

OCCURRENCE OF BIRDS
ON THE VERMILION PASS BURN
KOOTENAY NATIONAL PARK

by

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PROJECT REPORT

SUMMER 1970

OBSERVATIONS

SPARROW HAWK (*Falco sparverius*)

July 16, 12:15 pm, one pair seen 50 yards northeast of plot #2. Male chasing female, male enters nest hole in top of broken off and charred tree, then leaves and female enters. Both calling consistently.

Altitude: 5400 feet.

Weather: warm (65), slightly overcast and calm.

July 30, 10:02 am, adult female flew to same nesting site as above, then fed young and flew to a treetop perch 20 yards south. Young calling incessantly from charred tree home.

Altitude: 5400 feet.

Weather: cool, damp, 50% overcast.

August 6, 2:05 pm, heard a sparrow hawk calling from near the base of Mount Whympfer, but could not see it. Plot #2.

Altitude: 5500 feet.

Weather: sunny, warm (75), clear.

BLUE GROUSE (*Dendragapus obscurus*)

August 13, 10:25 am, a female and three young feeding along roadside at base of transect to plot #10 and on north side of highway. Moving Stanley Glacier Trail sign. (See footnote at end of this section.)

Altitude: 4950 feet.

Weather: overcast and cool.

SPOTTED SANDPIPER (*Actitis macularia*)

July 23, 11:45 am, one flying upstream low over the Vermilion River from base of plot #8.

Altitude: 5300 feet.

Weather: sunny, breeze, 70% overcast.

RUFIOUS HUMMINGBIRD (*Selasphorus rufus*)

August 20, 12:22 pm, female or immature visited a fireweed for a few seconds near plot #2 before darting off towards the highway, flying at about four feet above the ground.

Altitude: 5400 feet.

Weather: sunny, warm (70), stark blue sky.

Plot 12: The transect to this plot starts at survey point 528 along the B/W Parkway and is 325.9 feet long. To reach it one must cross a log bridge about 50 yards downstream from its inception with the Vermilion River, and walk back along the shore.

INFORMATION SLIPS

Information about each species seen or heard was written down on record cards or information slips designed especially for use in bird study. Below is an example completely filled out:

SPECIES NORTHERN 3-T'D WOODPECKER		DAY 23	MONTH JULY	YEAR 19 <u>70</u>	TIME OF DAY 2:15 p.m/
EXACT LOCATION BASE OF TRANSECT, PLOT # 10				ALTITUDE 5300'	
TOTAL NUMBER 3	NUMBER OF EACH, AGE, AND SEX 2 IMMATURES, 1 ADULT			PERTINENT WEATHER SUNNY CALM 90% OVER-CAST	
BEHAVIOUR ADULT ON SCORCHED ENGELMANN SPRUCE KNOCKING OFF BARK CHIPS; VERY AGGRESSIVE, BUT MAKING NO NOISES. IMMATURES CLINGING TO SEPARATE CHARRED TREES, "PEEPING" AND HAMMERING A LITTLE.					
HABITAT SEMI-OPEN SPRUCE FOREST. CONSIDERABLE GREEN UNDERGROWTH, INCLUDING HERBS BUSHES AND MOSS. SOME LIVE TREES.					
RETURN TO: INTERPRETIVE SERVICE, KOOTENAY NATIONAL PARK					
					M.I.C.

Plot 4: The origin of the transect to this plot is survey point 460 on the B/W Parkway. It is marked by a blue ribbon in a ravine across from the eastern end of the road guide directly northeast of the Stanley Glacier sign. The transect itself is 794.1 feet long and is fairly steep.

Plot 6: To reach plot #6 one must walk in off the parkway just east of the Marble Canyon point of interest, at the Tokumm Creek hiking trail sign. Following a fire guard up and to the right for over 1000 feet leads one to the place of origin of the transect. It is 209.8 feet in length. There is a southeastward slope to the land.

Plot 8: This transect starts at a point along the CPR cutline. However, due to the length of time required to reach this plot, it was considered adequate to traverse only the cutline. This cutline begins at survey point 443 on the B/W Parkway, and runs in an easterly direction up Storm Mountain for a little over one mile to where the upper weather station is located. This is where the traverse ends. In all there is a vertical rise of nearly 1000 ft.

Plot 10: The transect to plot #10 begins at survey point 492 on the B/W parkway, between the Stanley Glacier Trail sign and the first bend in the road going towards Radium. One must cross the Vermilion River via two fallen logs, then walk back along the shore a short distance until the ribbons are sighted. This transect extends for 1806.2 feet and slopes to the northwest.

DAY II (JULY 23) PLOT #

10:05 - 10:45 am	4	2:15 - 2:45 pm	10
10:50 - 11:25 "	2	2:50 - 3:10 "	12
11:45 - 1:15 pm	8	3:15 - 3:45 "	6

DAY III (JULY 30)

9:55 - 10:25 am	2	1:00 - 1:30 pm	12
10:30 - 11:35 "	8	1:35 - 2:00 "	6
11:45 - 12:30 pm	10	2:15 - 2:45 "	4

DAY IV (AUGUST 6)

10:00 - 11:25 am	8	1:00 - 1:30 pm	6
11:30 - 12:10 pm	10	1:35 - 2:00 "	4
12:15 - 12:45 "	12	2:05 - 2:35 "	2

DAY V (AUGUST 13)

10:40 - 11:10 am	10	1:35 - 1:50 pm	6
Steady downpour of rain		1:55 - 2:14 "	4
1:10 - 1:25 pm	12	Another long downpour	

DAY VI (AUGUST 20)

10:00 - 10:40 am	12	12:15 - 12:45 pm	2
10:50 - 11:25 "	6	1:20 - 3:10 "	8
11:35 - 12:10 pm	4	3:20 - 4:00 "	10

PLOT LOCATIONS

Plots 2, 4 and 6 are located north of the Banff-Windermere Parkway (B/W Parkway).

Plots 8, 10 and 12 are south of it.

Plot 2: The transect to plot #2 begins at survey point 421 on the B/W Parkway. It is 509.9 feet long. A blue ribbon marks its origin just to the right of a white post on the road allowance. The landscape slopes gently southward.

PROCEDURE

Choosing Transects. Because of a time limitation of about five hours per project day, the baselines of only six of the twelve vegetation plots on the Vermilion Pass burn were chosen as transects in the bird study. These were the even-numbered plots.

Dates. The project days were July 16, 23, and 30; and August 6, 13 and 20.

Field Routine. With the same number of project days as plots, it was possible to visit each plot at six different times of day throughout the study period. For example, on the initial day the first plot visited was #6, then #4, #2, #8, #10, #12. The second day began at plot #4 and then finished at plot #6, and so on. Arrival time at the base of the first transect was usually 10:00 am. Earlier arrivals were rarely possible, since project day coincided with the need for someone to drive information people up to the Marble Canyon trailer. Departure time from the last transect was normally 3:30 pm. Between 30 and 75 minutes were required for field-work along each transect to a from each respective plot.

Below is an outline of time spent at each plot as well as along its transect on each of the study days.

DAY I (JULY 16) PLOT

10:15 - 11:00 am	6	1:45 - 2:30 pm	8
11:15 - 11:40 "	4	2:40 - 3:20 "	10
11:50 - 12:30 pm	2	3:25 - 3:45 "	12

The methodology of the project was considered a major limiting factor in the fieldwork. It was not adjusted to the burn environment, nor to the activity of birdlife thereon. The need was realized for:

- A. a new timetable for fieldwork constructed with "sun time" in mind;
- B. more trails or transects leading across selected areas of the burn environment; and
- C. an earlier start on the project, say at least by the first week in July.

It was suggested furthermore that:

- D. more extensive research be carried out on the subject of bird succession in the literature, and
- E. the investigator become more adept at identifying the various species by song while keeping better field notes.

As outlined in the following paragraphs, these needs have been satisfied in part during the 1970 season.

REFERENCES

Included in the 1969 report is a bibliography of research that has been done which relates to our study of the Vermilion Pass burn. Only a few of the 82 selected works have been reviewed thus far, and nothing further has been added to the list. One new textbook has been purchased by the investigator: A LABORATORY AND FIELD MANUAL OF ORNITHOLOGY, by Olin S. Pettingill Jr. Also, the park naturalist has acquired A FIELD GUIDE TO WESTERN BIRD SONGS (record, Peterson Field Guide series).

INTRODUCTION

In 1969 a study was begun of what types of birds utilize the Vermilion Pass burn. Yearly surveys of this sort may reveal an emerging pattern of bird succession there. The initial report, entitled BIRDS OF THE BURN, is available from the park naturalist. The following is a summary of that report.

A preliminary survey of birds on the Vermilion Pass burn was conducted during August of 1969. The investigator used as a transect the Stanley Glacier Trail, which trends across the southern portion of the burn. A 1.4 mile section of the trail was traversed from the lower bridge, at 5100 feet, to the upper bridge, which crosses the Stanley Creek at 5600 feet. Stops were made at fifteen minute intervals to listen and to watch for birds, simultaneously recording all observations on special cards. Friday mornings were set aside for the project, and visits were made on August 8, 15 and 22.

The information obtained was fragmentary. Only five birds of four species were observed during the three field trips. In addition, however, forty-four birds of eight species were seen in various locations on the burn at different times throughout the summer. It was evident that a large segment of the bird population of the burn remained unsampled during the fieldwork.

NORTHERN THREE-TOED WOODPECKER (continued)

August 21, 10:00 am, one immature sighted as it chipped away at the bark of a fallen Engelmann spruce. Then it flew to a standing spruce, and with every 'hammer' made a 'peep' sound. Plot #10.

Altitude: 5100 feet.

Weather: sunny and hot, no breeze, completely blue sky.

OLIVE-SIDED FLYCATCHER (*Nuttallornis borealis*)

July 30, 1:50 pm, one male calling from spruce forest (unburnt) southwest of plot #6.

Altitude: 5300 feet.

Weather: cool, breeze, 75% overcast.

August 6, 12 noon, one calling from some very slightly scorched trees 50 yards to the northwest of plot #10.

Altitude: 5100 feet.

Weather: clear, sunny and warm, steady breeze.

August 6, 1:00 pm, one male singing in an unburnt stand of spruce 150 feet southwest of plot #6.

Altitude: 5300 feet.

Weather: clear, breeze, hot.

August 20, 3:30 pm, plot #10, one male calling from the top of a dead, thin pole in the midst of the burn part way up to the plot. Call is somewhat of a 'turp', actually four successive 'turps', with the accent on the third.

Altitude: 5200 feet.

Weather: hot, completely blue sky, slight breeze.

RAVEN (*Corvus corax*)

July 16, 11:30 am, plot #2, one sitting on top of dead 50 foot tree 60 yards south of highway and exactly even with the 414 survey mark on the road. Calling.

Altitude: 5400 feet.

Weather: warm (65), slight cloud cover, calm.

July 16, 2:25 pm, plot #8, one gliding from south side of road to north, low and into the trees near the base of this transect.

Altitude: 5300 feet.

Weather: warm (70), some clouds, very slight breeze.

RUFIOUS HUMMINGBIRD (continued)

Park Naturalist Ian D. Jack has mentioned that he saw a dozen or more hummingbirds one early August afternoon this year (70) on the burn just across from the continental divide monument.

RED-SHAFTED FLICKER (*Colaptes cafer*)

July 16, 12:30 pm, one heard northeast of plot #2 in a tract of charred trees. Later heard on south side of highway across from the base of the transect.

Altitude: 5500 feet.

Weather: warm (65), slightly overcast and calm.

July 16, 2:30 pm, one flying across highway to a position at base of CPR cutline, then disappeared from sight. Plot #8.

Altitude: 5300 feet.

Weather: warm, somewhat overcast, but calm.

NORTHERN THREE-TOED WOODPECKER (*Picoides tridactylus*)

July 23, 1:00 pm, one heard 'hammering' along cutline (CPR), then flew towards northeast. Plot #8.

Altitude: 6000 feet.

Weather: sunny, breeze, 70% overcast.

July 23, 2:15 pm, one adult and two young at base of transect to plot #10. Adult on scorched spruce tree, knocking off bark chips. Very aggressive but silent at its work. Immatures clinging to another charred tree, 'peeping' and hammering now and then.

Altitude: 5100 feet.

Weather: sunny, calm, 90% overcast.

August 6, 11:45 am, one immature seen near base of transect knocking off bark chips from scorched, dead spruce tree.

Altitude: 5100 feet.

Weather: sunny and hot, calm stark blue sky.

August 13, 10:50 am, two young chipping off bits of bark of Engelmann spruce, about 100 yards from river on west side of transect. Making squeaking noises like a rubber toy. Plot #10.

Altitude: 5100 feet.

Weather: overcast and cool.

CLARKE'S NUTCRACKER (*Nucifraga columbiana*)

July 16, 10:30 am, plot #6, croaking calls heard near plot, but source could not be located, since there are dense groves of live and growing spruces nearby.

Altitude: 5400 feet.

Weather: warm (60), some clouds, almost no breeze.

July 16, 11:30 am, plot #4, one heard calling from near base of Mount Whympier.

Altitude: 5600 feet.

Weather: warm (65), slight cloud cover, calm.

July 16, 12 noon, plot #2, some heard near base of Mount Whympier, and others heard calling from south side of the highway.

Altitude: 5600 feet.

Weather: slightly overcast and calm, about 65.

July 16, 12:20 pm, plot #2, one heard calling 'sure, sure' southwest of the plot about 150 yards away, near highway.

Altitude: 5400 feet.

Weather: slightly overcast, calm, warm.

July 16, 2:15 pm, plot #8, one flying to top of dead tree near upper weather station on CPR cutline.

Altitude: 6500 feet.

Weather: warm, calm, and overcast.

July 16, 2:45 pm, plot #10, two seen and heard calling in area of plot.

Altitude: 5100 feet.

Weather: warm, overcast and calm.

July 23, 11:00 am, plot #2, one calling near base of Mt. Whympier 300 yds. northwest of plot.

Altitude: 5600 feet.

Weather: sunny, breeze, 35% overcast.

July 23, 12:20 pm, plot #8, one calling from spruce forest west of lower weather station.

Altitude: 5400 feet.

Weather: sunny, overcast, calm.

July 23, 12:35 pm, plot #8, two pairs half-way between lower and upper weather stations, calling from spruce grove just to west of CPR cutline.

Altitude: 5800 feet.

Weather: sunny, slight breeze, 60% overcast.

CLARKE'S NUTCRACKER (continued)

July 30, 9:55 am, plot #2, three seen and heard calling as they flew about in trees out of highway.

Altitude: 5200 feet.

Weather: cool, damp, 50% overcast.

August 13, 1:50 pm, plot #6, one flying from slightly burned area to the southwest, to an unburned forest grove further east toward Stanley Pk.

Altitude: 5300 feet.

Weather: overcast and cool, some drizzle.

August 20, 12:05 pm, plot #4, one seen flying southwesterly over the plot at about 150 feet and towards Vermilion Peak.

Altitude: 5500 feet.

Weather: sunny, warm (70), blue sky.

MOUNTAIN CHICKADEE (*Parus gambeli*)

July 16, 10:25 am, plot #6, heard call notes 'fee-bee-bee' near plot, but could not see the bird itself.

Altitude: 5300 feet.

Weather: warm (60), some clouds, negligible breeze.

RED-BREASTED NUTHATCH (*Sitta canadensis*)

July 16, 10:35 am, plot #6, one heard northwest of plot in burned area.

Altitude: 5500 feet.

Weather: warm, some clouds, almost no breeze.

July 16, 10:40 am, plot #6, another heard in living spruce southwest of plot.

Altitude: 5200 feet.

Weather: warm, some clouds, little breeze.

August 6, 1:05 pm, plot #6, one heard 50 yards southwest of plot in stand of unburnt timber.

Altitude: 5200 feet.

Weather: completely blue sky, sunny and hot. slight breeze.

ROBIN (*Turdus migratorius*)

July 16, 11:45 am, plot #8, one male feeding on road allowance across highway from base of CP⁴ cutline.

Altitude: 5200 feet.

Weather: slightly overcast and calm, about 65.

ROBIN (ontinued)

July 16, 2:25 pm, plot #8, one male at base of CPR cutline sitting in a large dead tree.

Altitude: 5300 feet.

Weather: warm (70), some clouds, very slight breeze.

July 16, 3:20 pm, plot #10, one male heard singing about 200 yards southwest of transect.

Altitude: 5200 feet.

Weather: warm, slightly overcast and calm.

August 6, 12 noon, plot #10, one heard in scorched trees about half-way to the plot.

Altitude: 5300 feet.

Weather: clear, calm, hot.

August 13, 10:40 am, plot #10, one male seen singing from clump of unburnt trees on north side of highway.

Altitude: 5200 feet.

Weather: overcast and cool.

August 20, 11:25 am, plot #6, one male collecting worms and insects just above road allowance near start of fire road, flew south to other side of highway and landed in a large tree in a tract of unburnt forest to observe us.

Altitude: 5000 feet.

Weather: clear, hot and calm.

VARIED THRUSH (*Ixeorus naevius*)

July 16, 10:15 am, plot #6, heard piping notes southwest of plot in unburnt forest.

Altitude: 5300 feet.

Weather: warm, slightly overcast and calm.

July 30, 1:50 pm, plot #6, notes heard about 200 yards east of plot and 40 yards removed from the fireguard.

Altitude: 5250 feet.

Weather: sunny, breeze, warm (65), 70% overcast.

HERMIT THRUSH (*Hyllocichla guttata*)

July 16, 10:20 am, plot #6, male heard singing in spruce wood southwest of plot.

Altitude: 5300 feet.

Weather: warm, slightly overcast and calm.

HERMIT THRUSH (continued)

July 16, 3:20 pm, one male heard singing about 200 yards southwest of plot #10.

Altitude: 5300 feet.

Weather: warm, slight breeze, some clouds.

July 23 12:45 pm, plot #8, one male calling from island of semi-scorched spruce trees one-eighth of a mile northeast of the upper weather station.

Altitude: 6200 feet.

Weather: sunny, breeze, 70% overcast.

July 30, 11:15 am, one male singing in unburnt trees 50 yards to the southwest of upper weather station, plot #8.

Altitude: 6200 feet.

Weather: cool, damp, 50% overcast.

SWAINSON'S THRUSH (*Hylocichla ustulata*)

July 16, 11:25 am, plot #4, one heard in an island of unburnt spruce trees near highway, ascending notes.

Altitude: 5400 feet.

Weather: warm (65), slight cloud cover, calm.

MOUNTAIN BLUEBIRD (*Sialia currucoides*)

July 23, 1:05 pm, plot #8, pair seen in upper reaches of CPR cutline near previously burned site (as evidenced by grey-bleached tree trunks), on north side of cutline. Acting as if had nest.

Altitude: 5900 feet.

Weather: sunny, some breeze, 70% overcast.

TOWNSEND'S SOLITAIRE (*Myadestes townsendi*)

July 23, 11:10 am, plot #2, single note heard several times in vicinity of highway.

Altitude: 5300 feet.

Weather: 35% overcast, sunny, breeze.

PINE SISKIN (*Spinus pinus*)

July 23, 12:50 pm, plot #8, five or six calling in burnt trees to the northwest of lower weather station.

Altitude: 5500 feet.

Weather: 70% overcast, sunny, breeze.

PINE SISKIN (continued)

August 6, 10:23 am, plot #8, one calling about 70 yards northeast of cutline directly below 6000 foot level.
Altitude: 5950 feet.
Weather: clear, sunny, slight breeze.

SLATE-COLORED JUNCO (*Junco hyemalis*)

July 16, 10:30 am, plot #6, one twittering in spruce forest to the southwest of plot, and another on southeast edge of spruce forest.
Altitude: 5200 feet.
Weather: warm (60), some clouds, little breeze.

July 16, 10:40 am, plot #6, one heard on northeast edge of burned area above this plot.
Altitude: 5350 feet.
Weather: warm (60), some clouds, little breeze.

July 16, 11:20 am, plot #4, one heard in spruce forest near to the plot.
Altitude: 5500 feet.
Weather: warm (65), slight cloud cover, calm.

July 16, 3:50 pm, plot #12, one heard south of plot in an island of unburnt spruce.
Altitude: 4900 feet.
Weather: warm, slightly overcast, and calm.

July 23, 10:25 am, plot #4, one calling 50 yards southwest of plot in spruce forest .
Altitude: 5100 feet.
Weather: 30% overcast, sunny, slight breeze.

July 30, 11:03 am, plot #8, one heard in partially burned spruce grove 70 yards northeast of cutline at 6200 foot level.
Altitude: 6200 feet.
Weather: cool, damp, 50% overcast.

July 30, 1:45 pm, plot #6, one flying southwest along a cutline towards road and calling as doing so.
Altitude: 5300 feet.
Weather: cool, breeze, 75% overcast.

August 20, 10:20 am, one heard calling in underbush near base of transect of plot #12.
Altitude: 5000 feet.
Weather: sunny, hot, blue sky, no wind.

OREGON JUNCO (*Junco oreganus*)

July 16, 2:20 pm, plot #8, one on cutline feeding on ground near the stream below lower weather station.

Altitude: 5400 feet.

Weather: warm (70), slight breeze, some clouds.

July 23, 10:25 am, one calling 50 yards southwest of plot in spruce forest, plot #4.

Altitude: 5400 feet.

Weather: sunny, breeze, overcast.

July 23, 1:00 pm, plot #8, one seen on CPR cutline between upper and lower weather stations. It was feeding on ground amongst grasses and herbs in a large clearing near an old burn (where trunks are whitish).

Altitude: 5900 feet.

Weather: sunny, breeze, 70% overcast.

August 6, 11:40 am, two males giving 'chip, chip' alarm notes from small shrubs and lower branches of trees at base of plot #10.

Altitude: 5100 feet.

Weather: sunny and hot, calm, stark blue sky.

CHIPPING SPARROW (*Spizella passerina*)

July 16, 10:50 am, plot #6, pair feeding and calling in spruce trees 100 yards east of plot along fire guard.

Altitude: 5900 feet.

Weather: warm, some clouds, almost no breeze.

Footnote: The blue grouse has probably not been seen on the Vermilion Pass burn before the sighting here was made. Sinceptarmigan can be found in the higher reaches of the area during summer, but descend to lower altitudes later on, a description of the birds is in order.

Female: variously dark gray, brown and whitish mottled; an obvious dark band across the upper breast and around the shoulders; blackish outer tail feathers; reddish leggings; white mottlings under tail and on wing tips; pure gray underside; no eye markings.

Immatures: more whitish mottlings than female; reddish-brown caps; buffy gray under lower mandible and below eyes; darker gray on hindneck and shoulders.

DISCUSSION AND CONCLUSION

The number and variety of birds on the Vermilion Pass burn this past summer was indeed a significant change from the few seen in 1969. This change is probably attributable firstly to the increased habitability of the fired over area for birds. Secondly, the new and more involved methodology is no doubt responsible to a considerable degree. Visiting six different transects once a week for six weeks should have guaranteed more data than what was yielded by visiting one transect once a week for three weeks as during the previous summer.

Other important factors to consider in this respect are that the study was begun three weeks earlier this summer, and that at least two transects bordered or ran across unburnt timber close to the forest edge. An edge environment usually harbors more organisms, both in variety and numbers. In future, for purposes of comparison, there should be at least one transect lying entirely within the undisturbed forest that surrounds the burn. This, in a sense, would act as a control transect.

Research activity in the field should, in future, begin directly after the Jasper conference, and it should continue only until the second week in August. Two reasons for this are: a) In the north end of KNP the summers are considerably shorter than those further south, and the bird population rapidly dwindles by early August. b) There must be enough time remaining after field work is completed in which to write up an adequate report.

The somewhat unwieldy information slip in present use could be replaced by one which fits neatly into a field guide. That designed by Judy Tuttle for use in her herpetile study in the park is a useful prototype. Slightly modified, it might prove useful in recording observations of any wildlife forms--plant, animal or bird. Below is a suggested format:

<u>BIOLOGY OF KOOTENAY NATIONAL PARK</u>	
SPECIES	_____
LOCALITY	_____

DATE/TIME	_____
WEATHER	_____

TOPOGRAPHY	_____

ELEVATION	_____
VEGETATION	_____

ACTIVITY	_____

ADDITIONAL INFORMATION	_____

OBSERVER	_____

This format is of such a size as to allow four observation cards to be printed on one sheet of $8\frac{1}{2}$ x 14 typewriter paper, with virtually no waste accruing from the cutting out.

The 21 species of birds observed on the Vermilion Pass burn this past summer indicates that the work of meshing together life's web on such an empty-looking landscape has already begun, and may in fact be accelerating. Such a variety of birds gives us the opportunity of studying many things besides mere bird occurrences. For ease in recording field observations, grid maps of each plot and transect area should be drawn up and photostatted as an adjunct to the new observation cards. From a series of grid maps filled out during the summer, conclusions can be arrived at concerning population densities, nesting frequencies and territoriality of the various species. These and other factors could then be compared to those operating within a control area, helping to reveal the interdependencies functioning on the burn as compared with those in a climax spruce/fir forest. Ideas for acceptable procedures to follow in any of this work might be gleaned from recent papers and from Anthony J. Erskine, a CWS ornithologist now working out of Ottawa (address: 1215 Agincourt Road, Ottawa 5, Ontario).

One must never lose sight of the fact that everything we do as naturalists is meant, in the long run, to enhance our interpretive messages to park visitors. Sometimes it is particularly difficult to rise out of an objective frame of mind. For example, summer scientific projects like this bird study. They

certainly make for better-informed naturalists, requiring, in addition to field research, extra reading during the communication period. In general, I suppose, they make for more professional naturalists because they tend to broaden one's horizons. This occurs partly as a result of digging out new information, and partly from the very act of doing research. Having an appreciation for the scientific method through actually working with it encourages a "togetherness" with the scientists and researchers upon whose work we base our various interpretive efforts. However, it is a simple matter to permit this type of "togetherness" to supercede the much more important "togetherness" a naturalist must have with every other living thing in nature.

How successful a person in the naturalist line can be in handling the research type of project stems largely from whether he or she can allow the "scientific togetherness" to compliment rather than dominate the "nature togetherness." Our effectiveness lies not so much in the scientific facts we can lay at a park visitor's feet, nor in the responsibilities we hoist onto his shoulders, but in the spiritual consciousness of the park surroundings which we foster within him. If success in this regard is maintained, even through increased sophistication of a project, the time was well spent.

There are many different ways in which project time may be spent: planning new trails, constructing imaginative displays, writing pamphlets, etc. Projects such as this one on birds, dealing with ecological succession, inevitably take several years to complete. They may be On-going types of studies having no

definite time limit. The question must be asked and the answer to it repeatedly evaluated: Do the long term benefits of such a study outweigh the need for short-term results useful in the interpretive program? The answer depends on the chief naturalist, and on the characteristics of the park interpretive program which the project is meant to compliment. It depends also on the individual naturalist concerned.

Up to now the bird study on the Vermilion Pass burn has been exceedingly worthwhile, in many more respects than I could list. Most importantly, the groundwork has been laid down for a more involved project that could yield significant data on population densities, nesting frequencies and territoriality of the burn's birdlife. From what I understand, there will be several researchers active on the burn next summer, and the information which they provide will help us piece together a more complete picture of bird ecology and succession there.

My thanks are due to Ian D. Jack, KNP Chief Park Naturalist, for his direction and assistance throughout the project period.

BIRD SIGHTINGS IN
KOOTENAY NATIONAL PARK
AND VICINITY

APPENDIX I

1970

COMMON LOON (*Gavia immer*)

May 28, 6:15 am, one swimming slowly across and occasionally diving in the backwater slough behind Radium sawmill.

Altitude: 2700 feet.

Weather: cool, partly sunny, calm.

June 14, 6:00 pm, three swimming at south end of Dog Lake. Not distinguishable as to age and sex.

Altitude: 3800 feet.

Weather: showers, windy.

(G.H. Keesey)

RED-NECKED GREBE (*Podiceps grisegena*)

May 28, 6:20 am, one swimming low in water, preening and diving in middle of slough behind Radium sawmill.

Altitude: 2700 feet.

Weather: cool, partly sunny, calm.

May 28, 7:35 am, two swimming, diving and occasionally calling from different part of slough behind Radium sawmill than the one above.

Altitude: 2700 feet.

Weather: cool, partly sunny, calm.

HORNED GREBE (*Podiceps auritus*)

May 17, 5:00 pm, one swimming and diving at Sam's Folly Lake, on West Side Road behind Radium. Lodgepole pine forest, reedy pond.

Altitude: 3600 feet.

Weather: calm, sunny, warm.

CANADA GOOSE (*Branta canadensis*)

May 28, 6:15 am, one pair sitting in water near muskrat house at south end of slough behind Radium sawmill, honking loudly, necks up-stretched, on the alert.

Altitude: 2700 feet.

Weather: cool, calm, mostly overcast.

May 28, 7:55 am, 13 flying overhead, circling and heading down to Columbia River beyond sawmill behind Radium.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

MALLARD (*Anas platyrhynchos*)

May 7, 12:30 pm, two pairs swimming about on sewage lagoon in Redstreak garbage disposal area of KNP.

Altitude: 3400 feet.

Weather: warm, slightly cloudy, calm.

MALLARD (continued)

May 27, 9:20 am, two pairs swimming at Kootenay Pond.
Altitude: 4100 feet.
Weather: sunny, calm, cool.

May 28, 6:15 am, seven males and one female swimming about, feeding on surface, and upending for submerged aquatics at slough behind the Radium sawmill.
Altitude: 2700 feet.
Weather: calm, slightly sunny, cool.

June 4, 7:20 pm, two females, plus one female with 10 young swimming along shoreline of sewage lagoon behind Redstreak Campground.
Altitude: 3400 feet.
Weather: warm, clear, breeze from west.

GREEN-WINGED TEAL (*Anas carolinensis*)

June 4, 7:20 pm, one pair swimming at Redstreak sewage lagoon.
Altitude: 3400 feet.
Weather: warm, clear, breeze from west.

BLUE-WINGED TEAL (*Anas discors*)

May 28, 6:14 am, four males and one female swimming, feeding, bobbing heads and exchanging peeps and whinnies, as in courtship. Slough behind Radium sawmill.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

CINNAMON TEAL (*Anas cyanoptera*)

May 28, 6:35 am, one pair swimming away from shore through stubble reeds at southeast end of slough behind Radium sawmill.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

REDHEAD (*Aythya americana*)

May 28, 7:20 am, one male swimming and sitting in water in company with mallards at southernmost of two major sloughs southwest of the Radium dump on west side of tracks.
Altitude: 2700 feet.
Weather: slight breeze, sunny, cool.

RING-NECKED DUCK (*Aythya collaris*)

May 17, 4:55 pm, one pair swimming on Sam's Folly Lake, just off the West Side Road beyond Radium. Reedy pond in midst of lodgepole pine forest.

Altitude: 3600 feet.

Weather: cool, calm, clear.

May 28, 7:40 am, two males feeding and diving every two or three minutes on a slough southwest of Radium dump, on west side of tracks.

Altitude: 2700 feet.

Weather: partly sunny, calm, cool.

CANVASBACK (*Aythya valisineria*)

May 23, 7:30 pm, one male swimming alone on Columbia River backwater pond behind Edgewater, B.C. Taking flight upon seeing us.

Altitude: 2700 feet.

Weather: warm, slight breeze, clear.

May 28, 7:25 am, two pairs swimming and feeding on slough southwest of the Radium dump, on west side of tracks.

Altitude: 2700 feet.

Weather: cool, partly sunny, calm.

LESSER SCAUP (*Aythya affinis*)

May 13, 11:15 am, one male swimming and diving at Kootenay Pond.

Altitude: 4100 feet.

Weather: heavy clouds, slight breeze, cold.

COMMON GOLDENEYE (*Bucephala clangula*)

May 28, 7:20 am, one female with 13 young, leading them across a pond southwest of Radium dump on east side of tracks.

Altitude: 2700 feet.

Weather: cool, partly sunny, calm.

BARROWS GOLDENEYE (*Bucephala islandica*)

May 27, 9:20 am, one male and two females swimming and feeding, as well as diving at Kootenay Pond.

Altitude: 4100 feet.

Weather: sunny, calm, cool.

BUFFLEHEAD (*Bucephala albeola*)

May 20, 1:15 pm, one male swimming on a small pond beside Columbia River behind Radium townsite. Flew to opposite end when we approached.

Altitude: 2700 feet.

Weather: warm, clear, calm.

BUFFLEHEAD (continued)

May 28, 7:20 am, one pair swimming in slough southwest of Radium dump on east side of tracks. Moved away from shore, then flew west across tracks to larger pond.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

HARLEQUIN DUCK (*Histrionicus histrionicus*)

May 13, 8:40 am, one pair swimming and sitting on rocks near mouth of Redstreak Creek.

Altitude: 3500 feet.

Weather: slightly overcast, cool, calm.

RUDDY DUCK (*Oxyura jamaicensis*)

May 17, 4:45 pm, two males and four females on pond beside West Side Road, near turnoff to Sam's Folly Lake, that is southeast of the turnoff. One male pursuing two females along reeds, while the other male pursues this male. Other two females watching from a distance.

Altitude: 3600 feet.

Weather: warm, clear, breeze.

HOODED MERGANSER (*Lophodytes cucullatus*)

May 28, 6:15 am, one male sleeping on log which was floating near some reeds and cattails, on slough behind Radium sawmill.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

GOSHAWK (*Accipiter gentilis*)

May 31, 9:40 am, one immature on south slope of Mount Wardle a few hundred feet above the goat traps. First flew east low over mountain slope, then back again at tree height. Call, two slightly nasal "quacks" or "kaks". About the size of a marsh hawk.

Altitude: 6200 feet.

Weather: cool, windy, sunny.

SHARP-SHINNED HAWK (*Accipiter striatus*)

July 3, 11:40 am, one flying about 100 feet above Redstreak Trail at Columbia River viewpoint, heading to southwest and into trees.

Altitude: 3500 feet.

Weather: mostly sunny, cool, strong wind.

RED-TAILED HAWK (*Buteo jamaicensis*)

May 13, 9:40 am, one flying at about 200 feet and heading southwest $\frac{1}{4}$ mile north of Settler's Road turnoff.

Altitude: 3700 feet.

Weather: slightly overcast, calm.

May 28, 8:35 am, one three miles south of dump road from Radium. Flew to top of D. Fir, looked at us, and disappeared over the benchland.

Altitude: 2900 feet.

Weather: cool, calm, mostly sunny.

GOLDEN EAGLE (*Aquila chrysaetos*)

May 4, 10:30 am, one seen from Kootenay viewpoint, 15 miles east of Radium. Flying and gliding quickly northwards over the valley, below actual altitude of viewpoint.

Altitude: 4400 feet.

Weather: bright, sunny, hazy.

May 13, 3:15 pm, one at beginning of Paint Pots Nature Trail. Soaring above Vermilion River to north of bridge.

Altitude: 4600 feet.

Weather: bright, calm, warm.

May 31, 10:15 am, one flying over south ridge of Mount Wardle, moving around the crest, and disappearing over it to the northwest.

Altitude: 8300 feet.

Weather: cool, sunny, windy.

July 20, 1:30 pm, one soaring low over Kindersley Pass, toward the Sinclair basin.

Altitude: 6900 feet.

Weather: sunny, warm, calm.

MARSH HAWK (*Circus cyaneus*)

May 4, 2:15 pm, one flying northwards in characteristic marsh hawk style, above administration building.

Altitude: 3400 feet.

Weather: sunny, calm, 60 F.

SPARROW HAWK (*Falco sparverius*)

May 13, 9:55 am, one male making a swoop into the grass along the highway at entrance to McLeod Meadows Campground.

Altitude: 3800 feet.

Weather: slightly overcast, calm.

SPARROW HAWK (continued)

July 16, 12:15 pm, one pair 50 yards northeast of plot #2. Male chasing female, male enters nest hole in top of broken off and charred tree, then leaves and female enters. Both calling consistently.

Altitude: 5400 feet.

Weather: warm (65 F), slightly overcast and calm.

July 30, 10:02 am, adult female flew to same nesting site at plot #2, then fed young and flew to a treetop perch 20 yards to the south. Young calling incessantly from charred tree home.

Altitude: 5400 feet.

Weather: cool, damp, 50% overcast.

August 6, 2:05 pm, heard a sparrow hawk calling near plot #2 but could not see it. Seemed to originate nearer base of Mount Whympier.

Altitude: 5400 feet.

Weather: sunny, warm (75), clear.

BLUE GROUSE (*Dendragapus obscurus*)

May 12, evening and morning, courting activities among 2 to 6 grouse near and at the Watts' residence on southwest boundary of the park.

Altitude: 3300 feet.

Weather: cool, clear in morning; warm and calm in evening.

May 10, 12 noon, one female in trees on southwestern shoulder of Mount Berland, just fringing on the Redwall Fault. Flew onto ground and then away.

Altitude: 4000 feet.

Weather: hot, clear and calm.

May 10, 2:00 pm, one female on shoulder of Mount Berland along Redwall Fault. Perched in trees, then flew to ground.

Altitude: 7500 feet.

Weather: hot, clear and calm.

June 1, 4:40 pm, one female on east side of administration building, avoidance behavior.

Altitude: 3300 feet.

Weather: hot (75), cloudless.

(C.G. Fillion)

August 13, 10:25 am, one female and three young feeding along roadside at base of transect to plot # 10, on north side of highway. Moving towards Stanley Glacier Trail sign. (See full description at the end of the observation listings in "Occurrence of Birds on the Vermilion Pass Burn Kootenay National Park.")

Altitude: 4950 feet.

Weather: overcast and cool.

SPRUCE GROUSE (*Canachites canadensis*)

June 2, 7:15 am, one pair in trees ten years north of where you cross the first little stream on Numa Creek Trail. Female sitting on forest floor, then flew up in tree; male not far away.

Altitude: 4600 feet.

Weather: warm, sunny, calm.

RUFFED GROUSE (*Bonasa umbellus*)

May 7, 8:45 am, one male heard drumming on southeastern edge of the Redstreak Campground.

Altitude: 3300 feet.

Weather: warm, calm, mostly sunny.

May 16, 6:10 pm, one female at mile three along Cross River fire road, north of KNP boundary. Walking along roadside, then shuffling into bushes.

Altitude: 4000 feet.

Weather: warm, calm, clear.

May 31, 5:45 pm, one male just above goat trap in thick coniferous forest on Mount Wardle. Flew from ground, away 8 feet and began walking stelthily. Then flew further away.

Altitude: 4000 feet.

Weather: hot, sunny, calm.

June 5, 6:20 am, one male drumming at Crook's Meadows.

Altitude: 3800 feet.

Weather: sunny, calm, cold.

COOT (*Fulica americanus*)

May 28, 6:15 am, six swimming and feeding on slough behind Radium sawmill.

Altitude: 2700 feet.

Weather: slightly overcast, calm, cool.

KILLDEER (*Charadrius vociferus*)

May 13, 11:15 am, one at Kootenay Pond, flying across the water, then walking and feeding along shore.

Altitude: 4100 feet.

Weather: heavy clouds, slight breeze, cold.

WILSON'S SNIFE (*Capella gallinago*)

May 28, 7:20 am, one swooping high in the air above Colubia River southwest of Radium dump. Tremolo quite clear.

Altitude: 2700 feet.

Weather: cool, partly sunny, calm.

SPOTTED SANDPIPER (*Actitis macularia*)

May 13, 11:15 am, one heard at Kootenay Pond.
Altitude: 4100 feet.
Weather: heavy clouds, slight breeze, cold.

May 27, 9:20 am, one heard at Kootenay Pond.
Altitude: 4100 feet.
Weather: sunny, calm, cool.

May 28, 6:20 am, one seen along mill road behind Radium and beside large slough.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

July 23, 11:45 am, one flying upstream low over the Vermilion River, near base of transect to plot #8.
Altitude: 5300 feet.
Weather: sunny, breeze, 70% overcast.

RING-BILLED GULL (*Larus delawarensis*)

July 16, 4:45 pm, one immature flying along river towards Simpson Monument.
Altitude: 4000 feet.
Weather: overcast and raining.

BLACK TERN (*Chilodrias niger*)

May 28, 7:20 am, two flying low over water and colling at southernmost of two main sloughs southwest of Radium dump, west side of tracks.
Altitude: 2700 feet.
Weather: calm, slightly sunny, cool.

ROCK DOVE (*Columba livia*)

August 13, 4:25 pm, one on highway near Hawk Creek, alive and walking. No obvious leg band.
Altitude: 4300 feet.
Weather: overcast and cool.

MOURNING DOVE (*Zenaidura macroura*)

May 16, 2:20 pm, one sitting on highway at mile 15 from western park gateway. Then flew into trees.
Altitude: 3800 feet.
Weather: warm, calm, clear.

MOURNING DOVE (continued)

May 16, 2:35 pm, one sitting and feeding beside a stump in gravelly bank of Kootenay River 50 yards south of Pitts Creek fire road bridge. Afterwards, flew across river.
Altitude: 3800 feet.
Weather: warm, clear, calm.

May 16, 6:00 pm, one flew from Cross River fire road into trees, $2\frac{1}{2}$ miles north of KNP boundary from Cross River.
Altitude: 4000 feet.
Weather: warm, clear, calm.

May 28, 6:40 am, one heard singing and another seen flying to dead tree, beside Columbia River, west of sawmill behind Radium.
Altitude: 2700 feet.
Weather: partly sunny, calm, cool.

SHORT-EARED OWL (*Asio flammeus*) ?

July 16, 9:30 am, one found dead on shoulder of road $\frac{1}{4}$ mile southwest of Marble Canyon warden station along highway. Facial features not useful for identification, and no evident ear tufts. Black patch under bend in wing very evident. Lengthwise streaks down belly.
Altitude: 5100 feet.
Weather: clear, sunny, calm.

COMMON NIGHTHAWK (*Chordeiles minor*)

August 4, 6:45 pm, about 50 in six minutes seen on what appeared to be a dispersal flight south through the Rocky Mountain Trench. Feeding on wing at about 150 feet above Radium, calling. Mostly in singles, spread out over benchland. None turned back; flightpath very deliberate.
Altitude: 3000 feet.
Weather: warm, calm, clear, sundown. approaching with clouds in west.

SWIFT (species unknown)

August 14, 2:45 pm, landed in crevasse in rocks of Sinclair Canyon, then flew down over the falls and swung in a wide arch back over and above the canyon. Lightish markings underneath.
Altitude: 3200 feet.
Weather: very hot, calm, clear.

RUFOUS HUMMINGBIRD (Selasphorus rufus)

May 28, 6:40 am, one male on west side of slough behind Radium sawmill. Sitting on dead bush at end of branch 12 feet above ground.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

May 29, 7:30 pm, one flew past me and into the forest by old firehall in KNP. Presume it was this species.

Altitude: 3400 feet.

Weather: overcast, slight drizzle, cool.

August 20, 12:22 pm, near plot #2 a female or immature visited the fireweed for a few seconds before darting off towards the highway flying about four feet above the ground.

Altitude: 5400 feet.

Weather: sunny, warm (70), stark blue sky.

Park Naturalist Ian D. JACK has mentioned that he saw a dozen or more hummingbirds one early August afternoon on the burn just across from the continental divide monument.

BELTED KINGFISHER (Megaceryle alcyon)

May 19, 1:45 pm, one female by Columbia River just over the bench from Radium ball park. Flying along western edge of river, landing in trees and calling intermittently.

Altitude: 2700 feet.

Weather: hot, calm, clear.

May 28, 6:40 am, one pair on west side of slough behind Radium sawmill. Sitting in large, dead cottonwood, then flew east across slough.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

RED-SHAFTED FLICKER (Colaptes cafer)

May 27, 9:10 am, one flying across highway at entrance to McLeod Meadows Campground.

Altitude: 3800 feet.

Weather: sunny, calm, cool.

May 28, 8:25 am, one calling from top of dead cottonwood, $2\frac{1}{2}$ miles along Radium dump road from the town.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

May 31, 7:00 am, one on south shoulder of Mount Wardle, about 1500 feet above goat trap. Flying from dead tree to dead tree feeding.

Altitude: 5500 feet.

Weather: cool, sunny, calm.

RED-SHAFTED FLICKER (continued)

July 16, 12:30 pm, one heard northeast of plot #2 in a tract of charred trees. Later heard on south side of highway across from the base of the transect.

Altitude: 5500 feet.

Weather: warm (65), slightly overcast and calm.

July 16, 2:30 pm, one flying across Banff-Windermere Parkway to a position at base of CPR cutline, then disappeared from sight.

Altitude: 5300 feet.

Weather: warm, somewhat overcast, but calm.

YELLOW-BELLIED SAPSUCKER (*Sphyrapicus varius*)

May 19, 2:30 pm, one male feeding on a young Douglas fir about 100 yards west of Radium school.

Altitude: 3000 feet.

Weather: hot, slight breeze, clear.

May 28, 7:20 am, one male beside slough on east side of tracks southwest of Radium dump. Feeding on poplar, calling and moving up tree.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

NORTHERN THREE-TOED WOODPECKER (*Picoides tridactylus*)

July 23, 1:00 pm, one heard 'hammering' along CPR cutline, then flew towards northeast.

Altitude: 6000 feet.

Weather: sunny, breeze, 70% overcast.

July 23, 2:15 pm, one adult and two young at base of transect to plot #10. Adult on scorched spruce tree, knocking off bark chips. Very aggressive at its work but silent. Immatures clinging to another charred tree, 'peeping' and hammering feebly now and then.

Altitude: 5100 feet.

Weather: sunny, calm, 90% overcast.

August 6, 11:45 am, one immature seen near base of transect knocking off bark chips from scorched, dead spruce tree. Plot #10.

Altitude: 5100 feet.

Weather: sunny and hot, calm, stark blue sky.

August 13, 10:50 am, two young chipping off bits of bark of Engelmann spruce, about 100 yards from river on west side of transect to plot #10. Making squeaking call like a rubber toy.

Altitude: 5100 feet.

Weather: overcast and cool.

NORTHERN THREE-TOED WOODPECKER (continued)

August 20, 10:00 am, one immature sighted near base of plot #10 transect as it chipped away at the bark of a fallen Engelmann spruce. Then it flew to a standing spruce, and with every 'hammer' it made a 'peep' sound.
Altitude: 5100 feet.
Weather: sunny and hot, no breeze, completely blue sky.

EASTERN KINGBIRD (*Tyrannus tyrannus*)

May 28, 6:10 am, one flying across cattails to small bushes on east side of slough behind sawmill in Radium.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

WESTERN KINGBIRD (*Tyrannus verticalis*)

June 29, 10:20 am, pair building nest behind transformer on telephone pole behind Omega Restaurant in Radium.
Altitude: 2700 feet.
Weather: calm, warm, overcast.

LEAST FLYCATCHER (*Empidonax minimus*)

June 19, 8:20 am, one male heard singing along trail west of canyon viewpoint on Redstreak-Aquacourt Trail. Others heard in same vicinity.
Altitude: 3400 feet.
Weather: calm, clear, warm.

WESTERN WOOD PEWEE (*Contopus sordidulus*)

May 5, 8:15 am, one male singing from crown of 30-foot Douglas fir tree. Redstreak Campground.
Altitude: 3400 feet.
Weather: sunny, clear, warm.

OLIVE-SIDED FLYCATCHER (*Nuttallornis borealis*)

June 17, 10:00 am, one male heard singing along Stanley Glacier Trail 200 yards northwest of upper bridge.
Altitude: 5300 feet.
Weather: clear, calm, warm.

June 17, 10:20 am, one male heard singing near upper bridge on Stanley glacier Trail.
Altitude: 5600 feet.
Weather: calm, clear, warm.

OLIVE-SIDED FLYCATCHER (continued)

June 17, 11:00 am, one male singing from atop a spruce tree one mile beyond upper bridge on Stanley Glacier Trail.

Altitude: 5800 feet.

Weather: calm, clear, warm.

July 30, 1:50 pm, male calling from spruce forest (unburnt) southwest of plot #6.

Altitude: 5300 feet.

Weather: cool, breeze, 75% overcast.

August 6, 12 noon, male calling from some very slightly scorched trees 50 yards to the northwest of plot #10.

Altitude: 5100 feet.

Weather: clear, calm, hot.

August 6, 1:00 pm, one male singing in an unburnt stand of spruce 150 feet south west of plot #6.

Altitude: 5300 feet.

Weather: clear, sunny and warm, steady breeze.

August 20, 3:30 pm, one male calling from the top of a dead, thin pole in midst of the burn part way up to plot # 10. Call is somewhat of a 'turp', four successive 'turps' with the accent on the third.

Altitude: 5200 feet.

Weather: hot, completely blue sky, slight breeze.

VIOLET-GREEN SWALLOW (*Tachycineta thalassina*)

May 4, 5:30 pm, three flying around, calling, and sometimes picking up bits of grass for nest building in some corner or eaves of the firehall in KNP.

Altitude: 3400 feet.

Weather: warm, sunny, calm.

TREE SWALLOW (*Iridoprocne bicolor*)

May 15, 12 noon, numerous in and around Radium townsite, and by Radium Hot Springs Lodge.

Altitude: 3000 - 3400 feet.

Weather: sunny, warm, slight breeze.

May 16, 5:00 pm, one pair sitting on a dead tree near Cross River on east bank of Kootenay River.

Altitude: 4000 feet.

Weather: hot, sunny, calm.

TREE SWALLOW (continued)

May 28, 8:00 pm, several flying, darting, and perching in cottonwoods by slough behind Radium sawmill.

Altitude: 2700 feet.

Weather: partly sunny, calm, cool.

BANK SWALLOW (*Riparia riparia*)

May 28, 6:30 am, numerous and flying around and feeding close to slough surface behind Radium sawmill.

Altitude: 2700 feet.

Weather: cool, partly sunny, calm.

BARN SWALLOW (*Hirundo rustica*)

May 21, 1:00 pm, one male flying low over boulevards and highway at townsite of Radium.

Altitude: 3000 feet.

Weather: warm, calm.

CANADA JAY (*Perisoreus canadensis*)

May 31, 3:30 pm, one on south-facing slope, first or second crest east of old fire tower on Mount Wardle. Flew to tree, but made not a sound.

Altitude: 6000 feet.

Weather: warm, sunny, calm.

June 2, 7:30 am, one adult sitting and hopping in spruce trees near trail to Numa Creek, about 2 miles along.

Altitude: 4700 feet.

Weather: hot, sunny, calm.

BLACK-BILLED MAGPIE (*Pica pica*)

May 21, 1:00 pm, two flying downhill from Redstreak road, before first bend in road from bottom. Heading towards highway and park boundary.

Altitude: 3200 feet.

Weather: hot, clear, calm.

RAVEN (*Corvus corax*)

May 20, numerous both in the Columbia River Valley and in the park. One family nesting at turnoff to McLead Meadows picnic site.

Altitude: 3800 feet.

Weather: warm, sunny, slight breeze.

RAVEN (continued)

May 31, 9:00 am, one soaring over souther ridge of Mount Wardle.
Altitude: 8300 feet.
Weather: cool, sunny, windy.

July 16, 11:30 am, one sitting on top of dead 50 foot tree 60 yards south of highway and exactly even with the 414 survey mark on the road.
Plot #2. Calling.
Altitude: 5400 feet.
Weather: warm (65), slight cloud cover, calm.

July 16, 2:25 pm, one gliding from south side of road to north, low and into the trees near the base of transect to plot #8, CPR cutline.
Altitude: 5300 feet.
Weather: warm (70), some clouds, very slight breeze.

CROW (*Corvus brachyrhynchos*)

May 31, 5:30 am, one feeding a shoulder of road in front of McLeod Meadows Campground, then flew to trees.
Altitude: 3700 feet.
Weather: cool, clear, sunny.

CLARKE'S NUTCRACKER (*Nucifraga columbiana*)

July 16, 10:30 am, croaking calls heard near to plot #6, but source could not be determined since there are dense groves of live and growing spruces nearby.
Altitude: 5400 feet.
Weather: warm (60), some clouds, almost no breeze.

July 16, 11:30 am, one heard calling from near base of Mount Whympier, from plot # 4.
Altitude: 5600 feet.
Weather: warm (65), slight cloud cover, calm.

July 16, 12 noon, some heard near base of Mount Whympier, and other calling from south side of the highway, plot #2.
Altitude: 5600 feet.
Weather: slightly overcast and calm, about 65 degrees.

July 16, 12:20 pm, one heard calling 'sure-sure' southwest of plot #2 about 150 yards.
Altitude: 5400 feet.
Weather: slightly overcast, calm, warm.

CLARKE'S NUTCRACKER (continued)

July 16, 2:15 pm, one flying to top of dead trees near upper weather station on CPR cutline, or plot #8.

Altitude: 6500 feet.

Weather: warm, calm, and overcast.

July 16, 2:44 pm, two seen and heard calling in area of plot #10.

Altitude: 5100 feet.

Weather: warm, overcast, and calm.

July 20, heard consistently throughout late morning and early afternoon along Kindersley Pass.

Altitude: 6900 feet.

Weather: sunny, warm, and calm.

July 23, 11:00 am, one calling near base of Mount Whympner 300 yards northwest of plot #2.

Altitude: 5600 feet.

Weather: sunny, breeze, 35% overcast.

July 23, 12:20 pm, one calling from spruce forest west of lower weather station on CPR cutline, or plot #8.

Altitude: 5400 feet.

Weather: sunny, overcast, but calm.

July 23, 12:35 pm, two pairs half-way between lower and upper weather stations, calling from spruce grove just to the west of the CPR cutline.

Altitude: 5800 feet.

Weather: sunny, slight breeze, 60% overcast.

July 30, 9:55 am, three seen and heard calling as they flew about in trees south of highway near base of plot #2.

Altitude: 5200 feet.

Weather: cool, damp, 50% overcast.

August 13, 1:50 pm, one flying from slightly burned area to the southwest, to an unburned forest grove further east towards Stanley Peak.

Altitude: 5300 feet.

Weather: overcast and cool, some drizzle.

August 20, 12:05 pm, one seen flying southwesterly over plot #4 at about 150 feet and towards Vermilion Peak.

Altitude: 5500 feet.

Weather: sunny, warm (70), blue sky.

BLACK-CAPPED CHICKADEE (*Parus atricapillus*)

May 10, 2:00 pm, 6 feeding and calling low in trees on one minor peak south of principal Mt. Berland. Soon began dispersing down mountainside.

Altitude: 7000 feet.

Weather: cool, breezy, partially overcast.

BLACK-CAPPED CHICKADEE (continued)

May 28, 6:45 am, two calling their names near to us. By first bridge on lumber road behind sawmill in Radium.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

MOUNTAIN CHICKADEE (*Parus gambeli*)

May 7, 9:00 am, one calling from small twenty foot tall stand of D. fir, near entrance to Redstreak Campground. Flitting from tree to tree, about seven feet off ground.

Altitude: 3500 feet.

Weather: warm, calm, sunny.

May 10, 2:00 pm, on one minor peak south of principal Mt. Berland peak, in company with 6 Black-caps, feeding and calling low in the trees.

Altitude: 7000 feet.

Weather: cool, breezy, partially overcast.

July 16, 10:25 am, heard call notes 'fee-bee-bee' near plot #6, but could not see the bird itself.

Altitude: 5300 feet.

Weather: warm (60), some clouds, negligible breeze.

RED-BREASTED NUTHATCH (*Sitta canadensis*)

May 5, 8:00 am, one singing, but not seen, on northeastern edge of Redstreak Campground.

Altitude: 3400 feet.

Weather: sunny, clear, warm.

June 2, 7:30 am, one male heard about 2 miles along the Numa Creek Trail.

Altitude: 4700 feet.

Weather: hot, sunny, calm.

June 5, 6:30 am, one heard at Crook's Meadows in KNP.

Altitude: 3800 feet.

Weather: sunny, calm, cold.

July 16, 10:36 am, one heard calling northwest of plot #6 in a burned area, another heard in living forest of spruce southwest of same plot.

Altitude: 5500 feet.

Weather: warm, some clouds, almost no breeze.

July 18, 10:00 am, one at Redstreak amphitheatre feeding low in trees at the back.

Altitude: 3500 feet.

Weather: calm, slightly overcast, warm.

RED-BREASTED NUTHATCH (continued)

August 6, 1:05 pm, one heard 50 yards southwest of plot #6 in stand of unburnt timber.

Altitude: 5200 feet.

Weather: completely blue sky, sunny and hot, slight breeze.

DIPPER (*Cinclus mexicanus*)

May 13, 2:30 pm, one sitting on rock and 'pumping' below first bridge in Marble Canyon.

Altitude: 5000 feet.

Weather: overcast, breeze, cold.

LONG-BILLED MARSH WREN (*Telmatodytes palustris*)

May 23, 7:30 pm, two males singing in reeds beside pond near Columbia River behind Edgewater, BC.

Altitude: 2700 feet.

Weather: warm, slight breeze, clear.

May 28, 7:50 am, one seen fluttering in cattails in sloughs behind Radium. Others heard singing.

Altitude: 2700 feet.

Weather: warming as sun breaks through partly overcast sky, calm.

ROBIN (*Turdus migratorius*)

May 20, numerous in Columbia River Valley, townsite and Radium Lodge areas, and throughout park.

June 17, 10:00 am, one male singing along Stanley Glacier Trail, 200 yds. northwest of upper bridge.

Altitude: 5300 feet.

Weather: clear, calm, warm.

July 16, 11:45 am, one male feeding on road allowance across highway from base of C PR cutline.

Altitude: 5200 feet.

Weather: slightly overcast and calm, 65 degrees.

July 16, 2:25 pm, one male at base of CPR cutline sitting in a large dead tree.

Altitude: 5300 feet.

Weather: warm (70), some clouds, very slight breeze.

June 18, 11:00 am, one female brooding nest of 3 eggs on ladder behind warden shed at Kootenay Crossing. Only 5 feet off ground.

Altitude: 3840 feet.

Weather: calm, clear, warm.

ROBIN (continued)

July 16, 3:20 pm, one male heard singing about 200 yards southwest of transect to plot #10.

Altitude: 5200 feet.

Weather: warm, slightly overcast and calm.

July 22, 12:20 pm, one flying towards spruce grove on east side of Stanley valley, before end of trail.

Altitude: 5800 feet.

Weather: sunny, breeze, slight overcast.

July 20, one male seen along ridge of Kindersley Pass. Landed in small Krummholz tree, then flew south along ridge.

Altitude: 6900 feet.

Weather: sunny, warm, calm.

August 6, 12 noon, one heard in scorched trees approximately half way to plot #10.

Altitude: 5300 feet.

Weather: clear, calm, hot.

August 13, 10:40 am, one male seen singing from clump of unburnt trees on north side of highway near plot #10.

Altitude: 5200 feet.

Weather: overcast and cool.

August 20, 11:25 am, one male collecting worms and insects just above road allowance near start of fire road, flew south to other side of highway and landed in a large tree in a tract of unburnt forest to observe us, that is across from plot #6.

Altitude: 5000 feet.

Weather: clear, hot and calm.

VARIED THRUSH (*Ixoreus naevius*)

May 17, 4:55 pm, one male at Sam's Folly Lake, just off West Side Road behind Radkum. Flew to stump, where he sat and observed us on the road.

Lodgepole pine forest.

Altitude: 3600 feet.

Weather: warm, breezy, clear.

June 2, 7:30 am, at least three heard in a mountain meadow about two miles along Numa Creek Trail.

Altitude: 4700 feet.

Weather: hot, sunny, calm.

July 16, 10:15 am, heard piping notes southwest of plot #6 in unburnt forest.

Altitude: 5300 feet.

Weather: warm (65), slightly overcast and calm.

VARIED THRUSH (continued)

July 30, 1:50 pm, notes heard about 200 yards east of plot and 40 yards removed from the fireguard. Plot #6.

Altitude: 5250 feet.

Weather: sunny, breeze, warm (65), 70% overcast.

HERMIT THRUSH (*Hylocichla guttata*)

May 30, 4:45 am, one male singing near DPW houses by KNP firehall.

Altitude: 3500 feet.

Weather: cloudy, completely overcast, wet, calm.

May 31, 5:55 am, one male singing near goat trap below Mount Wardle.

Altitude: 4000 feet.

Weather: cool, clear, sunny.

May 31, 8:30 am, one male seen singing on dead tree, others heard, on open slope of Mount Wardle above Goat Trap.

Altitude: 6000 feet.

Weather: warm, sunny, calm.

June 2, 6:45 am, one male heard singing $1\frac{1}{2}$ mile along Numa Creek Trail.

Altitude: 4600 feet.

Weather: warm, sunny, clear.

June 2, 8:40 pm, one male singing in trees beside Sinclair Creek, about 100 yards east of the canyon on the south side of road.

Altitude: 3200 feet.

Weather: warm calm, clear.

June 17, 10:00 am, one male singing along Stanley Glacier Trail, about 200 yards below upper bridge.

Altitude: 5300 feet.

Weather: calm, clear, warm.

June 17, 6:30 am, one male heard singing along Paint Pots Nature Trail, about half-way to bridge.

Altitude: 4600 feet.

Weather: calm, clear, warm.

July 1, 3:55 pm, male seen near start of Stanley Glacier Trail. It flew to log on ground then flitted away. Made no noise.

Altitude: 5100 feet.

Weather: calm, partly overcast, warm.

July 16, 10:20 am, male heard singing in spruce woods southwest of plot #6.

Altitude: 5300 feet.

Weather: warm, slightly overcast and calm.

HERMIT THRUSH (continued)

July 16, 3:20 pm, one male heard singing about 200 yards southwest of plot #10.

Altitude: 5300 feet.

Weather: warm, slight breeze, some clouds.

July 20, 4:30 pm, one heard in timber at base of mountain above headwaters of Sinclair Creek.

Altitude: 6400 feet.

Weather: sunny, warm, calm.

July 22, 12:15 pm, one male heard near top of Stanley Glacier Trail.

Altitude: 5800 feet.

Weather: sunny, breeze, slight overcast.

July 23, 12:45 pm, one male calling from island of semi-scorched spruce trees one-eighth of a mile northeast of the upper weather station on the CPR cutline, plot #8.

Altitude: 6200 feet.

Weather: sunny, breeze, 70% overcast.

July 30, 11:15 am, one male singing in unburnt trees 50 yards to the southwest of upper weather station, CPR cutline, plot #8.

Altitude: 6200 feet.

Weather: cool, damp, 50% overcast.

SWAINSON'S THRUSH (*Hylocichla ustulata*)

July 16, 11:25 am, one heard in an island of unburnt spruce trees near highway at base of plot #4 transect. Ascending notes.

Altitude: 5400 feet.

Weather: warm (65), slight cloud cover, calm.

VEERY (*Hylocichla fuscescens*) ?

June 29, 11:00 am, one male heard singing at south end of pond behind Radium mill. Song: 'weedle, weedle, weedle' (upper note)...!weedle, weedle, weedle' (lower note).

Altitude: 2700 feet.

Weather: calm, warm, overcast.

MOUNTAIN BLUEBIRD (*Sialia currucoides*)

May 6, 9:30 am, one male sitting on top of D. fir tree beside admin. building.

Altitude: 3500 feet.

Weather: warm, lightly overcast, calm.

MOUNTAIN BLUEBIRD (continued)

May 13, 12 noon, one male seen below Mount Wardle and west of animal licks. Flitting to ground, then flew to forestry fire line, and there preened himself for several minutes.

Altitude: 3900 feet.

Weather: heavy clouds, sunny periods, cold, breeze.

May 28, 8:40 am, two females about $2\frac{3}{4}$ miles along Radium dump road. Feeding with purple finches, then scaring away before finches, and flying in a different direction than them.

Altitude: 2800 feet.

Weather: partly sunny, calm, cool.

May 31, 8:30 am, three males and one female about 2000 feet above goat trap below Mount Wardle. One pair had a nest, and the other two males were intruders and were being driven away.

Altitude: 6000 feet.

Weather: cool, sunny, calm.

May 31, 2:00 pm, three on southwest slope of topmost peak of Mount Wardle. Flew to large snowbank, and appeared to be eating something.

Altitude: 8900 feet.

Weather: cold, sunny, windy.

June 21, 6:30 pm, one male flying in westerly direction 50 yards east of Hot Springs along road.

Altitude: 3400 feet.

Weather: clear, warm, calm.

July 8, 1:00 pm, one pair about 200 yards from upper bridge on Stanley Glacier Trail. Apparently have a nest in burned tree, in a hole just underneath a big lip of bark.

Altitude: 5500 feet.

Weather: warm, sunny, calm.

July 23, 1:05 pm, one pair seen in upper reaches of CPR cutline near previously burned site (as evidenced by grey-bleached tree trunks) on north side of cutline. Plot #8. Acting as if had nest.

Altitude: 5900 feet.

Weather: sunny, some breeze, 70% overcast.

TOWNSEND'S SOLITAIRE (*Myadestes townsendi*)

May 28, 6:00 am, one male singing near DFW houses beside old firehall in KNP. Did not see the bird.

Altitude: 3400 feet.

Weather: cool, partly sunny, calm.

TOWNSEND'S SOLITAIRE (continued)

May 31, 9:00 am, one male singing in dead tree on southern slope of Mount Wardle above goat trap.

Altitude: 6000 feet.

Weather: cool, sunny, breezey.

June 23, 7:30 pm, one, possibly a female, seen across road and a little west of Sinclair Pass Warden Station. Acting as if had nest.

Altitude: 3500 feet.

Weather: clear, warm, calm.

July 8, 11:00 am, one feeding and flying 150 yards north of upper bridge on Stanley Glacier Trail.

Altitude: 5600 feet.

Weather: warm, sunny, calm.

July 23, 11:10 am, single note heard several times in vicinity of the highway at base of plot #2.

Altitude: 5300 feet.

Weather: 35% overcast, sunny, breeze.

RUBY-CROWNED KINGLET (*Regulus calendula*)

May 5, 8:00 am, one male singing in uppermost branches of D. fir at north end of Redstreak Trail. Others seen throughout park, and heard calling.

Altitude: 3400 feet.

Weather: sunny, clear, calm.

BOHEMIAN WAXWING (*Bombycilla garrulus*)

May 26, 7:10 am, one pair seen one mile south of Pitts Creek bridge on Cross River fire road. Flew into coniferous trees on side of road and disappeared.

Altitude: 4000 feet.

Weather: cool, cloudy, calm.

STARLING (*Sturnus vulgaris*)

May 16, 2:30 pm, about 20 feeding near gravel pit then flying to tree, Pitts Creek fire road bridge, just off highway.

Altitude: 3800 feet.

Weather: hot, calm, clear.

YELLOW WARBLER (*Dendroica petechia*)

May 28, 6:40 am, two males singing on west side of slough behind the Radium sawmill.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

June 2, 10:30 am, one male about 400 feet below saddle above southwest tributary of Numa Creek. Singing and carrying some nesting material or food.

Altitude: 5900 feet.

Weather: warm, sunny, breeze.

AUDUBON'S WARBLER (*Dendroica auduboni*)

May 5, 7:45 am, one male 100 feet south of firehall in KNP. Sitting in lower branches of D. fir, flitting from branch to branch calling. About 15 feet up in 60 foot tree.

Altitude: 3400 feet.

Weather: warm, overcast, some sunny intervals.

May 31, 8:45 am, one male singing and darting about in a spruce stand above goat trap below Mount Wardle.

Altitude: 6000 feet.

Weather: warm, sunny, calm.

June 23, 7:30 pm, one male flitting in trees across road and a little west of Sinclair Canyon Warden Station. Also walking on moss ledges of rock face, disappears in bushes, possibly to a nest.

Altitude: 3500 feet.

Weather: clear, warm, calm.

July 10, 10:00 am, one pair in front of administration building.

Altitude: 3400 feet.

Weather: warm, slight breeze, some cloud.

MACGILLIVRAY'S WARBLER (*Oporornis tolmiei*)

June 2, 7:30 am, one male singing and feeding low down in undergrowth, about 2 miles along Numa Creek Trail.

Altitude: 4700 feet.

Weather: hot, sunny, calm.

WILSON'S WARBLER (*Wilsonis pusilla*)

June 2, 6:25 am, one male singing at top of spruces about a mile along Numa Creek Trail. Others also heard.

Altitude: 4500 feet.

Weather: cool, sunny, calm.

WESTERN MEADOWLARK (*Sturnella neglecta*)

June 2, 6:40 pm, one sitting on roadside at entrance to McLeod Meadows Campground. Did not take flight as we drove past. Numerous in the Columbia River valley south of Radium, especially near Shuswap Village.
Altitude: 3800 feet.
Weather: hot, sunny, calm.

YELLOW-HEADED BLACKBIRD (*Xanthocephalus xanthocephalus*)

May 28, 6:15 am, one male heard singing and seen in flight behind the Radium sawmill beside a large slough.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

RED-WINGED BLACKBIRD (*Agelaius phoeniceus*)

May 23, 7:30 pm, several in small reedy pond near railway tracks at Edgewater, BC.
Altitude: 2700 feet.
Weather: warm, slight breeze, clear.

BROWN-HEADED COWBIRD (*Molothrus ater*)

May 13, 12 noon, four below Mount Wardle west of animal licks. Flying from poplar grove towards northeast and disappear.
Altitude: 3900 feet.
Weather: heavy clouds, sunny periods, cold, breeze.

May 13, 1:30 pm, one walking beside an elk at the animal lick below Mount Wardle.
Altitude: 3900 feet.
Weather: heavy clouds, sunny periods, cold, breeze.

WESTERN TANAGER (*Piranga ludoviciana*)

May 28, 6:45 am, one male calling from west side of slough behind Radium sawmill near first bridge. At mid-branches of a cottonwood. Flew to understory bushes and then up again into the trees.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

June 2, 7:00 pm, one pair at Watt's residence behind administration building.
Altitude: 3400 feet.
Weather: warm, calm, sunny.

WESTERN Tanager (continued)

June 23, 3:40 pm, one male sitting in an ornamental ash tree, then flew to bed of flowers to feed on ants. Administration building.
Altitude: 3300 feet.
Weather: hot, clear, breeze.

EVENING GROSBEAK (*Hesperiphona vespertina*)

July 8, 9:10 am, about six feeding on roadside in front of Hawk Creek maintenance camp.
Altitude: 4400 feet.
Weather: sunny, warm, breeze.

PURPLE FINCH (*Carpodacus purpureus*)

May 28, 8:40 am, one female and two males (with much red on head and rump), $3\frac{1}{2}$ miles along dump road from Radium. Feeding on ground, picking up litter in beaks, holding head back and shuffling litter around in beak, possibly for insects and seeds.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

PINE GROSBEAK (*Pinicola enucleator*)

June 17, 7:50 pm, one pair feeding on insect galls on poplars and birches half-way along Cobb Lake Trail.
Altitude: 4300 feet.
Weather: clam, clear, warm.

GRAY-CROWNED ROSY FINCH (*Leucosticte tephrocotis*)

May 31, 2:00 pm, one male on southwest slope of topmost peak of Mount Wardle. Flew nearby, then flew back in same direction after a couple of seconds.
Altitude: 8900 feet.
Weather: cold, sunny, windy.

PINE SISKIN (*Spinus pinus*)

May, observed in Columbia Valley around Radium townsite, and at Edgewater in company with Purple Finches. In park seen regularly at McLeod Meadows.
June 5, 6:00 am, three in top of dead D. fir at Crook's Meadows.
Altitude: 3800 feet.
Weather: sunny, calm, cold.

PINE SISKIN (continued)

July 20, 4:00 pm, small flock seen in Krummholtz above Sinclair Basin.
Altitude: 6900 feet.
Weather: sunny, warm, calm.

July 22, 10:35 am, four seen in treetops towards end of Stanley Glacier Trail.
Altitude: 5900 feet.
Weather: sunny, breeze, slight overcast.

July 23, 12:50 pm, five or six calling in burnt trees to northwest of lower weather station on CPR cutline, plot #8.
Altitude: 5500 feet.
Weather: 70% overcast, sunny, breeze.

August 6, 10:23 am, one calling about 70 yards northeast of CPR cutline directly below 6000 foot level, plot #8.
Altitude: 5950 feet.
Weather: clear, sunny, slight breeze.

AMERICAN GOLDFINCH (*Spinus tristis*)

June 17, 6:40 pm, about 15 on highway in front of Hawk Creek maintenance compound. Sitting on road, perhaps feeding on windblown seeds.
Altitude: 4400 feet.
Weather: calm, clear, warm.

GRASSHOPPER SPARROW (*Ammodramus savannarum*)

May 28, 8:10 am, two males singing with a steady dry twittering buzz, two miles along dump road from Radium.
Altitude: 2700 feet.
Weather: calm, partly sunny, cool.

VESPER SPARROW (*Pooecetes gramineus*)

June 5, 6:30 am, one male singing at Crook's Meadows. Sitting on top of a gravel pile, sometimes running along through grass.
Altitude: 3800 feet.
Weather: sunny, calm, cold.

June 5, 8:30 am, one male singing at administration building.
Weather: sunny, calm, warm.
Altitude: 3400 feet.

SLATE-COLORED JUNCO (Junco hyemalis)

May 31, 8:45 am, one male singing from a dead tree just above goat trap below Mount Wardle, others heard.

Altitude: 6000 feet.

Weather: warm, sunny, clear.

June 2, 7:30 am, three flying to tops of small trees calling, about two miles along Numa Creek Trail. Others heard.

Altitude: 4700 feet.

Weather: hot, sunny, calm.

July 16, 10:30 am, one twittering in spruce forest to southwest of plot #6, and another on southeast edge of spruce forest.

Altitude: 5200 feet.

Weather: warm (60), some clouds, little breeze.

July 16, 10:40 am, one heard on northeast edge of burned area above plot #6.

Altitude: 5350 feet.

Weather: warm (60), some clouds, little breeze.

July 16, 11:20 am, one heard in spruce forest to near plot #4.

Altitude: 5500 feet.

Weather: warm (65), slight cloud cover, calm.

July 16, 3:50 pm, one heard south of plot # 12 in an island of unburnt spruce.

Altitude: 4900 feet.

Weather: warm, slightly overcast, and calm.

July 20, 4:00 pm, several seen in Krummholtz above Sinclair basin.

Altitude: 6900 feet.

Weather: sunny, warm, calm.

July 23, 10:25 am, one calling 50 yards southwest of plot #4 in spruce forest.

Altitude: 5100 feet.

Weather: 30% overcast, sunny, slight breeze.

July 30, 11:03 am, one heard in partilly burned spruce grove 70 yards northeast of CPR cutline at 6200 foot level. Plot #8.

Altitude: 6200 feet.

Weather: cool, damp, 50% overcast.

July 30, 1:45 pm, one flying southwest along cutline towards road and calling as it goes, plot #6.

Altitude: 5300 feet.

Weather: cool, breeze, 75% overcast.

SLATE-COLORED JUNCO (continued)

August 20, 10:20 am, one heard calling in underbrush near base of transect of plot #12.

Altitude: 5000 feet.

Weather: sunny and hot, blue sky, no wind.

OREGON JUNCO (*Junco oreganus*)

May 6, 9:00 am, one male at eastern edge of Redstreak Campground, on lower part of Redstreak Trail. Sitting on ground, then flitted to lower branches of large D.fir tree and called a few times.

Altitude: 3500 feet.

Weather: warm, lightly overcast, calm.

June 2, 6:10 am, one male singing $\frac{3}{4}$ mile along Numa Creek Trail.

Altitude: 4500 feet.

Weather: cool, clear, calm.

June 17, 10:00 am, one male singing about one-eighth of a mile along The Stanley Glacier Trail.

Altitude: 5300 feet.

Weather: clear, calm, warm.

July 16, 2:20 pm, one on CPR cutline feeding on ground near the stream below the lower weather station, plot #8.

Altitude: 5400 feet.

Weather: warm (70), slight breeze, some clouds.

July 23, 10:25 am, one calling 50 yards southwest of plot in spruce forest, plot #4.

Altitude: 5400 feet.

Weather: sunny, breeze, overcast.

July 23, 1:00 pm, one seen on CPR cutline between upper and lower weather station. It was feeding on the ground amongst grasses and herbs in a large clearing near an old burn (where trunks are whitish).

Altitude: 5900 feet.

Weather: sunny, breeze, 70% overcast.

August 6, 11:40 am, two males giving 'chip, chip' alarm notes from small shrubs and lower branches of trees at base of plot #10.

Altitude: 5100 feet.

Weather: sunny and hot, calm, stark blue sky.

CHIPPING SPARROW (*Spizella passerina*)

May 28, 8:10 am, six feeding on ground and lower branches of conifers and poplars two miles along dump road from Radium.

Altitude: 2700 feet.

Weather: calm, partly sunny, cool.

CHIPPING SPARROW (continued)

June 2, 6:30 am, three feeding $\frac{3}{4}$ way up spruce tree, some near ground, a mile or so along Numa Creek Trail. Others heard.

Altitude: 4500 feet.

Weather: cool, sunny, calm,

June 16, a nest of four eggs seen at R.C.M.P. detachment in Radium. Eventually destroyed by June 18.

Altitude: 3000 feet.

Weather: clear, calm, warm.

June 18, 11:00 am, one female brooding a nest of 2 young and 2 eggs in low branches (4 feet) of spruce tree in front yard of Hanley residence, Kootenay Crossing Warden station.

Altitude: 3840 feet.

Weather: calm, clear, warm.

July 16, 10:50 am, pair feeding and calling in spruce trees 100 yards east of plot along fire guard, plot # 6.

Altitude: 5900 feet.

Weather: warm, some clouds, almost no breeze.

WHITE-CROWNED SPARROW (*Zonotrichia leucophrys*)

June 2, 11:25 am, one male at southwest tributary of Numa Creek, about $\frac{1}{4}$ mile up along it, or approximately 500 feet below saddle ridge. Flew up from behind a bush and sang his song just once, loud and clear, before flying away. ($\frac{1}{8}$ mile up from its confluence with the main stream.)

Altitude: 5800 feet.

Weather: warm, sunny, breeze.

Status of Birds in Kootenay National Park
and Adjacent Columbia River Valley

This list of birds was prepared for the convenience of park naturalists, to be used eventually as the basis for a revised checklist of species native to the region. Every year we meet more and more people who express a keen interest in birdlife, and some have requested a park checklist. Although we have one, it is decidedly inadequate.

"Birdlife is not plentiful either in species or numbers in Kootenay," says the new park folder. This was more true before Kurt Seel's time in the park; only 80 species had been reported up to then. Through his efforts, and from the records I have kept over the past few summers, that number has risen to 133. The observations of present Park Naturalist Ian D. Jack have yet to be incorporated into this survey, and the Columbia Valley Natural History Society has not been contacted for their co-operation. More extensive field work will no doubt raise the total still further.

If a person were at the right places at the right times, he could discover the presence of some 223 birds in and around the park. From early spring to late summer, as many as 206 might be observed. During the park visitor season one could expect to see in the neighborhood of 157 species. (Based on THE BIRDS OF CANADA, By Earl Godfrey, 1966.) These numbers are surprisingly high for a mountainous region like Kootenay National Park.

The Columbia River Valley has been included in this survey because, being an important dispersal flyway (part of the Rocky Mountain Trench), it experiences great seasonal fluctuations in bird populations and varieties. There is usually a certain amount of lateral drift associated with such migration routes. So naturalists and park visitors alike should be on the lookout for the 'drifters' that may be in the area for only a matter of hours during the year. Over and above that, birds which congregate in the Columbia Valley during the summer are likely to wander sometimes into the park.

The format of this reference list facilitates change; it is less of a chore to update smaller columns. In the present context, "change" might mean a first sight record for a bird expected in the area but previously never seen. Or it might refer to a new breeding record. Another possibility is that, after an abundance of observations on particular species is built up, we may be able to redraft the occurrence and breeding distribution columns. Instead of basing it on work done in the late forties or early sixties, or on Godfrey's book, we could base it more on our latest observations, making it an up-to-the-year reflection of a bird's real status here. For example, Godfrey shows the red-necked grebe to be a migrant through this region, whereas it is commonly found nesting all along the back-water sloughs of the Columbia River, and at Windermere and Columbia Lakes.

But the list has taken on its format for several other reasons. It presents less of a formidable mass of type to the reader's eye, making for easier study; lists tend to be monotonous. All the pages can be photostatted, cut out and stapled together, fitting nicely into our brown field books and ready for immediate use.

The arrangement and names in the first column are based on THE BIRDS OF CANADA, by Earl Godfrey (Queen's Printer, Ottawa, 1966). The second, or occurrence, column tells whether a bird is a summer resident (S), a permanent resident (R), a migrant (M), a summer visitor (V), a winter visitor (W), or an accidental (A), recorded but not expected to occur again. Breeding distributions are tabulated in column three, and are based primarily on Godfrey's book. "P" refers to the park, and "C" refers to the Columbia River Valley, Canal Flats to Spillimacheen only. Column four lists local sightings made prior to 1950. It and column two are based on the works of Munro and Cowan ("A Review of the Bird Fauna of British Columbia," 1947), and Walter B. Johnstone ("The Birds of the East Kootenay, British Columbia," 1949). Local sightings made from 1964 onward are based on Kurt Seel's 1965 report entitled "The Birds of Kootenay National Park," and on my own records. This information is tabulated in column five. Use of * after P or C in the local sightings columns connotes a breeding record.

In terms of a checklist, obviously the average park visitor will not require such detail. Perhaps only the name and occurrence columns need be used, with a length of black line following for the date seen or a checkmark. Checklists could be issued as two flat 8½ by 11 sheets, each divided into fours. That way a person could either put it into a binder, or could cut it apart, staple the pages together and tuck it neatly into a field guide.

STATUS OF BIRDS
IN KOOTENAY NATIONAL PARK
AND ADJACENT COLUMBIA RIVER VALLEY

Column I..... name
Column II..... occurrence
Column III..... breeding distrib.
Column IV..... seen before 1950
Column V..... seen 1964 & after
for

Summer Resident..... S
Permanent Resident.. R
Migrant..... M
Summer Visitor..... V
Winter Visitor..... W
Accidental..... A

"P" refers to the park, and "C"
to the Columbia River Valley,
Canal Flats to Spillimacheen.
Use of * after P or C in columns
IV or V connotes a breeding
record.

Tabulated data based on Munro
and Cowan ("A Review of the Bird
Fauna of British Columbia," 1947),
Walter B. Johnstone ("The Birds
of the East Kootenay, British
Columbia," 1949), Kurt E. Seel
("The Birds of Kootenay National
Park," 1965), Earl Godfrey ("The
Birds of Canada," 1966), and the
records of Murray Christman, KNP
seasonal park naturalist.

COMMON LOON	S	P	C	P	C*	P	C
ARCTIC LOON	M	-	-	-	-	-	-
RED NECKED GREBE	M	-	-	-	C*	-	C*
HORNED GREBE	S	P	C	-	C	-	C
EARED GREBE	S	P	C	-	-	-	-
WESTERN GREBE	M	-	-	-	C	-	-
PIED BILLED GREBE	M	-	-	-	C	-	C
WHITE PELICAN	A	-	-	-	C	-	C
GREAT BLUE HERON	S	P	C	-	C	-	C
AMERICAN BITTERN	S	P	C	-	C*	-	C
WHISTLING SWAN	M	-	-	-	C	-	-
TRUMPETER SWAN	M	-	-	-	C	-	-
CANADA GOOSE	S	P	C	P	C*	P	C
SNOW GOOSE	M	-	-	P	C	P	-
MALLARD	S	P	C	-	C	P*	C
GADWALL	S	-	C	-	C	-	-
PINTAIL	S	P	C	-	C*	-	-
GREEN WINGED TEAL	S	P	C	-	C	P	-
BLUE WINGED TEAL	S	P	C	-	-	P	C
CINNAMON TEAL	S	-	C	-	-	-	C
BALDPATE	S	P	C	-	C*	P	C
SHOVELER	S	P	C	-	-	-	C
WOOD DUCK	S	-	C	-	C	-	C
REDHEAD	M	-	-	-	C	-	C
RING NECKED DUCK	S	P	C	-	C	-	C*
CANVASBACK	M	-	-	-	-	-	C
GREATER SCAUP	M	-	-	-	-	-	C
LESSER SCAUP	S	P	C	-	C	P	-
COMMON GOLDENEYE	S	P	C	-	-	P	C*
BARROW'S GOLDENEYE	S	P	C	P	C*	P	C
BUFFLEHEAD	S	P	C	-	C*	P	C
HARLEQUIN DUCK	S	P	C	P	C	P*	-
WHITE WINGED SCOTER	M	-	-	-	-	P	-
SURF SCOTER	M	-	-	-	-	P	-
RUDDY DUCK	M	-	-	-	-	P	C
HOODED MERGANSER	S	P	C	-	-	-	C

COMMON MERGANSER	S	P	C	-	C*	-	-
RED BREASTED MERGANSER	M	-	-	-	C	-	-
TURKEY VULTURE	S	P	C	-	-	-	-
GOSHAWK	S	P	C	P	C	P	-
SHARP SHINNED HAWK	S	P	C	P	-	P	C
COOPER'S HAWK	S	P	C	-	C	-	-
RED TAILED HAWK	S	P	C	P	C*	P*	C
SWAINSON'S HAWK	M	-	-	-	-	P	-
GOLDEN EAGLE	R	P	C	P	C	P	C
BALD EAGLE	S	P	C	-	C*	P	-
MARSH HAWK	S	P	C	-	C	P	C
OSPREY	S	P	C	-	C	P	C
PRAIRIE FALCON	S	P	C	-	-	-	-
PEREGRINE FALCON	S	P	C	-	C	-	-
PIGEON HAWK	S	P	C	-	C	-	-
SPARROW HAWK	S	P	C	P	-	P*	C
BLUE GROUSE	R	P	C	P	C*	P*	-
SPRUCE GROUSE	R	P	C	P	-	P	-
RUFFED GROUSE	R	P	C	P*	C*	P	-
WHITE TAILED PTARMIGAN	R	P	C	P	-	P	-
SHARP TAILED GROUSE	R	P	C	-	-	-	-
SANDHILL CRANE	M	-	-	-	C	-	-
SORA	S	P	C	-	-	-	C
COOT	S	P	C	-	C	P	C
SEMIPALMATED PLOVER	M	-	-	-	C	P	-
KILLDEER	S	P	C	-	C*	P	C
GOLDEN PLOVER	M	-	-	-	C	-	-
BLACK BELLIED PLOVER	M	-	-	-	C	-	-
COMMON SNIPE	S	P	C	-	C	-	C
SPOTTED SANDPIPER	S	P	C	P	C	P	-
SOLITARY SANDPIPER	M	-	-	-	C	P	-
GREATER YELLOWLEGS	M	-	-	-	C	-	-
LESSER YELLOWLEGS	M	-	-	-	C	-	-
PECTORAL SANDPIPER	M	-	-	-	C	-	-
BAIRD'S SANDPIPER	M	-	-	P	C	-	-
LEAST SANDPIPER	M	-	-	-	-	-	-

DUNLIN	M	-	-	-	-	-
SHORT BILLED DOWITCHER	M	-	-	-	C	-
LONG BILLED DOWITCHER	M	-	-	-	-	-
STILT SANDPIPER	M	-	-	-	-	-
SEMIPALMATED SANDPIPER	M	-	-	-	C	-
WESTERN SANDPIPER	M	-	-	-	C	-
MARBLED GODWIT	V	-	-	-	C	-
SANDERLING	M	-	-	-	C	-
WILSON'S PHALAROPE	S	P	C	-	-	-
NORTHERN PHALAROPE	M	-	-	-	C	-
GLAUCOUS GULL	M	-	-	-	-	P
HERRING GULL	M	-	-	-	C	C
CALIFORNIA GULL	M	-	-	-	C	P
RING BILLED GULL	M	-	-	-	C	P
MEW GULL	M	-	-	-	-	-
BONAPARTE'S GULL	M	-	-	-	C	P
COMMON TERN	M	-	-	-	C	-
ARCTIC TERN	M	-	-	-	C	-
BLACK TERN	S	-	C	-	-	C
ROCK DOVE	A	-	-	-	-	P
MOURNING DOVE	S	P	C	-	-	P
GREAT HORNED OWL	R	P	C	P	C	-
SNOWY OWL	W	-	-	-	-	-
HAWK OWL	W	-	-	-	-	-
PYGMY OWL	R	P	C	-	-	-
BARRED OWL	R	P	C	-	-	-
GREAT GRAY OWL	R	P	C	-	C	-
LONG EARED OWL	R	P	C	-	-	-
SHORT EARED OWL	R	P	C	-	C	-
BOREAL OWL	R	P	C	-	-	-
SAW WHET OWL	R	P	C	-	-	-
COMMON NIGHTHAWK	S	P	C	P	C	P
BLACK SWIFT	S	P	C	P	-	P
VAUX'S SWIFT	S	P	C	-	C	-
BLACK CHINNED HMBIRD	V	-	-	-	-	P
RUFIOUS HUMMINGBIRD	S	P	C	P	C	P

CALLIOPE HUMMINGBIRD	S	P	C	-	C	P	-
BELTED KINGFISHER	S	P	C	P	C	P	C
RED SHAFTED FLICKER	S	P	C	P*	-	P	C
PILEATED WOODPECKER	R	P	C	P	C	P	C
LEWIS' WOODPECKER	S	P	C	-	C*	-	-
YELLOW BELLIED SAPSKR	S	P	C	P	C	P*	C
WILLIAMSON'S SAPSUCKER	S	P	C	-	-	-	-
HAIRY WOODPECKER	R	P	C	P*	C*	P	-
DOWNY WOODPECKER	R	P	C	-	C	P	-
BLACK BACKED 3-TD WDPKR	R	P	C	P	C	P*	-
NORTHERN 3-TD WDPKR	R	P	C	P	C	P*	-
EASTERN KINGBIRD	S	P	C	-	C	P	C
WESTERN KINGBIRD	S	P	C	-	-	-	C*
SAY'S PHOEBE	S	P	C	-	-	-	-
TRAILL'S FLYCATCHER	S	P	C	P	-	P	-
LEAST FLYCATCHER	S	P	C	-	-	P	-
HAMMOND'S FLYCATCHER	S	P	C	P	-	-	-
DUSKY FLYCATCHER	S	P	C	P	-	-	-
WESTERN FLYCATCHER	S	P	C	-	-	-	-
WESTERN WOOD PEWEE	S	P	C	P	C	P	-
OLIVE SIDED FLYCATCHER	S	P	C	P	-	P	-
HORNED LARK	S	P	C	-	C	-	-
VIOLET GREEN SWALLOW	S	P	C	P	C	P	C
TREE SWALLOW	S	P	C	P	-	P*	C
BANK SWALLOW	S	P	C	-	C*	P	C
ROUGH WINGED SWALLOW	S	P	C	P*	C	P	C
BARN SWALLOW	S	P	C	-	C*	P	C
CLIFF SWALLOW	S	P	C	P	-	P	-
GRAY JAY	R	P	C	P*	-	P	-
STELLER'S JAY	R	P	C	P	C	P	-
BLACK BILLED MAGPIE	R	P	C	P	C	P	C
COMMON RAVEN	R	P	C	P	C*	P	C
COMMON CROW	S	P	C	P	-	P	C
CLARK'S NUTCRACKER	R	P	C	P*	C	P*	-
BLACK CAPPED CHICKADEE	R	P	C	P	-	P	C
MOUNTAIN CHICKADEE	R	P	C	P	C	P	-

BOREAL CHICKADEE	R	P	C	P	-	P	-
CHESTNUT BACKED CHKDEE	R	P	C	-	-	P	-
WHITE BREASTED NUTHATCH	R	-	C	-	C	P	-
RED BREASTED NUTHATCH	R	P	C	P	C	P	-
BROWN CREEPER	R	P	C	-	-	P	-
DIPPER	R	P	C	P*	-	P*	-
HOUSE WREN	S	P	C	-	-	-	-
WINTER WREN	S	P	C	P*	-	P*	-
LONG BILLED MARSH WREN	S	P	C	-	C	-	C*
ROCK WREN	S	P	C	-	-	-	-
ROBIN	S	P	C	P	-	P*	C
VARIED THRUSH	S	P	C	P*	-	P	C
HERMIT THRUSH	S	P	C	P	-	P	-
SWAINSON'S THRUSH	S	P	C	P	C	P	-
VEERY	S	P	C	-	C	-	C
WESTERN BLUEBIRD	S	P	C	-	C	-	-
MOUNTAIN BLUEBIRD	S	P	C	P	-	P*	C
TOWNSEND'S SOLITAIRE	S	P	C	P	C	P*	-
GOLDEN CROWNED KINGLET	S	P	C	P	C	P	-
RUBY CROWNED KINGLET	S	P	C	P	C	P	-
WATER PIPIT	S	P	C	-	C	P	-
BOHEMIAN WAXWING	S	P	C	P	C	P	-
CEDAR WAXWING	S	P	C	-	C	P	-
NORTHERN SHRIKE	M	-	-	-	C	-	-
COMMON STARLING	S	P	C	-	-	P	C
SOLITARY VIREO	S	P	C	P	-	P*	-
RED EYED VIREO	S	P	C	P	C	P	-
WARBLING VIREO	S	P	C	P	-	P	-
TENNESSEE WARBLER	S	P	C	P	-	P	-
ORANGE CROWNED WARBLER	S	P	C	-	-	-	-
YELLOW WARBLER	S	P	C	-	-	P	C
MAGNOLIA WARBLER	M	-	-	-	-	P	-
MYRTLE WARBLER	M	-	-	-	-	P	-
AUDUBON'S WARBLER	S	P	C	P	C	P	C
TOWNSEND'S WARBLER	S	P	C	P	-	P	-
BLACKPOLL WARBLER	M	-	-	-	-	-	-

NORTHERN WATERTHRUSH	S	P	C	-	-	-	-
MACGILLIVRAY'S WARBLER	S	P	C	P	C*	-	-
YELLOWTHROAT	S	P	C	P	C	P*	C
WILSON'S WARBLER	S	P	C	P	-	-	-
REDSTART	S	P	C	P	C	-	C
HOUSE SPARROW	R	P	C	-	C	P	C
WESTERN MEADOWLARK	S	-	C	P	-	-	C
YELLOW HEADED BLACKBIRD	S	P	C	-	C	-	C
RED WINGED BLACKBIRD	S	P	C	-	C	P	C
BULLOCK'S ORIOLE	S	-	C	-	C	-	-
RUSTY BLACKBIRD	M	-	-	-	-	-	-
BREWER'S BLACKBIRD	S	P	C	-	C	-	-
BROWN HEADED COWBIRD	S	P	C	P	-	P	C
WESTERN Tanager	S	P	C	P	-	P*	C
BLACK HEADED GROSBEAK	S	P	C	-	-	-	-
LAZULI BUNTING	S	P	C	-	C	-	-
EVENING GROSBEAK	S	P	C	P	-	P	-
PURPLE FINCH	S	P	C	-	-	P	C
CASSIN'S FINCH	S	-	C	P	-	P	-
PINE GROSBEAK	R	P	C	-	-	P	-
GRAY CROWNED ROSY FINCH	S	P	C	-	-	P	-
COMMON REDPOLL	W	-	-	-	C	P	-
PINE SISKIN	R	P	C	P	C	P	C
GOLDFINCH	A	-	-	-	-	P	C
RED CROSSBILL	R	P	C	P	-	P	-
WHITE WINGED CROSSBILL	R	P	C	-	-	P	-
SAVANNAH SPARROW	S	P	C	-	C	P	-
GRASSHOPPER SPARROW	A	-	-	-	-	-	C
VESPER SPARROW	S	P	C	P	C	P	-
SLATE COLOURED JUNCO	W	-	-	-	-	P	-
OREGON JUNCO	S	P	C	P	-	P*	-
TREE SPARROW	M	-	-	-	-	-	-
CHIPPING SPARROW	S	P	C	P	-	P*	C
CLAY COLOURED SPARROW	S	P	C	-	-	P	-
BREWER'S SPARROW	S	P	C	-	-	-	-
WHITE CROWNED SPARROW	S	P	C	P	C	P	-

GOLDEN CROWNED SPARROW	S	P	C	-	-	-	-
WHITE THROATED SPARROW	M	-	-	-	-	-	-
FOY SPARROW	S	P	C	P	C	P	-
LINCOLN'S SPARROW	S	P	C	P	-	P	-
SONG SPARROW	S	P	C	-	C	P	-
LAPLAND LONGSPUR	M	-	-	-	C	-	-
SNOW BUNTING	W	-	-	-	C	-	-

Summer Residents (S)	PC	...	119
Summer Residents (S)	C	...	7
Permanent Res. (R)	PC	...	36
Permanent Res. (R)	C	...	1
Migrants (M)		...	49
Winter Visitant (W)		...	5
Summer Visitant (V)		...	2
Accidental (A)		...	4
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Total		...	223