



MONITORING OF AVIAN POPULATIONS
DURING EXPERIMENTAL INSECT
CONTROL OPERATIONS IN
BRITISH COLUMBIA IN 1976.

by

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INTRODUCTION

Experimental trials using aerial applications of Orthene^R and Dimilin^R were carried out against the Douglas fir tussock moth, Orgyia pseudotsugata (McDunnough) infestations in the Kamloops area of British Columbia. Orthene was applied at the emitted dosage rate of 1.121 kg/ha (16 oz/ac) and Dimilin at the rate of 0.140 kg/ha (2 oz/ac) and 0.035 kg/ha ($\frac{1}{2}$ oz/ac).

The Environment Impact group of the Chemical Control Research Institute monitored the forest bird complex in treated and untreated forest stands and the aquatic invertebrate complex inhabiting ponds and streams in both treated and untreated areas.

This report highlights the results of bird monitoring operations that are available to date. The aquatic monitoring data has not been processed to the point to where the results are available for this report.

METHODS

Forest songbird populations were assessed on 4 hectare (10 acre) plots in treated and untreated areas using techniques similar to those described by Kendeigh 1944. Populations were monitored daily and recorded on plot maps starting about 5 days prior to the application of the insecticide and continuing throughout the experimental period, ending approximately 5 days after the treatment. On the day of the application of the insecticide, plot searches were carried out in an attempt to recover any sick or dead birds for pesticide residue analysis. Five forest plots (Tables I - V) and one open marsh plot were monitored in the Orthene trials and two forest plots (Tables VI and VII) monitored in the 0.140 kg/ha (2 oz/ac) Dimilin trial.

Aquatic organisms were collected from streams and ponds in areas receiving the Orthene and both Dimilin trials. Surber samples (Surber 1936) were taken from stream and pond bottoms, preserved and returned to the laboratory for sorting, identification and data analysis.

RESULTS

Orthene: Preliminary analysis of the data indicate that the Orthene trials did not cause any mortality to breeding bird populations on the census plots. Avian populations on the treated plots remained relatively stable while those on the untreated check plot increased. This population increase is mainly due to small groups of such species as brown-headed cowbirds, Molothrus ater (Boddaert), black-capped chickadees, Parus atricapillus Linnaeus and pine siskins, Spinus pinus (Wilson) foraging through the plot. The data do not indicate that these species had vacated the treated areas. Species occupying breeding territories such as the Traill's flycatcher, Empidonax traillii (Audubon) and the chipping sparrow, Spizella passerina (Beckstein) were not affected by the treatment except on plot 2 (Table III) where activity was noticeably reduced on the day following treatment but territories remained occupied.

Red-winged blackbirds, Agelaius phoeniceus (Linnaeus) occupying territories in an open catabail marsh were observed throughout the Orthene trial monitoring period. Numerous territories were identified but only three nests were located close to the shore. Searches for nests in the other territories being hampered by deep water and muddy bottom conditions. Living young were observed in all three nests throughout the census period.

Dimilin: Avian populations on the untreated check plot increased after the application of Dimilin while populations on the treated plot remained relatively constant. A decrease in activity was recorded on the day after the application but returned to normal on day 2. Small groups of black-capped chickadees P. atricapillus L. and American robins, Tardus migrotorius Linnaeus were mainly responsible for the daily population fluctuations of the daily population census. Again the data do not indicate that these wandering groups were forced to leave the treated area.

SUMMARY

Preliminary analysis of the data indicate that under the conditions of application neither Orthene^R at the emitted dosage rate of 1.121 kg/ha or Dimilin^R at the emitted dosage rate of 0.140 kg/ha caused any mortality to the small forest bird complex in the treatment areas. A one day reduction in activity was experienced on plot 2 (Table III) in the Orthene trials and on the Dimilin treatment plot. The data do not indicate the insecticides caused this decline. Nestling blackbirds in nests exposed to the Orthene trial were not affected.

Table I
 Forest bird population census
 Orthene^R untreated check plot
 Kamloops, British Columbia
 May 23 - June 2
 1976

Family	Species	Pre-spray days					Daily Average	Post-spray days					Daily Average
		May 23	May 24	May 25	May 26	May 27		May 29	May 30	May 31	June 1	June 2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Scolopacidae	Common Snipe	0	0	1	1	1	0.6	1	1	1	1	1	1.0
Columbidae	Mourning Dove	1	1	1	1	0	0.8	1	0	0	0	0	0.2
Trochilidae	Calliope Hummingbird	0	0	0	0	0	0.0	1	1	1	0	0	0.6
Picidae	Common Flicker	0	1	0	0	0	0.2	0	0	0	0	0	0.0
	Yellow-bellied Sapsucker	0	0	0	0	0	0.0	1	1	2	2	2	1.6
Tyrannidae	Say's Phoebe	1	1	0	0	0	0.4	1	0	0	0	0	0.2
	Traill's Flycatcher	4	2	2	4	5	3.4	4	5	6	6	6	5.6
Corvidae	Raven	0	1	0	2	0	0.6	0	0	1	0	0	0.2
Paridae	Black-capped Chickadee	1	2	1	4	3	2.2	5	5	4	0	6	4.0
	Mountain Chickadee	0	2	0	0	0	0.4	0	0	0	4	0	0.8
Sittidae	White-breasted Nuthatch	0	0	0	0	0	0.0	0	1	1	0	0	0.4
	Red-breasted Nuthatch	0	0	0	0	0	0.0	1	1	0	1	1	0.8

Table I cont'd

Family	Species	Pre-spray days					Daily Average	Post-spray days					Daily Average
		May	May	May	May	May		May	May	May	June	June	
		23	24	25	26	27		29	30	31	1	2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Turdidae	American Robin	1	4	1	0	1	1.4	1	1	3	4	4	2.6
	Swainson's Thrush	1	1	1	1	0	0.8	1	2	0	0	1	0.8
	Townsend's Solitaire	0	0	0	0	0	0.0	0	0	0	1	1	0.4
Vireonidae	Solitary Vireo	2	0	2	2	1	1.4	2	2	0	3	3	2.0
Parulidae	Magnolia Warbler	0	1	0	0	0	0.2	0	0	0	0	0	0.0
	Black-throated Gray Warbler	0	0	1	0	2	0.6	1	0	0	0	0	0.0
	Audubons Warbler	3	2	3	0	1	1.8	1	3	2	3	2	2.2
	Chestnut-sided Warbler	0	0	0	2	0	0.4	0	0	0	0	0	0.0
	Wilson's Warbler	1	0	0	2	0	0.6	0	2	1	1	0	0.8
Icteridae	Brewer's Blackbird	1	3	1	0	0	1.0	0	0	0	0	0	0.0
	Brown-headed Cowbird	0	0	0	3	1	0.8	5	2	3	7	3	4.0
Thraupidae	Western Tanager	3	5	3	4	1	3.2	2	2	4	6	2	3.2
Fringillidae	Pine Siskin	0	0	0	1	0	0.2	2	0	0	5	8	3.0
	Chipping sparrow	6	3	5	2	6	4.4	2	5	5	5	5	4.4
Unidentified species		0	0	1	0	0	0.2	1	0	0	0	3	0.8
Totals		25	29	23	29	22	26.6	33	34	34	49	47	39.4

Table II
 Forest bird population census
 Orthene[®] treatment plot 1
 Kamloops, British Columbia
 May 23 - June 2, 1976

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		May	May	May	May	May		May	May	May	June	June	
		23	24	25	26	27		29	30	31	1	2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Tetraonidae	Ruffed Grouse	1	1	2	0	0	0.8	0	1	0	0	0	0.2
Trochilidae	Calliope Hummingbird	2	2	4	1	2	2.2	0	2	2	0	1	1.0
Picidae	Common Flicker	0	0	1	0	0	0.2	1	1	0	0	0	0.4
	Yellow-bellied Sapsucker	0	0	0	1	0	0.2	0	0	0	0	1	0.2
Tyrannidae	Traill's Flycatcher	1	1	3	2	2	1.8	5	5	3	4	2	3.8
Corvidae	Black-billed Magpie	0	0	0	0	1	0.2	0	0	0	0	0	0.0
Paridae	Black-capped Chickadee	0	2	0	1	0	0.6	5	0	2	0	0	1.4
	Mountain Chickadee	0	0	2	0	0	0.4	0	0	0	2	0	0.4
Sittidae	Red-breasted Nuthatch	0	0	0	1	0	0.2	0	0	0	1	0	0.2
Turdidae	American Robin	2	3	1	4	1	2.2	0	0	1	3	1	1.0
	Swainson's Thrush	0	0	0	1	1	0.4	0	0	1	1	1	0.6
	Townsend's Solitaire	0	1	0	0	1	0.4	2	0	1	0	2	1.0
Vireonidae	Solitary Vireo	3	1	0	1	1	1.2	0	0	0	1	1	0.4
	Warbling Vireo	0	0	0	0	0	0.0	0	1	0	0	0	0.2

Table II Cont'd

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		May 23	May 24	May 25	May 26	May 27		May 29	May 30	May 31	June 1	June 2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Parulidae	Nashville Warbler	0	1	1	0	0	0.4	1	0	0	0	0	0.2
	Audubon's Warbler	1	0	0	0	0	0.2	1	0	0	1	0	0.4
	MacGillivray's Warbler	1	0	0	1	0	0.4	0	1	0	0	0	0.2
	Wilson's Warbler	1	0	0	0	0	0.2	0	0	0	0	0	0.0
Icteridae	Rusty Blackbird	1	0	0	0	0	0.2	0	0	0	0	0	0.0
	Brewer's Blackbird	0	0	0	0	0	0.0	1	0	0	0	0	0.2
	Brown-headed Cowbird	0	0	0	1	0	0.2	0	1	0	0	1	0.4
Thraupidae	Western Tanager	2	2	1	2	1	1.6	4	4	1	1	2	2.4
Fringillidae	Evening Grosbeak	0	4	0	0	0	0.8	0	0	0	0	0	0.0
	Pine Siskin	3	7	2	1	0	2.6	3	2	2	5	0	2.4
	Dark-eyed Junco	0	0	0	0	0	0.0	1	0	3	1	1	1.2
	Chipping Sparrow	5	7	8	3	7	6.0	7	4	4	2	0	3.4
Totals:		23	32	25	20	17	23.4	31	22	20	22	13	21.6

Table III
 Forest bird population census
 Orthene[®] treatment plot 2
 Kamloops, British Columbia
 May 23 - June 2, 1976

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		May 23	May 24	May 25	May 26	May 27		May 29	May 30	May 31	June 1	June 2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Tetraonidae	Ruffed Grouse	1	1	0	0	0	0.4	0	1	0	0	1	0.4
Columbidae	Mourning Dove	1	0	0	0	0	0.2	0	0	0	0	0	0.0
Trochilidae	Calliope Hummingbird	0	2	0	2	1	1.0	1	0	1	1	0	0.6
Picidae	Common Flicker	0	0	0	0	1	0.2	1	1	0	0	0	0.4
	Yellow-bellied Sapsucker	0	0	1	0	0	0.2	0	1	2	0	0	0.6
Tyrannidae	Traill's Flycatcher	1	1	1	1	0	0.8	1	3	4	3	2	2.6
Paridae	Black-capped Chickadee	0	1	1	4	2	1.6	1	4	5	1	0	2.2
	Mountain Chickadee	0	0	1	0	0	0.2	0	0	0	0	1	0.2
Sittidae	Red-breasted Nuthatch	1	0	0	0	0	0.2	1	0	0	0	0	0.2
Turdidae	American Robin	3	0	2	2	3	2.0	0	2	1	4	1	1.6
	Swainson's Thrush	0	0	0	0	0	0.0	2	1	1	1	2	1.4
Vireonidae	Hutton's Vireo	1	0	0	0	0	0.2	0	0	0	0	0	0.0
	Solitary Vireo	2	1	2	3	0	1.6	0	0	2	1	1	0.8
Parulidae	Nashville Warbler	0	0	0	0	1	0.2	0	0	0	0	0	0.0
	Audubon's Warbler	2	5	2	2	2	2.6	1	2	2	1	3	1.8
	Townsend's Warbler	0	2	0	0	0	0.4	0	0	0	0	0	0.0
	Wilson's Warbler	0	0	0	0	1	0.2	0	0	0	1	1	0.4

Table III Cont'd

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		May 23	May 24	May 25	May 26	May 27		May 29	May 30	May 31	June 1	June 2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Icteridae	Brewer's Blackbird	1	0	0	0	0	0.2	0	1	0	0	0	0.2
	Brown-headed Cowbird	0	0	1	0	4	1.0	2	2	1	3	2	2.0
Thraupidae	Western Tanager	0	1	0	1	4	1.2	0	1	0	0	4	1.0
Fringillidae	Eyening Grosbeak	0	0	0	0	2	0.4	0	0	0	0	1	0.2
	Purple Finch	0	1	0	0	0	0.2	0	0	0	0	0	0.0
	Pine Siskin	2	0	0	0	0	0.4	2	3	4	2	1	2.4
	Chipping Sparrow	8	8	6	5	5	6.4	4	8	5	9	2	5.6
Unidentified Species		0	0	0	0	0	0.0	0	0	0	1	0	0.2
Totals:		23	21	17	20	26	21.4	16	29	27	28	22	24.4

Table IV
 Forest bird population census
 Orthene^R treatment plot 5
 Kamloops, British Columbia
 May 23 - June 2
 1976

Family	Species	Pre-spray days					Daily Average	Post-spray days					Daily Average
		May 23	May 24	May 25	May 26	May 27		May 29	May 30	May 31	June 1	June 2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Tetraonidae	Ruffed Grouse	0	0	0	0	0	0.0	0	0	1	0	0	0.2
Columbidae	Mourning Dove	0	0	1	0	0	0.2	1	0	0	0	0	0.2
Trochilidae	Calliope Hummingbird	0	0	0	0	0	0.0	0	1	1	0	1	0.6
Picidae	Yellow-bellied Sapsucker	0	0	1	0	0	0.2	0	0	1	0	0	0.4
Tyrannidae	Traill's Flycatcher	0	1	0	1	0	0.4	1	0	1	0	2	0.8
Paridae	Black-capped Chickadee	0	0	0	0	1	0.2	0	3	0	0	2	1.0
Turdidae	American Robin	0	1	0	1	0	0.4	1	0	0	0	0	0.2
Sylviidae	Ruby-crowned Kinglet	1	1	0	1	0	0.6	0	1	0	0	0	0.2
Vireonidae	Solitary Vireo	0	0	0	0	0	0.0	0	0	1	0	0	0.2
Parulidae	Audubon's Warbler	0	0	1	1	1	0.6	0	1	0	0	0	0.2
	Wilson's Warbler	1	0	0	0	0	0.2	0	0	0	0	0	0.0
Icteridae	Brewer's Blackbird	1	0	1	0	0	0.4	0	0	0	0	0	0.0
Fringillidae	Pine Siskin	0	3	0	0	2	1.0	0	0	3	0	0	0.6
	Chipping Sparrow	0	1	1	1	2	1.0	2	1	2	1	1	1.4
	Song Sparrow	0	0	0	1	0	0.2	1	1	1	1	1	1.0
Totals		3	7	5	6	6	5.4	7	8	11	2	7	7.0

Table V
 Forest bird population census
 Orthene[®] treatment plot 6
 Kamloops, British Columbia
 May 23 - June 2, 1976

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		May 23	May 24	May 25	May 26	May 27		May 29	May 30	May 31	June 1	June 2	
Tetraonidae	Ruffed Grouse	1	1	1	1	1	1.0	1	0	0	0	1	0.4
Columbidae	Mourning Dove	1	1	0	0	0	0.4	0	0	0	0	0	0.0
Trochilidae	Calliope	0	0	0	0	0	0.0	0	0	1	0	1	0.2
	Hummingbird	0	0	0	0	0	0.0	0	0	1	0	1	0.2
Picidae	Yellow-bellied	0	1	1	1	1	0.8	1	0	0	0	1	0.2
	Sapsucker	0	1	1	1	1	0.8	1	0	0	0	1	0.2
Tyrannidae	Traill's Flycatcher	1	1	0	1	0	0.6	1	2	1	0	0	0.8
Paridae	Black-capped	1	0	0	0	0	0.2	3	0	1	0	1	1.0
	Chickadee	1	0	0	0	0	0.2	3	0	1	0	1	1.0
	Mountain Chickadee	0	0	0	1	0	0.2	0	0	0	0	1	0.2
Sittidae	Red-breasted	1	0	0	0	0	0.2	0	0	0	0	0	0.0
	Nuthatch	1	0	0	0	0	0.2	0	0	0	0	0	0.0
Turdidae	American Robin	1	0	1	1	0	0.6	0	0	0	0	1	0.2
	Swainson's Thrush	0	0	0	0	0	0.0	1	1	0	2	2	1.2
Sylviidae	Golden-crowned	0	0	0	0	0	0.0	0	0	0	0	2	0.4
	Kinglet	0	0	0	0	0	0.0	0	0	0	0	2	0.4
	Ruby-crowned	2	2	3	2	2	1.2	1	2	2	2	2	1.8
Vireonidae	Solitary Vireo	0	0	0	0	0	0.0	0	1	1	0	1	0.6
	Warbling Vireo	1	1	1	1	1	1.0	2	0	1	0	1	0.8

Table V

Cont'd

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		May 23	May 24	May 25	May 26	May 27		May 29	May 30	May 31	June 1	June 2	
		-5	-4	-3	-2	-1		+1	+2	+3	+4	+5	
Parulidae	Audubon's Warbler	0	0	1	0	0	0.2	0	1	0	1	0	0.4
	Wilson's Warbler	1	1	0	1	1	0.8	1	1	1	1	0	0.8
Icteridae	Brewer's Blackbird	0	0	1	0	0	0.2	0	0	0	0	0	0.0
	Brown-headed Cowbird	0	0	0	0	0	0.0	2	0	0	1	0	0.6
Thraupidae	Western Tanager	0	0	0	1	0	0.2	1	0	1	1	2	1.0
Fringillidae	Pine Siskin	10	5	0	1	0	3.2	0	2	3	0	0	1.0
	Dark-eyed Junco	0	0	1	2	0	0.6	0	0	0	0	0	0.0
	Chipping Sparrow	0	0	0	0	0	0.0	0	0	2	0	0	0.4
	Song Sparrow	0	0	0	0	0	0.0	0	0	0	1	0	0.2
Totals:		20	13	10	13	6	12.4	14	10	14	9	16	12.6

Table VI
 Forest bird population census
 Dimilin^R untreated check plot
 Kamloops, British Columbia
 June 12 - 24
 1976

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		June 12	June 13	June 14	June 15	June 17		June 19	June 20	June 21	June 23	June 24	
		-6	-5	-4	-3	-1		+1	+2	+3	+5	+6	
Tetraonidae	Ruffed Grouse	0	0	1	0	0	0.2	0	0	1	0	0	0.2
Trochilidae	Calliope Hummingbird	1	0	1	1	0	0.6	1	3	1	2	2	1.8
Picidae	Yellow-bellied Sapsucker	0	0	0	0	1	0.2	2	2	2	2	1	1.8
Tyrannidae	Traill,s Flycatcher	1	1	1	1	1	1.0	0	0	1	1	1	0.6
Paridae	Black-capped Chickadee	1	2	1	0	0	0.8	0	0	0	0	0	0.0
	Mountain Chickadee	1	0	2	1	0	0.8	0	6	4	6	2	3.6
Sittidae	Red-breasted Nuthatch	0	0	0	1	0	0.2	0	0	2	0	1	0.6
Turdidae	American Robin	0	0	2	7	1	2.0	1	0	1	1	3	1.2
	Swainson's Thrush	2	2	2	1	0	1.4	2	1	2	0	1	1.2
Sylviidae	Ruby-crowned Kinglet	0	0	0	0	2	0.4	0	0	1	2	3	1.2
Vireonidae	Hutton's Vireo	0	0	0	0	0	0.0	1	0	0	0	0	0.2
	Warbling Vireo	1	3	4	1	1	2.0	2	1	3	0	3	1.8

Table VI (Cont'd.)

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		June	June	June	June	June		June	June	June	June	June	
		12	13	14	15	17		19	20	21	23	24	
		-6	-5	-4	-3	-1		+1	+2	+3	+5	+6	
Parulidae	Audubon's Warbler	0	0	0	0	0	0.0	0	0	1	1	0	0.2
Icteridae	Brown-headed Cowbird	1	0	0	0	0	0.2	0	1	1	0	1	0.4
	Western Meadowlark	0	0	0	0	0	0.0	0	1	0	0	0	0.2
Thraupidae	Western Tanager	0	0	0	0	0	0.0	0	1	0	0	0	0.2
Fringillidae	Cassin's Finch	0	0	0	0	0	0.0	1	0	0	0	1	0.4
	Pine Siskin	0	0	0	0	3	0.6	1	0	0	1	3	1.0
	Vesper Sparrow	0	1	1	1	2	1.0	0	2	2	2	2	1.6
	Dark-eyed Junco	0	1	1	0	0	0.4	0	0	0	1	0	0.2
	Chipping Sparrow	2	3	7	4	3	3.8	5	3	6	3	4	4.2
Unidentified	species	0	0	0	0	0	0.0	0	0	1	0	0	0.2
Totals		10	13	23	18	14	15.6	16	21	29	22	28	23.2

Table VII
 Forest bird population census
 Dimilin^R treatment plot
 Kamloops, British Columbia
 June 12 - 24
 1976

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		June	June	June	June	June		June	June	June	June	June	
		12	13	14	15	17		19	20	21	23	24	
		-6	-5	-4	-3	-1		+1	+2	+3	+5	+6	
Trochilidae	Calliope Hummingbird	0	0	1	0	0	0.2	0	1	0	0	0	0.2
Picidae	Common Flicker	1	2	0	1	1	1.0	0	2	0	0	0	0.4
	Yellow-bellied Sapsucker	2	0	0	1	1	0.8	0	2	1	2	2	1.4
Tyrannidae	Traill's Flycatcher	1	2	3	1	2	1.8	0	0	0	1	0	0.2
Corvidae	Raven	0	0	0	0	0	0.0	0	0	0	0	1	0.2
	Crow	0	0	0	0	1	0.2	0	0	0	0	0	0.0
Paridae	Black-capped Chickadee	0	6	6	0	0	2.4	0	0	0	0	0	0.0
	Mountain Chickadee	0	3	6	5	4	3.6	3	4	3	1	0	2.2
Sittidae	White-breasted Nuthatch	0	0	1	0	0	0.2	0	1	0	1	0	0.4
	Red-breasted Nuthatch	2	0	0	0	1	0.6	0	2	0	0	0	0.4
Turdidae	American Robin	0	6	8	5	6	5.0	3	1	2	3	3	2.4
	Swainson's Thrush	1	2	2	2	2	1.8	2	1	2	2	1	1.6
	Townsend's Solitaire	0	0	0	0	0	0.0	0	0	0	1	0	0.2

Table VII (Cont'd)

Family	Species	Pre-spray days					Daily ave	Post-spray days					Daily ave
		June 12	June 13	June 14	June 15	June 17		June 19	June 20	June 21	June 23	June 24	
		-6	-5	-4	-3	-1		+1	+2	+3	+5	+6	
Vireonidae	Solitary Vireo	0	0	0	1	1	0.4	1	0	2	2	1	1.2
	Warbling Vireo	2	3	3	3	2	2.6	2	3	2	1	1	1.8
Parulidae	Audubon's Warbler	1	2	1	1	1	1.2	1	4	2	1	3	2.2
	Wilson's Warbler	1	1	0	0	0	0.4	0	0	0	0	0	0.0
Icteridae	Brown-headed Cowbird	4	2	2	1	3	2.4	1	1	4	4	2	2.4
	Western Meadowlark	0	0	0	0	0	0.0	0	0	0	1	0	0.2
Thraupidae	Western Tanager	3	0	3	2	1	1.8	0	2	1	2	0	1.0
Fringillidae	Cassin's Finch	0	0	2	0	1	0.6	0	1	0	0	0	0.2
	Pine Siskin	0	4	0	1	5	2.0	6	6	8	3	4	5.4
	Vesper Sparrow	2	0	0	1	1	0.8	1	1	1	0	0	0.6
	Dark-eyed Junco	1	4	1	1	1	1.6	1	2	2	4	3	2.4
	Chipping Sparrow	4	4	3	1	3	3.0	1	3	5	6	2	3.4
Totals		25	41	42	27	37	34.4	22	37	35	35	23	30.4

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