young.

3. Only one nest was low enough to permit the banding of nestlings but all other young produced in 2020 were subsequently captured in June or early July on the ground after they began travelling with their respective social groups. This year’s production of young was far less than that observed last year. On the 20 territories observed in both years the number of young present in June was 52 in 2019 but only 18 in 2020, a reduction of 65%. When first observed, many of the 2020 broods consisted of only one or two juveniles. This suggests that, compared to 2019, greater fledgling mortality occurred this year in the period between fledging and the full integration of the young into their respective social groups. Juveniles are presumably

especially vulnerable in this “inbetween” stage of their development and losses might be severe in years when, say, a pair of Goshawks nests in the study area.

Associated Developments

Based mainly on data collected in this study, a paper written by me and Stéphanie Doucet, an authority on avian plumage colours at the University of Windsor, is now “in press” at the Canadian Journal of Zoology. The paper, “A bird that changes colour without moulting: how Wisakedjak tricked the taxonomists” documents, through spectral analyses and photographs of marked individuals at Paradise Meadows, the highly unusual colour change in living individuals of the Canada Jay’s Pacific morphotype from fresh grey to year-old brown.

A second paper led by Brendan Graham and Theresa Burg at the University of Lethbridge and Carla Cicero at U. Cal. at Berkeley has been submitted and is now under review. It documents genetic discordance between the three Canada Jay morphotypes (Pacific, Boreal, and Rocky Mountain) along their common distributional boundaries in southern mainland BC. The principal conclusion is that the plumage differences between the Pacific and Boreal morphotypes correspond quite closely with genetic differences whereas the relationship between the Boreal and Rocky Mountain morphotypes is much less straightforward.

A third paper in the queue will be the publication of the Canada Jay’s genome by a group of medical geneticists at The Centre for Applied Genomics at the Hospital for Sick Children in Toronto. Based on a Boreal bird I collected for the project in northern Ontario, the genome has been assembled and is being supplemented by material from the other two (Pacific and Rocky Mountain) morphotypes.

These three papers, along with the yet-to-be-published social behaviour data from the Paradise Meadows study, will have a bearing on whether or not the Pacific morphotype of the Canada Jay is eventually restored to the status of a full, separate species, a status it held (as *P. obscurus*, the “Oregon Jay”) from 1880 to 1944, before the era of modern genetics.

Acknowledgements

Special thanks are due this year to Andy Smith and Erica McLaren of BC Parks for quickly granting me and assistants a dispensation from the covid-related closure of Strathcona Park in mid-March. This allowed us to continue the study in the critical nest-finding period with the loss of only one day in the field.

For the fourth straight year, the 2020 field activities received salary support (March and April) for field assistant Blair Dudeck from Ryan Norris, University of Guelph. Further much appreciated help in nest finding and field observations was received this year from volunteers, Megan Buers and Heather Holmes, not to mention numerous cases of recreationists emailing photographs or descriptions of colour-marked birds after the park was re-opened. Ongoing genetic analyses are being performed by Brendan Graham and Theresa Burg at the University of Lethbridge.

All these contributions are gratefully acknowledged.

June-Fall Composition of Paradise Meadows Canada Jay Social Groups 2020 ^{1,2} (Contact Dan Strickland: perisoreus1@gmail.com)																		
2020	ViewTwo		Biathlon		NewGroup		GreatBigView		Trailhead		TreeBeard		RossRise Bud-off ³		Rossiter's Rise ⁴			
	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall	June	Fall		
"ADULTS"	PLPOSR	PIPOSR	LOSLRRm	LOSLRRm	TOYLPOSR ₁₄	TOYLPOSR ₁₄	GOSLORRR ₁₆	GOSLORRR ₁₆	PLBOSRm	PLBOSRm	POS�WR	YOSLWBRF ₁₈	YOSLWBRF ₁₈	WLOSRRm	WLOSRRm	LOPOSRRm ₁₉	LOPOSRRm ₁₉	
	POS�TR	POS�TR	TLPOSRf	TLPOSRf	WOTLORR ₁₄	WOTLORR ₁₄	(DO)SLRR	(DO)SLRR	LOSBRf	LOSBRf	YOSLWBRF ₁₈	YOSLWBRF ₁₈	TOSLROWR ₁₉	TOSLROWR ₁₉	BLKOSRRf1	BLKOSRRf1		
	RLWOSR ₁₇	RLWOSR ₁₇	BOSLWR ₁₇	BOSLWR ₁₇	LOSLOKR ₁₉	LOSLOKR ₁₉	BORLORR ₁₈	BORLORR ₁₈	TORLWOSR ₁₈	TORLWOSR ₁₈	WIKOSRRm ₁₇	WIKOSRRm ₁₇	TOSLROWR ₁₉	TOSLROWR ₁₉	TOSLKRm2	TOSLKRm2		
	ROPLBOSR ₁₅	ROPLBOSR ₁₅	KOSLROBR ₁₈	KOSLROBR ₁₈	ROSLOPOR ₁₅	ROSLOPOR ₁₅	ROSLOPOR ₁₅	ROSLOPOR ₁₅	KOSLROBR ₁₈	KOSLROBR ₁₈	WIKOSRRm ₁₇	WIKOSRRm ₁₇	BOWLWOSR ₁₉	BOWLWOSR ₁₉	KLGOSRRf2	KLGOSRRf2		
	KOPLYOSR ₁₅	KOPLYOSR ₁₅	OOSLWOPR ₁₈	OOSLWOPR ₁₈	POSLOTR ₁₅	POSLOTR ₁₅	LOSLOPOR ₁₅	LOSLOPOR ₁₅	BOSLYOTR ₁₉	BOSLYOTR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	ROSLOYR ₁₉	ROSLOYR ₁₉	OOSLWOPR ₁₈	OOSLWOPR ₁₈		
			TOSLROBR ₁₈	TOSLROBR ₁₈	WOSLYR ₁₅	WOSLYR ₁₅	POSLOTR ₁₅	POSLOTR ₁₅	LOSLOYPR ₁₉	LOSLOYPR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈
					KOPLBOSR ₁₅	KOPLBOSR ₁₅	BOSLOKR ₁₅	BOSLOKR ₁₅	ROSLOYPR ₁₉	ROSLOYPR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈
					OOSLPOBR ₁₅	OOSLPOBR ₁₅			ROSLOYPR ₁₉	ROSLOYPR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈
					YOSLGORR ₁₈	YOSLGORR ₁₈			ROSLOYPR ₁₉	ROSLOYPR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈
					GOSLYOVR ₁₈	GOSLYOVR ₁₈			ROSLOYPR ₁₉	ROSLOYPR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈
				OOSLKOBR ₁₉	OOSLKOBR ₁₉			ROSLOYPR ₁₉	ROSLOYPR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	
				BOSLKOTR ₁₉	BOSLKOTR ₁₉			ROSLOYPR ₁₉	ROSLOYPR ₁₉	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	WIKOSRRm ₁₇	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	OSLWOPR ₁₈	
YOUNG Hatched in 2020	GOYLROSR ₂₀	GOYLROSR ₂₀	GOSLYOPR ₂₀	GOSLYOPR ₂₀	None	None	ROLLKOSR ₂₀	ROLLKOSR ₂₀	None	None	LOSLGOOR ₂₀	LOSLGOOR ₂₀	None	None	YOSLBOBR ₂₀	YOSLBOBR ₂₀		
	WOSLPOOR ₂₀	WOSLPOOR ₂₀					OOSLWOPR ₂₀	OOSLWOPR ₂₀							KOYLROSR ₂₀	KOYLROSR ₂₀		
"ADULTS"	Bridge ^{4,5}		Halfway		BattleShip		Campground ^{4,6}		Midway		RealRabbit ^{4,9}		JackRabbit		LakeBottom			
	GLWOSRf1	GLWOSRf1	PLWOSRf	PLWOSRf	TOSL(DR)f	TOSL(DR)f	(YO)SLGRm1	(YO)SLGRm1	ROSLOKR ₁₇	ROSLOKR ₁₇	YLO(S)SRm	YLO(S)SRm	WLOSRRm	WLOSRRm	POSLOKR ₁₆	POSLOKR ₁₆		
	BLWOSRm2	BLWOSRm2			GLKOSRf	GLKOSRf	POSLOKRf1 ₁₈	POSLOKRf1 ₁₈	LOSBRf	LOSBRf	WOSLWOPRf1 ₁₈	WOSLWOPRf1 ₁₈	TOSLGRf	TOSLGRf	ROSLOKRm1 ₁₆	ROSLOKRm1 ₁₆		
	SORLGRf2	SORLGRf2			GOTLYOSR ₁₈	GOTLYOSR ₁₈	YOSLGRm2	YOSLGRm2	LOSBOBR ₁₉	LOSBOBR ₁₉	WOSLWOPRf1 ₁₈	WOSLWOPRf1 ₁₈	LOGLORR ₁₉	LOGLORR ₁₉	OOSLWOPRf1 ₁₈	OOSLWOPRf1 ₁₈		
	(WO)SLKRm3	(WO)SLKRm3					YOSLGRf2 ₁₈	YOSLGRf2 ₁₈	GOTLOOSR ₁₉	GOTLOOSR ₁₉	POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	OOSLWOPR ₁₉	OOSLWOPR ₁₉	GOSLWOSR ₁₉	GOSLWOSR ₁₉		
	YOPLLOSRRf3 ₁₅	YOPLLOSRRf3 ₁₅					TOSLOOGR ₁₉	TOSLOOGR ₁₉			POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	OOSLWOPR ₁₉	OOSLWOPR ₁₉	YOSLWOSR ₁₉	YOSLWOSR ₁₉		
	ROSLOKR ₁₉	ROSLOKR ₁₉					ROSLOKR ₁₉	ROSLOKR ₁₉			POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	YOSLWOSR ₁₉	YOSLWOSR ₁₉		
													POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	YOSLWOSR ₁₉	YOSLWOSR ₁₉		
													POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	YOSLWOSR ₁₉	YOSLWOSR ₁₉		
													POPLOPRf1 ₁₈	POPLOPRf1 ₁₈	YOSLWOSR ₁₉	YOSLWOSR ₁₉		
YOUNG Hatched in 2020	OOTLGOOR ₂₀	OOTLGOOR ₂₀	None	None	None	None	None	None	None	None	KOTLGOOR ₂₀	KOTLGOOR ₂₀	YOGLLOSR ₂₀	YOGLLOSR ₂₀	None	None		
											BOSLBOBR ₂₀	BOSLBOBR ₂₀	BOSLPOWR ₂₀	BOSLPOWR ₂₀				
"ADULTS"	LakeApproach ⁴		Gully ⁷		BackBait		TenEleven		FalseMack		HelenMackenzie ⁸		Canada Jay Naming System					
	(GLRO)SRm1	(GLRO)SRm1	POTLBOBRm ₁₈	POTLBOBRm ₁₈	GOSLBRm	GOSLBRm	TLOOSRm	TLOOSRm	RLROSRm	RLROSRm	TOSLWR ₁₇	ROSLOPR	Name is based on each bird's unique combination of coloured bands (brackets indicate a lost band; subscript is year hatched)					
	SOBLLOKRf1 ₁₆	SOBLLOKRf1 ₁₆			KLROSRf	KLROSRf	GLGOSRf ₁₇	GLGOSRf ₁₇	LOSLOKRf ₁₇	LOSLOKRf ₁₇	OOSLWOPR ₁₆	OOSLWOPR ₁₆	O = Over (when 2nd letter or 3rd last) or Orange					
	LLPOSRm2 ₁₇	LLPOSRm2 ₁₇			GOSLTRm	GOSLTRm	POSLYOVR ₁₉	POSLYOVR ₁₉	LOSLOYOVRm ₁₈	LOSLOYOVRm ₁₈	WOPLOKR ₁₇	WOPLOKR ₁₇	L = Left (when 2nd or 4th letter) or Light green					
	KLWOSRf1 ₁₇	KLWOSRf1 ₁₇			ROBLWOSRf ₁₇	ROBLWOSRf ₁₇					KORLWOSR ₁₉	KORLWOSR ₁₉	R = Right (when last letter) or Red	K = pink				
					TOSLYOBR ₁₈	TOSLYOBR ₁₈					LORLWOSR ₁₉	LORLWOSR ₁₉	Y = Yellow	T = light blue	N = brown			
							(BOSL)OPR ₂₀	(BOSL)OPR ₂₀	None	None	BOGLYOSR ₂₀	BOGLYOSR ₂₀	S = Standard	B = dk Blue	D = grey			
							(ROSL)GOYR ₂₀	(ROSL)GOYR ₂₀			ROSLTOPR ₂₀	ROSLTOPR ₂₀	P = Purple	G = dk Green	W = White			
											WOBLOSR ₂₀	WOBLOSR ₂₀	Example: ROSLTOGR ₁₉ = Red O ver S tandard Left, light T blue					
											POSLOKR ₂₀	POSLOKR ₂₀	O ver dark Green Right (hatched in 2019)					

¹Sex, if known, indicated by "m" or "f". Breeders listed first (but see footnote 2).

²Year 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 means bird was hatched in 2016 or earlier ("16-")

³Female position vacant in both June and September

⁴Two or more pairs attempted to nest on this territory. Rank of breeder indicated by number after its name and sex

⁵The primary male (KOSLKR) built a nest with the primary female (GLWOSR) but he disappeared during the incubation period. GLWOSR may mate with secondary male (BLROSR) in 2021?

⁶The secondary Campground pair was formed by BOSLPR (at least 4 years old) and YOSL(GO)PR a 2018 juvenile banded on Helen Mackenzie territory

⁷The Gully nest was not found but its existence strongly indicated by pair's behaviour and subsequent disappearance and reappearance of female at appropriate times.

⁸Helen Mackenzie nest has never been found and breeder identity is uncertain

⁹In list of RealRabbit territory jays, the horizontal lines separate the two breeding pairs and their respective fledglings

Table 1. Occupants of 22 Canada Jay territories in Paradise Meadows study area in June (grey columns) and "fall" (ca October 1) 2020. In contrast to the Boreal morphotype population studied in Algonquin Park, Ontario, this population of the Pacific morphotype shows very little over-summer mortality.

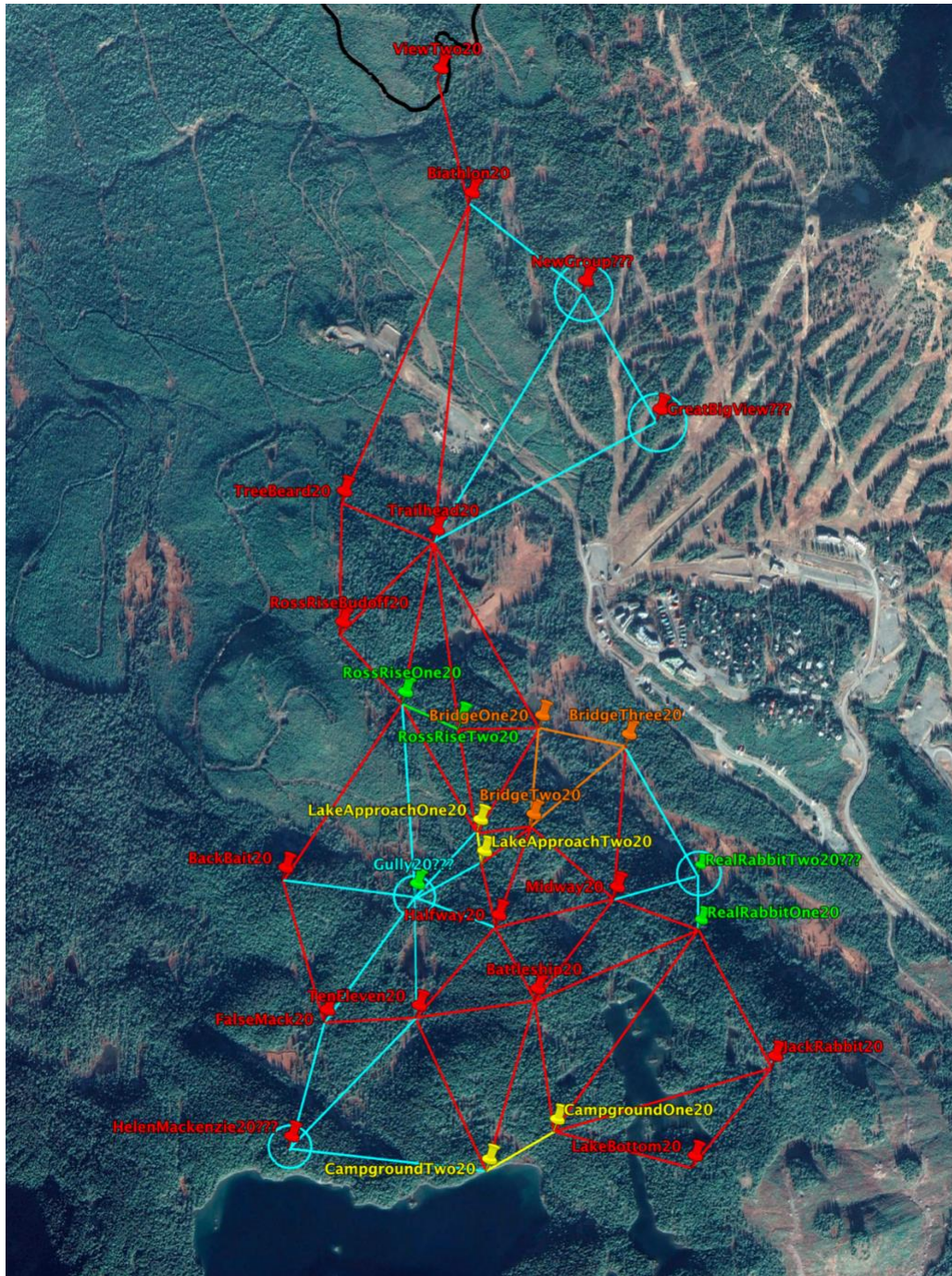


Figure 1. Paradise Meadows 2020 nest locations. Red indicates single nesting pair on named territory. Cyan circles enclose probable location of nests not actually found. There were two nesting pairs on the Campground, RealRabbit, LakeApproach, and Rossiter's Rise territories (nest locations shown in yellow or green) and three nesting pairs on the Bridge territory (nest locations shown in orange). The mean distance between nests was 480 metres, corresponding to a mean territory size of ca 20 hectares.



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Figure 2. TOSLKR, the secondary male on the Rossiter's Rise territory, carrying a twig to his unfinished nest, April 6, 2020, Photo by Blair Dudeck



Figure 3. LOSLKR, the FalseMack female begging at her mate, RLROSR, March 29, 2020. Photo by Blair Dudeck



Figure 4. LOSLYOOR, a 2-year-old nonbreeder still on his natal territory (FalseMack) feeding his stepmother, LOSLKR, March 29, 2020. Photo by Blair Dudeck



Figure 5. The primary LakeApproach pair, GLROSR and SOBLLOKR, mating, March 26, 2020, Photo by Blair Dudeck.



Figure 6. Megan Buers and Blair Dudeck at TreeBeard nest tree, April 6, 2020.

