

POPULATION AND OCCURRENCE OF BIRDS IN
VARYING COVER TYPES OF THE
WILLAMETTE VALLEY

by

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INTRODUCTION

The material and observations in this work deal primarily with problems and questions of an ecological nature. However, the writer has not confined himself to ecology exclusively. The recording of a certain amount of observed behavior of the birds seemed necessary in order to give a more complete picture of the relation to the varying cover types. Linsdale (8a) is of the opinion that the recording of environmental responses in connection with definite areas is one of the important forms of investigation toward solving ecological problems.

The nature of the problem of bird distribution in relation to the environment is just beginning to receive attention from investigators. The waning emphasis on life zones as a distributional basis is due mostly if not wholly to the increasing number of ecological studies being carried out. The emphasis is toward the study of smaller ecological units such as life forms, or ecological niches as they were formerly called. The present status of the problem is admirably outlined by Roger Tory Peterson (11) in a recent number of the Audubon Magazine

(formerly Bird-Lore) in an article entitled "Life Zones, Biomes or Life Forms." In it he points out the inadequacy not only of life zones for distributional problems, but also of the newer concept of the biomes, or in other words the major landscape units such as grasslands, deciduous forests, conifer forests, tundra, etc. He says, "Most land birds appear to conform much more readily to the physical aspect of the vegetation or life form."

Two of Mr. Peterson's conclusions must be stated here as a basis for further comment in relation to the results of the present study. First, that "the physical aspect of the environment, or life form, seems to be the most important factor, being modified by climate, barriers, competition, population pressures, and historic factors." Second, "birds that occupy the climax growths are most frequently restricted to that biome as an indicator of it."

Both English and American investigators have tackled different phases of this problem. Among them, a few should be referred to for a comparison of results.

In England, C. Elton (4) tabulated results of a questionnaire sent out to numerous clubs and formulated a table comparing the birds of a conifer forest cover in Finland, England, and California. M. Colquhoun (2) made a study of the density of birds in a preserve forest in

England.

In the United States, J. R. Carpenter (1), W. C. Van Deventor (13), and J. M. Linsdale (8,9) have made important contributions to bird ecology. Some of their methods have been used in the present work and reference will be made to some of them in the discussion of results.

It is from the accumulated results of the environmental relations of animals on many small areas in localities of differing geographic character that solutions of many of the most perplexing problems in natural history may eventually come. Grinnell and Linsdale (9).

The object of the present work is simply to collect and formulate in an organized form a body of data concerning the question of what birds occur, and the amount of their activity, in several varying types of physical and botanical environment. It is to be hoped that this will provide a more definite basis for observational work along ecological lines in similar localities and also provide students with a practical help to personal bird study.

The observations were carried on in five areas within a radius of ten miles of Corvallis, Oregon. The studies were begun on November 9, 1941 and ended with the observations taken on April 6, 1942. A total of twenty-six trips were made to cover the several areas between these dates.

METHODS

Before outlining the methods of observation and tabulation, it will be necessary to give a brief description of each of the five areas covered. Three of these five areas were definite plant cover types. They were: Oak, Conifer, and Cottonwoods. The other two areas were of the open field type. These two were designated as the Open Hillsides and the Valley Fence Rows areas.

The Oak area, located about two miles south of Philomath was about a thirty-acre tract of sparse oak woods (Quercus garryana). At an elevation of about three hundred feet, it was also close to the foothills of the Coast Range. Mt. Chintimini, the highest point in the range, was within ten or twelve miles. The area was surrounded by cultivated fields with a gravel road along the west side.

This area was within a mile of the Conifer area. Within the boundaries of the tract itself, the Oak trees were scattered or in more concentrated groves. The southern end of the area was almost bare of trees but with numerous clumps of wild rose (Rosa rubignosa) growing up to five or six feet high. At the opposite end, where the ground dropped off sharply, the growth of oaks was very dense. In between, in the larger part of the tract, there



Fig. I-Old Oaks with young oak scrub.



Fig. II-Old Oaks with wild rose undergrowth.

were several good-sized clearings separating the groves which had a varying amount of scrubby oak and scattered rose bushes. Under plants were Poison Oak (Rhus diversiloba), Oregon Grape (Berberis aquifolium), and a few Manzanita trees (Arbutus menziesii). (See Figures I and II).

The Conifer Forest area was less than a mile southwest of the Oak area but with a somewhat higher elevation. Most of the area covered was a high forested ridge, almost entirely of Fir (Pseudotsuga taxifolia). Only in a few places was it dense forest where there was no undergrowth. The rest of the ridge was covered with scattered old growth, rotting stumps, and a varying amount of young firs in irregular thickets. Other plants of the undergrowth were Pussy Willow (Salix), Salmonberry (Rubus spectabilis), Trailing Blackberry (Rubus ursinus), and some Elder (Sambucus). The area covered here was again about thirty acres. (See Figures III, IV, and VII).

The third area of major importance was located at Peoria Ferry on the Willamette river, which is about ten miles south of Corvallis and three miles east of the West-side Highway. The elevation here is about 250 feet and the area was completely flooded at least twice during the winter. The surrounding country was mostly cultivated fields with some groves of fir forests scattered around,



Fig.III - Open tract in Conifer area.

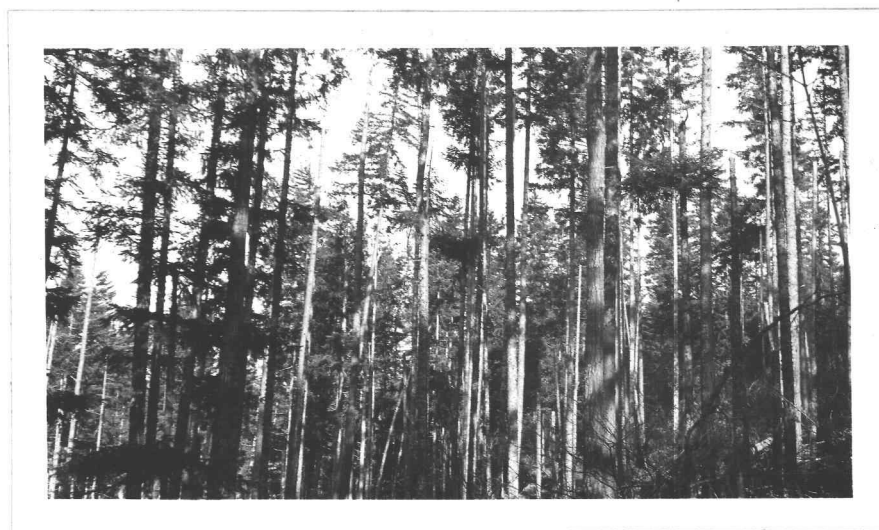


Fig.IV - Dense section of Conifer area.

one of these being adjacent to the checking area. The dominant growth here was Cottonwood (Populus trichocarpa), with several others mixed in. Among these were: Oregon maple (Acer macrophyllum), vine maple (Acer circinatum), Oregon alder (Alnus oregana), Oregon crab apple (Malus diversifolia), and several kinds of Willow (Salix).

Among the shrubs were: Elder (Sambucus), Salmonberry (Rubus spectabilis), and Evergreen Blackberry (Rubus laciniatus). This tract was bounded on the east by the Willamette river and on the west by a long narrow slough. It contained about thirty acres. (See Figures V, VI, and IX).

The fourth area used for checking was situated about two miles north of Corvallis on a south-facing slope of partially cultivated hillsides. This area included an old, grass-grown orchard, brushy fence rows, some willow-grown swales, and a rather steep sidehill of scrubby oak and wild rose. Conifer and Oak forests were adjacent to it, a little higher on the hills. There were a few alders along the gullies and among the willows. The dominant plant was grass, but this included the sown fields of grain. This area contained about fifty acres. It ranged from an elevation of around 300 to 400 or 450 feet. The foothills of this area were a part of the beginnings of the Coast Range. (See Figure VIII).



Fig.V - Cottonwood stand on Willamette river.



Fig.VI - Cottonwood growth along slough.

The fifth checking area was not a definite area as compared to the other four, but a strip of territory about a hundred yards on either side of several valley country roads. This included the road and any fence rows along the roadside. These roads were both paved and gravelled stretches between Corvallis, Philomath, and Peoria.

In checking the numbers and species of birds observed in the first four areas, ninety-minute periods, or observational units, were used and the entire area covered on foot. In the Fence Rows area, a car was used to travel the six to ten miles of roadway that made up this area. Although driving slowly and stopping frequently there was a much greater area covered here than in any of the others. Consequently, only a forty-five-minute checking period was used here. Even then, the comparison of numbers of birds along the Fence Rows area with the other four areas cannot be considered trustworthy.

The Oak, Conifer, and Cottonwoods areas were the three main cover types of a definite character and the comparisons among these three areas can be considered reliable to a certain point, depending on the facts that are sought.

The Open Hillsides area was somewhat larger in acreage than the first three, but its open character and

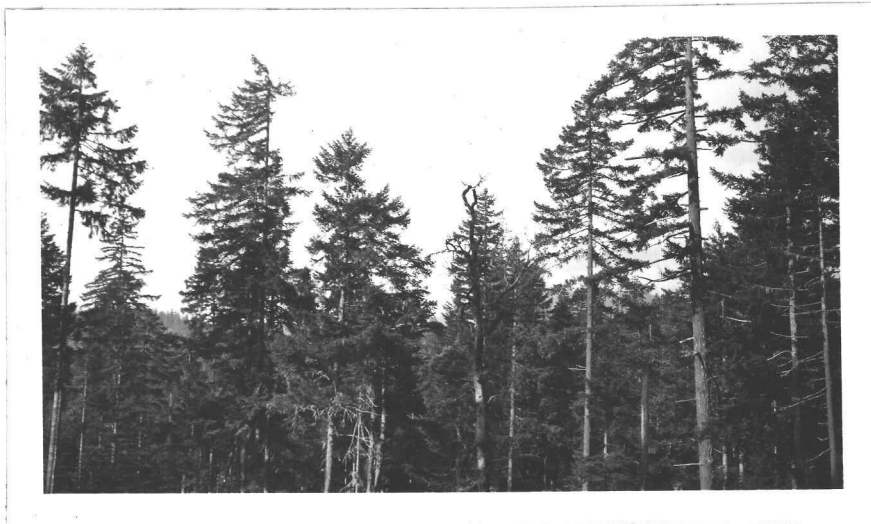


Fig.VII - Sparse growth in Conifer area.



Fig.VIII - Willows and Alders on Open Hillsides.

the fact that it, too, was covered on foot make the comparisons fairly good.

The nomenclature used in the present work is the result of a good deal of agitation away from the use of subspecific names in any work based on observation in the field.

This agitation has been apparent in recent biological meetings and also in recent articles in current journals. However, some compromise had to be made. In the case of two species (Harris' and Gairdner's Woodpeckers) field evidence was deemed sufficient to establish the identity of these two as subspecies. However, in all other cases the recognized common name was used in the discussion and in the complete lists for each area the probable subspecific common name was inserted in parentheses below the common name of the species. In all of these cases the scientific subspecific name was omitted. This practice has been pointed out to be more scientifically accurate than using the subspecific name based simply on the geographic location.

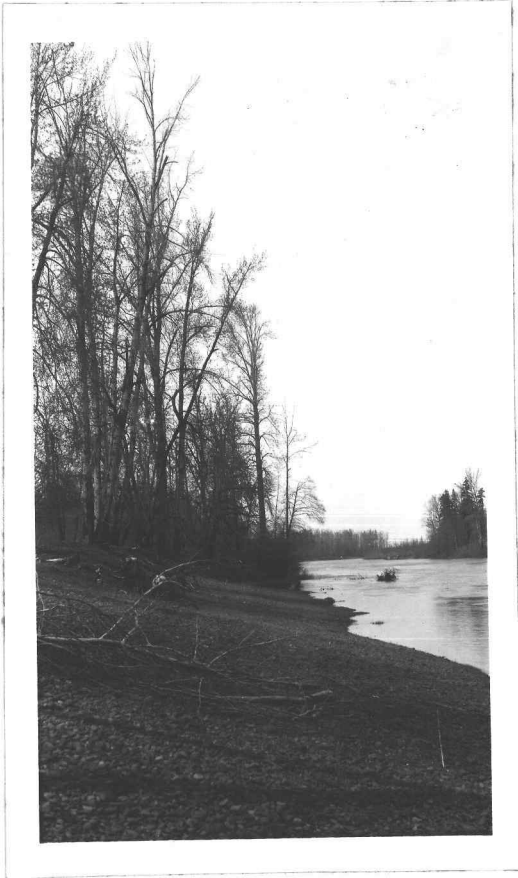
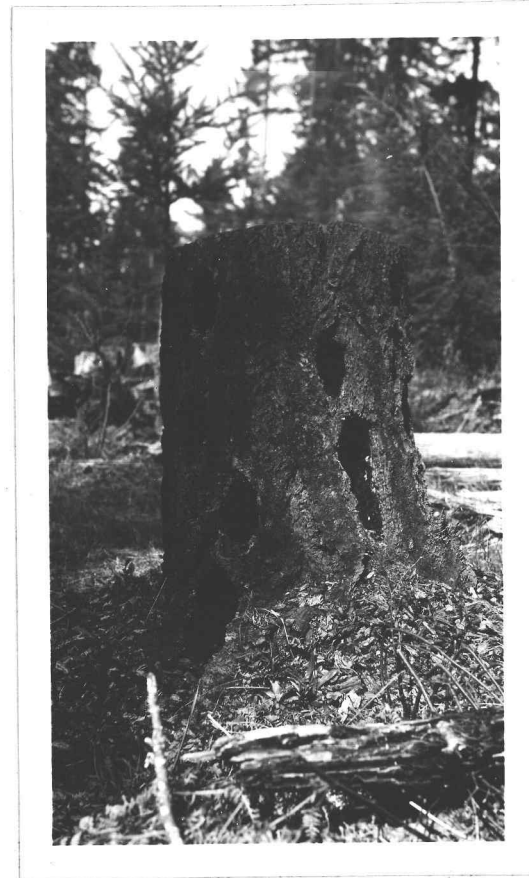


Fig. IX Willamette river at Peoria.



Work of the Pileated Woodpecker.

TABLE I

Observation Dates	Oak Area	Conifer Area	Cotton- woods	Open Hills	Fence Rows
November 9			15		
10				16	
15	20				
24	14	11			17
30	17				
December 10.			16		
13.		13			21
28.				15	
31.	15				
January 17		17	11		13
20	15			11	
31				11	
February 1	14	11			
3			10		11
12.				13	
14.	12				11
17.		12	19		
26.	12			15	11
28.		13	12		
March 12.				11	
14.			17		18
17.	13	14			
28.				15	
29.	12	21	15		18
April 3				12	
6		22	22		19
Average (number of species)	14.40	14.77	15.22	13.22	14.33
Total. (number of species)	34	35	38	35	37

Table I shows the distribution of the observational units through the five months and among the five checking areas. The numbers in the first four columns represent the number of species observed during the hour and a half checking periods, and in the last column, during the forty-five minute periods.

At no time were there less than ten species observed in any one unit, and the highest number was recorded on the last day when twenty-two species were present in two different areas.

The average number of species in each area appears at the bottom of that column, and below, the total number of species recorded from that area during all the units.

It will be seen that there is little variation in either the total or the average number of species among the five areas. Also, through the winter there was a fairly constant number of species and the only real fluctuation took place in the latter part of March and early April when a definite increase showed with the influx of the first waves of the spring migrations. To attempt to explain the minor fluctuations in the number of species from the present study would be impracticable, but they may have been due in some degree to the wandering proclivities of the wintering flock associations.

TABLE II. OAK AREA

	Nov.			Dec.	Jan.	Feb.			March	
	15	24	30	31	20	1	14	26	17	29
Bob-White		15	2	10	3				13	1
Pheasant	2	1	1			3	2	1		1
Flicker	3	19	9	25	18	19	7	9	6	3
Gairdner's Woodpecker	1	2	2	3	1					
California Jay	2	2	4		3	2	1	4	2	4
Oregon Chickadee	8	12	15	16	11	9	11	20	24	23
White-breasted Nuthatch	2	5	4	8	3	2	3	3	2	2
Bewick's Wren	2		2	4	2	5	3	2	4	1
Western Robin		2		3	6	30		12		
Ruby-crowned Kinglet		6	8	8	3	9		1	2	3
Audubon Warbler	8	40	25	41	43	5			4	
Oregon Towhee	5	8	6	19	10	8	13	15	13	4
Oregon Junco	8	16	19	24		12	30	36	50	

Table II shows the occurrence of the thirteen most common birds in the Oak Area. Juncos, Chickadees, Flickers, and Towhees formed a large part of the population here with Audubon Warblers and White-breasted Nuthatches.

TABLE III. CONIFER AREA

	Nov. 24	Dec. 13	Jan. 17	February 1 17 28			March 17 29		Apr. 6
Sooty Grouse							3	4	6
Ruffed Grouse		3		1		1		2	
Pileated Woodpecker	1	1		2	1		1	4	
Harris's Woodpecker	1	1	1		1			2	2
Steller Jay		3	2	2	1	2	3		5
Raven	4	1	3	7		1	1		
Chestnut- backed Chickadee	8	6	5	11	9	19	23	14	14
Red-breasted Nuthatch	5	2	5	7	10	8	6	7	8
Winter Wren	6	12	5	7	6	4	6	8	8
Robin		1	3	5		5	2	2	4
Varied Thrush	1	4		7	1	1		2	
Golden-crowned Kinglet	32	75	45	54	43	57	62	68	42

Table III shows the twelve birds most constant in occurrence in the Conifer Forest Area. The dominant birds were the Golden-crowned Kinglet, Chestnut-backed Chickadee, Red-breasted Nuthatch, and Winter Wren. In smaller number, but fairly constant, were Steller Jays, Robins, Pileated and Harris Woodpeckers.

TABLE IV. COTTONWOODS AREA

	Nov. 9	Dec. 1	Jan. 17	Feb. 3 17 28			Mar. 14 29		Apr. 5
Wood Duck	2		2				9	2	6
Pheasant	2	1						1	8
Flicker	6	3	3	7	2	1	5	8	1
Gairdner's Woodpecker		2		1	1		1	1	1
Red-breasted Sapsucker		2	2		1	1			2
Stellar Jay	3	2		1	1				6
Oregon Chickadee	8	25	3	13	8	14	11	14	20
White-breasted Nuthatch		2			4	1		2	1
Brown Creeper		1		1	2		2		
Winter Wren	4	1	2	3	2	2	2	2	3
Robin	3	24	14	5	3	30	6	10	14
Golden-crowned Kinglet	26	35	18	34	16	8	10	6	
Oregon Junco	19		8	15	10	1	1		4
Song Sparrow	4		3	2	2	3			

Table IV shows the fourteen birds most constant in occurrence in the Cottonwoods Area, with the Golden-crowned Kinglet again the most abundant. Others in the order of their abundance were: Oregon Chickadee, Robin, Junco, and Flicker.

TABLE V. OPEN HILLSIDES AREA

	Nov. 10	Dec. 28	Jan. 20 31		Feb. 12 26		Mar. 12 22		Apr. 3
Red-tailed Hawk	1				2		1	1	
Sparrow Hawk		1	1	1	1	1	2	1	
Mountain Quail		10		14	13		1		
Pheasant	3				1	2			2
Flicker	5	4	6	9		6	2	3	
Crow	24	1			3	2	3	9	
Oregon Chickadee	8	2	16	13	8	8	4	10	1
Bewick's Wren				2	4	2	4	2	
Robin		1	4		16	53	5		3
Bluebird		6	2	35	5		16	6	
Meadowlark	10		1	2	35	6	4	4	3
Oregon Towhee	4	15	16	8	5	11	4	7	5
Junco	32	80	3	130		75	30	30	

Table V shows the thirteen birds most common in occurrence in the Open Hillsides Area, with the Juncos, Chickadees, Robins, Towhees, and Meadowlarks leading the list.

TABLE VI. VALLEY FENCE ROWS AREA

	Nov. 24	Dec. 13	Jan. 17	Feb. 3 14 26			Mar. 14 29		Apr. 6
Turkey Vulture							2	2	2
Sparrow Hawk	2	4	2	2	3	3	4	4	1
Pheasant	12	25	2	3		2	1	3	6
Killdeer	30	150	10				1	2	1
Flicker	2	5	3	1	2	1	5		1
California Jay		1	2	2			1		3
Crow		14				1	3	4	5
Robin	2	30	66	9	30	77	250	18	15
Bluebird	15	15	3	2	4		3		3
English Sparrow		15	20		3		20		8
Meadowlark	8	5	10	3	5	2	7	24	15
Brewer's Black- bird	65		12	1	10	1	260	35	37
Towhee	3	3			2	4	6		4
Junco	31	30	45	53	18	27	41	21	6
White-crowned Sparrow		15		8				8	5
Song Sparrow	4	6	4	1	6	2	5	4	4

Table VI shows sixteen of the birds that were most constant in occurrence along the Valley Fence Rows. Robins and Juncos led, followed closely by Brewer's Blackbirds and Meadowlarks. Pheasant, Bluebirds, Song Sparrows and Sparrow Hawks were the next in line here.

Complete List of the Birds of the Oak Area

1. Geese -- Branta sp.
2. Cooper's Hawk -- Accipiter cooperi
3. Red-tailed Hawk -- Buteo borealis
4. Sparrow Hawk -- Falco sparverius
5. Bob-white -- Colinus virginianus
6. California (Valley) Quail -- Lophortyx californica
7. Ring-necked Pheasant -- Phasianus colchicus
8. Killdeer -- Oxyechus vociferus
9. Mourning Dove -- Zenaidura macroura
10. Northwestern Flicker -- Colaptes cafer
11. Lewis Woodpecker -- Asyndesmus lewis
12. Harris' Woodpecker -- Dryobates villosus harrisi
13. Gairdner's Woodpecker -- Dryobates pubescens gairdneri
14. California Jay -- Aphelocoma californica
(Long-tailed)
15. Raven -- Corvus corax
16. Western Crow -- Corvus brachyrhynchos
17. Oregon Chickadee -- Penthestes atricapillus
18. White-breasted Nuthatch -- Sitta carolinensis
(Slender-billed)
19. Bewick's Wren -- Thryomanes bewicki
(Seattle)
20. Robin -- Turdus migratorius

List of Birds of the Oak Area (continued)

21. Varied Thrush -- Ixoreus naevius
(Pacific)
22. Hermit Thrush -- Hylocichla guttata
(Alaska or Dwarf)
23. Western Bluebird -- Sialia mexicana
24. Golden-crowned Kinglet -- Regulus satrapa
25. Ruby-crowned Kinglet -- Corthylio calendula
(Sitka)
26. American Pipit -- Anthus spinoletta
27. Audubon Warbler -- Dendroica auduboni
28. Brewer's Blackbird -- Euphagus cyanocephalus
29. Purple Finch -- Carpodacus purpureus
(California)
30. Pine Siskin -- Spinus pinus
31. Spotted Towhee -- Pipilo maculatus
(Oregon)
32. Oregon Junco -- Junco oreganus
(Shufeldt's)
33. White-crowned Sparrow -- Zonotrichia leucophrys
34. Golden-crowned Sparrow -- Zonotrichia coronata

Complete List of Birds of the Conifer Area

1. Red-tailed Hawk -- Buteo borealis
2. Sooty Grouse -- Dendragapus fuliginosus
3. Ruffed Grouse -- Bonasa umbellus
(Oregon)
4. Mountain Quail -- Oreortyx picta
5. Ring-necked Pheasant -- Phasianus colchicus
6. Horned Owl -- Bubo virginianus
(Dusky)
7. Rufus Hummingbird -- Selasphorus rufus
8. Flicker -- Colaptes cafer
9. Pileated Woodpecker -- Ceophloeus pileatus
10. Harris' Woodpecker -- Dryobates villosus harrisi
11. Red-breasted Sapsucker -- Sphyrapicus varius
(Northern)
12. Steller Jay -- Cyanocitta stelleri
(Coast)
13. Raven -- Corvus corax
14. Western Crow -- Corvus brachyrhynchos
15. Chestnut-backed Chickadee -- Penthestes rufescens
16. Red-breasted Nuthatch -- Sitta canadensis
17. Brown Creeper -- Certhia familiaris
(California)
18. Winter Wren -- Nannus hiemalus
19. Bewick's Wren -- Thryomanes bewicki
(Seattle)
20. Robin -- Turdus migratorius

Complete List of the Birds of the Conifer Area (continued)

21. Varied Thrush -- Ixoreus naevius
(Pacific)
22. Western Bluebird -- Sialia mexicana
23. Golden-crowned Kinglet -- Regulus satrapa
24. Ruby-crowned Kinglet -- Corthylio calendula
25. Hutton's Vireo -- Vireo huttoni
26. Audubon Warbler -- Dendroica auduboni
27. McGilvray's Warbler -- Oporornis tolmiei
28. Pine Siskin -- Spinus pinus
29. Willow Goldfinch -- Spinus tristis
30. Spotted Towhee -- Pipilo maculatus
(Oregon)
31. Oregon Junco -- Junco oreganus
(Shufeldt's)
32. White-crowned Sparrow -- Zonotrichia leucophrys
(Puget Sound)
33. Fox Sparrow -- Passerella iliaca
(Valdez or Sooty)
34. Song Sparrow -- Melospiza melodia
(Rusty)

Complete List of the Birds of the Cottonwoods Area

1. Farallon Cormorant -- Phalacrocorax auritus
2. Blue Heron -- Ardea herodias
(California)
3. Geese -- Branta ?
4. Ducks -- ?
5. Wood Duck -- Aix sponsa
6. Hooded Merganser -- Lophodytes cucullatus
7. Turkey Vulture -- Cathartes aura
8. Sharp-shinned Hawk -- Accipiter velox
9. Red-tailed Hawk -- Buteo borealis
10. Sparrow Hawk -- Falco sparverius
11. Sooty Grouse -- Dendragapus fuliginosus
12. Ruffed Grouse -- Bonasa umbellus
(Oregon)
13. Ring-necked Pheasant -- Phasianus colchicus
14. Killdeer -- Oxyechus vociferus
15. Rufus Hummingbird -- Selasphorus rufus
16. Kingfisher -- Megaceryle alcyon
17. Flicker -- Colaptes cafer
(Northwestern)
18. Pileated Woodpecker -- Geophloeus pileatus
19. Harris' Woodpecker -- Dryobates villosus harrisi
20. Gairdner's Woodpecker -- Dryobates pubescens

List of the Birds of the Cottonwoods Area (continued)

21. Red-breasted Sapsucker -- Sphyrapicus varius
22. Steller Jay -- Cyanocitta stelleri
23. Oregon Chickadee -- Penthestes atricapillus
24. White-breasted Nuthatch -- Sitta carolinensis
(Slender-billed)
25. Brown Creeper -- Certhia familiaris
(California)
26. Winter Wren -- Nannus hiemalis
27. Bewick's Wren -- Thryomanes bewicki
(Seattle)
28. Robin -- Turdus migratorius
29. Western Bluebird -- Sialia mexicana
30. Golden-crowned Kinglet -- Regulus satrapa
31. Ruby-crowned Kinglet -- Corthylio calendula
32. Audubon Warbler -- Dendroica auduboni
33. McGillivray's Warbler -- Oporornis tolmiei
34. Brewer's Blackbird -- Euphagus cyanocephalus
35. Western Evening Grosbeak -- Hesperiphona vespertina
36. Willow Goldfinch -- Spinus tristis
37. Spotted Towhee -- Pipilo maculatus
(Oregon)
38. Oregon Junco -- Junco oreganus
(Shufeldt's)
39. Song Sparrow -- Melospiza melodia
(Rusty)

Complete List of the Birds of the Open Hillsides Area

1. Cooper's Hawk -- Accipiter cooperi
2. Red-tailed Hawk -- Buteo borealis
3. Sparrow Hawk --, Falco sparverius
4. Bob-White -- Colinus virginianus
5. Mountain Quail -- Oreortyx picta
6. Ring-necked Pheasant -- Phasianus colchicus
7. Killdeer -- Oxyechus vociferus
8. Wilson's Snipe -- Capella delicata
9. Flicker -- Colaptes cafer
(Northwestern)
10. Gairdner's Woodpecker -- Dryobates pubescens gairdneri
11. Steller Jay -- Cyanocitta stelleri
12. Violet-green Swallow -- Tachycineta thalassina
13. Western Crow -- Corvus brachyrhynchos
14. Oregon Chickadee -- Penthestes atricapillus
15. White-breasted Nuthatch -- Sitta carolinensis
(Slender-billed)
16. Brown Creeper -- Certhia familiaris
(California)
17. Bewick's Wren -- Thryomanes bewicki
(Seattle)
18. Robin -- Turdus migratorius
19. Varied Thrush -- Ixoreus naevius
20. Hermit Thrush? -- Hylocichla (guttata)

List of the Birds of the Open Hillsides Area (continued)

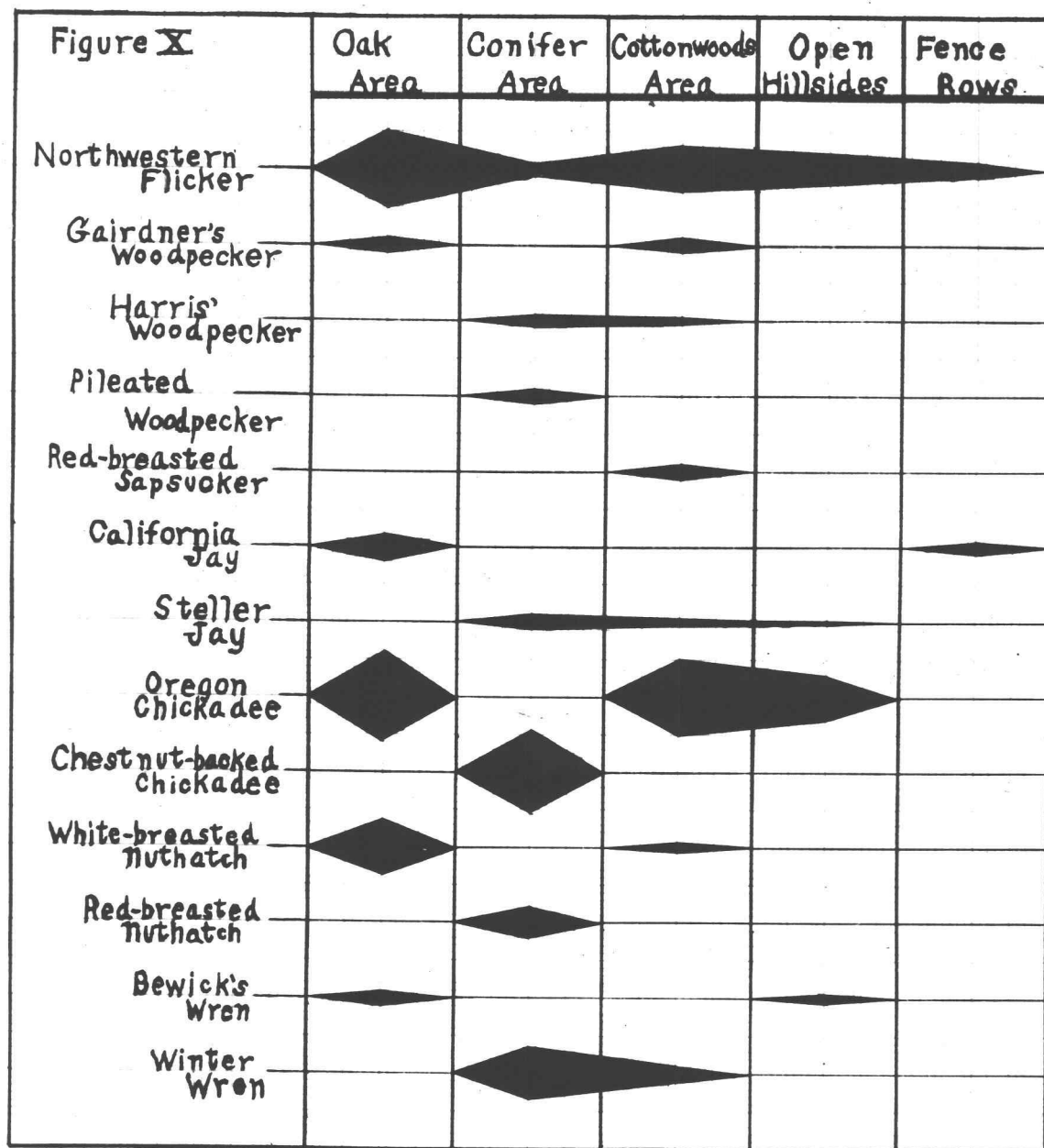
21. Western Bluebird -- Sialia mexicana
22. Golden-crowned Kinglet -- Regulus satrapa
23. Ruby-crowned Kinglet -- Corthylio calendula
24. Lutescent Warbler -- Vermivora celata
25. Audubon Warbler -- Dendroica auduboni
26. Meadowlark -- Sturnella neglecta
27. Brewer's Blackbird -- Euphagus cyanocephalus
28. Western Evening Grosbeak -- Hesperiphona vespertina
29. Spotted Towhee -- Pipilo maculatus
(Oregon)
30. Oregon Junco -- Junco hiemalis
31. Golden-crowned Sparrow -- Zonotrichia coronata
32. Lincoln's Sparrow -- Melospiza lincolni
33. Song Sparrow -- Melospiza melodia
34. Rufus Hummingbird -- Selasphorus rufus

Complete List of the Birds of the Valley Fence Rows

1. Geese -- Branta ?
2. Turkey Vulture -- Cathartes aura
3. Red-tailed Hawk -- Buteo borealis
4. Marsh Hawk -- Circus hudsonius
5. Sparrow Hawk -- Falco sparverius
6. Bob-White -- Colinus virginianus
7. Ring-necked Pheasant -- Phasianus colchicus
8. Killdeer -- Oxyechus vociferus
9. Mourning Dove -- Zenaidura macroura
10. Flicker -- Colaptes cafer
11. Horned Lark -- Otocoris alpestris
12. Violet-green Swallow -- Tachycineta thalassina
13. California Jay -- Aphelacoma california
(Long-tailed)
14. Raven -- Corvus corax
15. Western Crow -- Corvus brachyrynchos
16. Bewick's Wren -- Thryomanes bewicki
17. Robin -- Turdus migratorius
18. Western Bluebird -- Sialia mexicana
19. Golden-crowned Kinglet -- Regulus satrapa
20. Ruby-crowned Kinglet -- Corthylio calendula

List of the Birds of the Valley Fence Rows (continued)

21. Shrike -- Lanius sp.
22. Audubon Warbler -- Dendroica auduboni
23. English Sparrow -- Passer domesticus
24. Meadowlark -- Sturnella neglecta
25. Northwestern Redwing -- Agelaius phoenicius
26. Brewer's Blackbird -- Euphagus cyanocephalus
27. Spotted Towhee -- Pipilo maculatus
(Oregon)
28. Oregon Junco -- Junco hiemalis
29. White-crowned Sparrow -- Zonotrichia leucophrys
(Puget Sound)
30. Golden-crowned Sparrow -- Zonotrichia coronata
31. Song Sparrow -- Melospiza melodia
(Rusty)
32. Oregon Chickadee -- Penthestes atricapillus
33. White-breasted Nuthatch -- Sitta carolinensis
(Slender billed)
34. Bush-tit -- Psaltriparis minimus
35. Tule Wren -- Telmatodytes palustris
36. California Quail -- Lophortyx californica
(Valley)



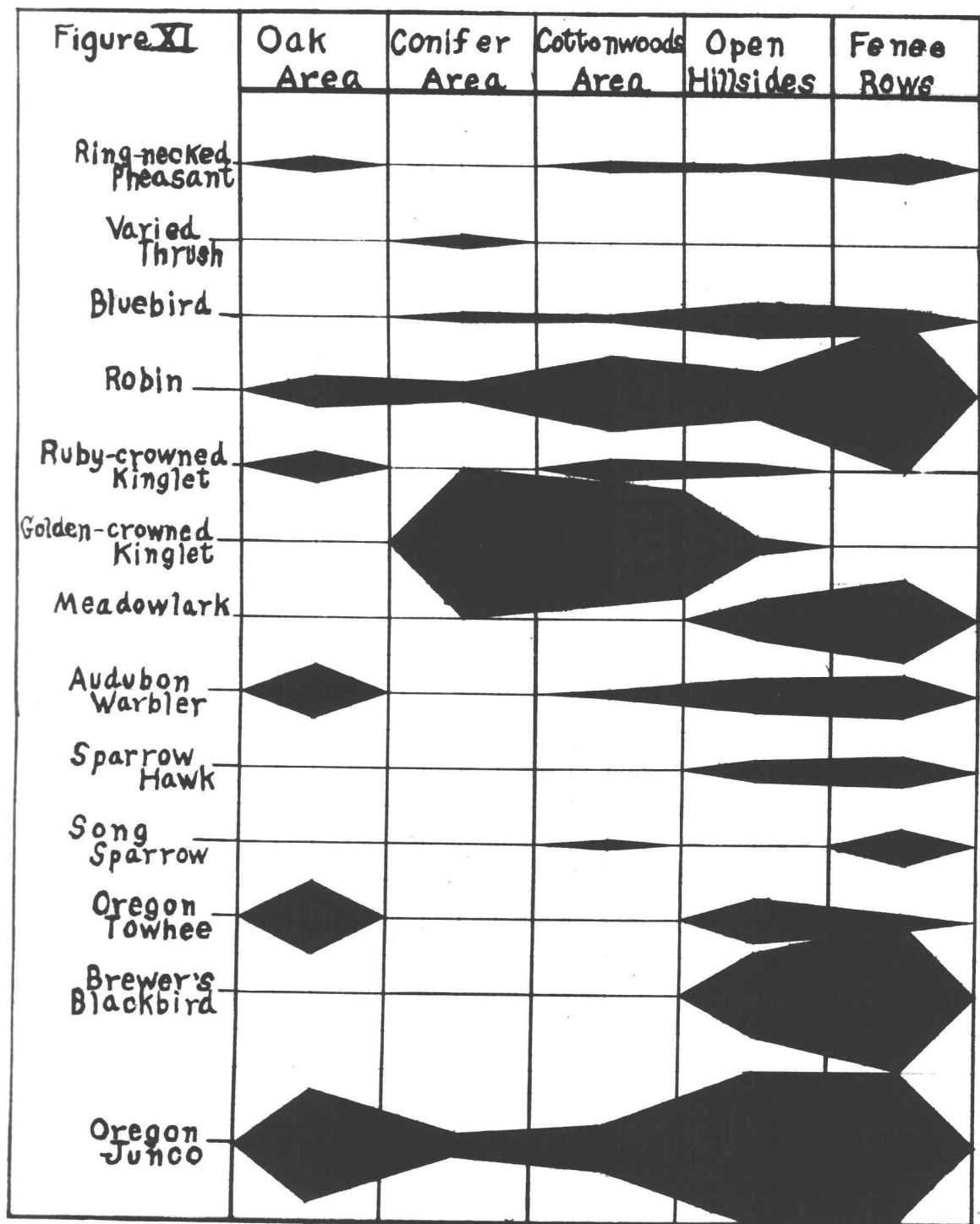


Figure X shows the occurrence and comparative numbers of thirteen of the most constantly observed birds in the five areas. The comparative abundance is shown by the widening line which was drawn to represent the average number of individuals of that species in each area. The distances or spaces between the lines was equal to an average of ten birds so that if the line widened to touch both adjoining lines it showed an average of twenty or more birds per area.

In Figure XI is shown another thirteen species by the same method of presentation. But in this group there occurred five instances of an average of more than twenty.

These two charts show at a glance at what points one species overlaps or competes with another, which species range over a wide variety of habitats, and which are confined to a narrow one.

DISCUSSION OF RESULTS

The first chart (Figure X) shows several pairs of species which illustrate the replacement of species in different areas. The two Chickadees are the best example. Here the Oregon Chickadee is seen to occupy the Oak, Cottonwoods, and Open Hillsides, and not at all the Conifer area, which was the only area where the Chestnut-backed Chickadee occurred.

The White-breasted Nuthatch occupied the Oak and Cottonwoods, and the Red-breasted Nuthatch was found only in the Conifers. The California Jay was found only in the Oak and Fence Rows, whereas the Steller Jay occurred only in the Conifer, Cottonwoods, and Open Hillsides. The Bewick's Wren appeared only in Oak and Open Hillsides and the Winter Wren only in the Conifers and Cottonwoods.

A similar but less definite example is apparent in the distribution of the woodpeckers. The Red-breasted Sapsucker and the Gairdner's Woodpecker were most common in the Cottonwoods, whereas the Harris' Woodpecker and the Pileated Woodpecker were most common in the Conifers, the latter being found exclusively here.

Another Characteristic often noted in wintering birds was the tendency of several different species to

associate in loosely knit flocks. Van Deventer (13a) points out that this has been noted frequently by ornithologists. He worked out a study of a four-species association in New York which was made up of the Downy Woodpecker, White-breasted Nuthatch, Black-capped Chickadee, and Tree Sparrow. Three of these, the woodpecker, nuthatch, and chickadee, were also found in association in the present study. Others that were often found in association with each other were the Golden-crowned Kinglet, Chestnut-backed Chickadee, and Red-breasted Nuthatch. In the Oaks, the first-named association was most common and here this three-bird combination often became a six-bird association including the Audubon Warbler, Junco, and Towhee. It was a common experience to traverse a considerable part of the Oak area without seeing a bird and then suddenly find oneself in the midst of all six of these species.

The Golden-crowned Kinglet, Chestnut-backed Chickadee, Red-breasted Nuthatch association was found in the Conifers and was much more constant in occurrence than the bird associations in the Oak area. One, two, or all three of these species could be heard almost every minute of the times spent on the Conifer area.

Another significant fact was the preference shown by the Golden-crowned Kinglet and Winter Wren for

the Cottonwoods and the Conifers. These two areas were the only two with a characteristic combination of tall trees and floor cover of brush piles, fallen limbs, and trees and other debris. The first characteristic seemed to be the reason for the presence of the Kinglet as it usually stayed high up, and the second characteristic appeared to be the reason for the presence of the wren as it seldom was seen more than a few feet off the ground and almost always among the ground debris.

It can be seen from a glance at the chart that the Junco was much more abundant away from the tall trees (Conifers and Cottonwoods) and that the Towhee stayed almost completely away from them.

The birds that seemed most to prefer the open fields were the Meadowlarks, Brewer's Blackbirds, and Sparrow Hawks. Along the Fence Rows, the Song Sparrows and Towhees were much more abundant than the chart shows because their skulking habits kept them from being observed as often as other birds from a moving car.

Some investigators (Van Deventer, 13, and Colquhoun 2,3) have made estimates of the bird population per square mile but in the present work it seems inadvisable to do so except in the case of one area. Four of the areas were chosen with the idea of checking an

area that would show a concentration of birds from the surrounding country so that the multiplication of the average number of birds in an area into terms of a square mile would give a number out of all proportion to the actual fact.

However, the Conifer area was typical of scores of square miles of territory adjoining so that a fair estimate can be made here. But even then the area was definitely not what one would call dense forest as is most of the thousands of square miles of conifer forests in Oregon, so that the estimate can be applied only to the rather semi-open conifer forests that are found closer to cultivated land.

Table VII shows the abundance of birds in the five areas without respect to species. Huge flocks, such as 500 blackbirds on November 10th (Open Hillsides), and 250 on March 14 (Fence Rows), were omitted from the averages in order to give a truer picture of the abundance.

Taking the average of 122 birds in the Conifer area, which was somewhat less than forty acres, or one-sixteenth of a square mile, and multiplying by sixteen gives the figure of 1,956.8 per square mile, which should be somewhere near the correct figure for the more open type of conifer forest.

TABLE VII.

Oak Area

<u>Nov.</u>			<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>			<u>Mar.</u>		Average
15	24	30	31	20	1	14	26	17	29	
82	179	123	189	110	111	116	112	134	48	120.4

Conifer Area

<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>		<u>Mar.</u>		<u>Apr.</u>		
24	13	17	1	17	28	17	29	6	
65	112	125	105	158	106	114	164	152	112.3

Cottonwoods Area

<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>		<u>Mar.</u>		<u>Apr.</u>		
9	1	17	3	17	28	14	29	6	
85	144	53	75	66	64	77	55	143	84.33

Open Hills Area

<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>		<u>Feb.</u>		<u>Mar.</u>		<u>Apr.</u>		
10	28	20	31	12	26	12	22	3		
95	146	53	215	98	183	95	91	32	112.0	

Fence Rows

<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>		<u>Mar.</u>		<u>Apr.</u>		
24	13	17	3	14	26	14	29	6	
113	210	177	83	85	114	107	180	184	138.1

Average of Averages 115.2

DISCUSSION OF SPECIES

Phalacrocorax auritus

Farallon Cormorants were seen several times on the Willamette river at the Peoria Ferry. Two were flying up the river of February 17 and three on March 14 were flying downstream and lit a quarter of a mile away and began fishing. March 20th a single one was seen flying up the river past Corvallis.

Ardea herodias

Blue Herons were seen only at the Peoria Ferry and always singly. A backwater slough of the river was the attraction here.

Aix sponsa

Wood Ducks were frequently flushed from the slough back of the Cottonwoods tract. Usually they seemed reluctant to leave the area and flew back and forth overhead several times. They never failed to utter their high-pitched, protesting call upon being flushed.

Lophodytes cucullatus

A pair of Hooded Mergansers was seen in the Willamette River on March 14 at Peoria.

Cathartes aura

Turkey Vultures were first seen on March 14 over the Valley Fence Rows and were common thereafter.

Accipiter velox

A Sharp-shinned Hawk was seen in the cottonwoods at Peoria on December 1. Another was seen in Corvallis perched on a low roof not two blocks from the campus on April 1.

Buteo borealis

Red-tailed Hawks were seen occasionally over all the checking areas except at Peoria. In the Philomath Oak Area on November 24th, a Jack-rabbit was flushed from a brush patch and seconds later as it disappeared over a slight rise it suddenly started squalling frantically. Quickly following the sound, the observer saw a Red-tailed Hawk flap up from the ground and on the spot the rabbit was still kicking. As the hawk had not previously been seen soaring anywhere near, it presumably had been perched in a tree near the spot when the rabbit ran into the open.

Accipiter cooperi

Cooper's Hawk was seen rarely. Two were soaring over the Philomath Oak Area on November 15 and one was coasting along the North Corvallis Hillside area on Jan-

uary 20th.

Circus hudsonius

The first Marsh Hawks were seen on March 14 when two appeared at widely separated points along Valley Fence Rows. Both were coursing low over the ground and occasionally alighting on some low perch. Another was recorded in the same general locality on April 6. It was watched for a good many minutes as it hunted systematically through a patch of oak.

Falco sparverius

Sparrow Hawks were seen consistently only along the Valley Fence Rows and open Hillsides, occasionally in the Oak area, only once at Peoria, and not at all in the Conifer Forest area. A single Sparrow Hawk was seen consistently over the old orchard in the North Corvallis Hillsides Area and on March 22 a pair chased a Red-tailed Hawk out of the same orchard. The number seen along the Valley Fence Rows remained fairly constant. (Two to four during the 45-minute checking period).

Dendragopus fuliginosus

The first Sooty Grouse, or "Hooters", were heard on March 17 in the Conifer Forest area. Again on March 29, four or five separate hootings were heard and two

individuals were flushed. On the same day a single bird was heard hooting in the grove of fir trees near the Peoria Cottonwood area, and again on April 6. On several occasions, birds were observed, with the glasses, walking around on the spreading branches of the fir trees high above the ground.

Bonasa umbellus

Ruffed Grouse were seen on a number of occasions in the Conifer Forest area. On December 13, three grouse were driven from a dust bath under an overhanging tree when there was some snow on the ground. One was flushed from the roadside in the Cottonwoods area on December 1. On March 29, two were feeding in an open logged-off area of Conifer Forest tract.

Colinus virginianus

Bob-White were most often seen in the Oak area. A bevy of from ten to fifteen evidently fed in the area a good part of the time. On six days out of the ten visits to this area Bob-White were present.

Lophortyx californica

A flock of a dozen California Valley Quail were flushed in the Oak area on November 20. Another flock of eight was flushed from the road in Valley Fence Rows area on April 6.

Oreortyx picta

Mountain Quail were seen only in the Open Hill-sides area and the Philomath Conifer Forest area. A flock of from ten to fifteen apparently wintered in a brushy sector of the highest part of the former area. They were seen at least half of the times and always plenty of sign was present. At two different places in the Conifer Forest area which were rather open, Mountain Quail were seen.

Phasianus colchicus

The "Chinese" Pheasants were most abundant in the Philomath Oak area and along the Valley Fence rows. They were occasionally found in the Cottonwoods bottom-land, and in the open sections of the Open Hillsides area. One or two were present seven out of ten checking times in the Oak area. In the 45-minute checking periods used for the Valley Fence Rows, the number corresponded approximately to the above the occurrence was more constant. An exception was that in November and December the numbers along the Fence Rows was much greater than thereafter. On April 6, eight Pheasant were seen in the Cottonwoods along the river bank and twice were seen to fly across the river. On March 29 and April 6, Pheasants were heard and one was seen in the small clearings adjoining the Conifer Forest area.

Oxyechus vociferus

Killdeer were really abundant only in the open fields along the Fence Rows and then only in November and December. Afterward they were fairly constant but few in number.

Capella delicata

A single Wilson's Snipe was flushed from the grass of one of the higher open fields in the Open Hill-sides area on December 28. Wilson's Snipe was occasionally seen around Corvallis in the swale areas.

Zenaidura macroura

Mourning Doves were recorded from the Philomath Oak area and Valley fence Rows. They were seen feeding in the road all three times in the latter area in December, February, and March. In the Oak area, they were seen in November and January. A flock of about fifty was flushed from the ground under scrub oak here on November 24.

Bubo virginianus

A pair of Horned Owls was heard late in the day calling from the tops of fir trees on February 17 in the Conifer Forest area.

Selasphorus rufus

Rufus Hummingbirds were first seen on March 22 in the Open Hillsides area and then in both the Conifer Forest area and the Cottonwoods bottomlands on March 29.

Megaceryle alcyon

Kingfishers were recorded only from the Willamette river at the Peoria Ferry and then only occasionally.

Colaptes cafer

The Flicker came closer to being a universal inhabitant of all the cover types and areas checked than any other bird. Only in the Conifer Forest area was it at all scarce, being seen here three times, whereas in all the other areas it was present virtually every time.

It was most abundant in the Oak area and the greatest numbers were found here in the winter months. In November, December, January, and February numbers recorded were 19, 25, 18, and 19, respectively. From the middle of February to April the numbers considerably diminished.

The numbers in the cottonwoods area and the Open Hillsides area remained fairly constant under seven or eight, and along the Valley Fence Rows about three or four.

The Flickers were frequently flushed from the ground where they had been feeding and several times when there was heavy rain a group of the birds was flushed from the lee side of a tree trunk where they had taken shelter together.

Ceophloeus pileatus

Pileated Woodpeckers were seen only in the conifer Forest area with but one exception. A single bird was seen in the tall cottonwoods at Peoria on February 28. Their workings were much in evidence all along the high ridge of the Conifer Forest area and they were observed at these workings on numerous occasions. And, too, their loud calls and heavy hammering often made their presence known without an actual sight of them.

Asyndesmus lewis

A single Lewis Woodpecker was seen (Gordon) in the Oak area on November 15.

Sphyrapicus varius

The Red-breasted Sapsucker was seen most often at Peoria among the cottonwoods where scattered markings on the trunks were evidence of its presence. It was seen twice in the Conifer area, and in other areas not at all.

Dryobates villosus

Harris's Woodpecker was seen most often in the Conifer area and occasionally in the Oak area and Cottonwood riverbottom tract.

Dryobates pubescens

Gairdner's Woodpeckers frequented two of the areas, the Oak and the Cottonwood, but were absent from the other areas. From November to the first of February in the Oak area they occurred regularly but were not recorded after that. They appeared irregularly through the checking times in the Cottonwoods area.

Otocoris alpestris

A pair of Horned Larks were seen dusting themselves in the middle of a gravel road on March 29. They were very tame and returned immediately to the spot right in front of the car as soon as it stopped.

Tachycineta thalassina

The Violet-green Swallows were first recorded along the Valley Fence Rows on March 29, although they had arrived in Corvallis four or five days before this. Thirty-four birds were counted on this day in the checking period. They were usually near buildings of some kind. On the same day none were seen in any of the other

three areas checked. On April 3, three were seen flying and playing high in the air over the Open Hillside area and even here they were not far from farm buildings.

Cyanocitta stelleri

Steller Jays were most common in the Conifer area, one or two at least being seen or heard in almost every checking period. They were recorded in two other areas -- the Open Hillside area and the Cottonwoods area -- but this may have been due to large stands of conifers not far away. In the Oak area and the Valley Fence Rows where there were no such large stands very close no Steller Jays were recorded.

Aphelocoma californica

The Long-tailed Jay, or California Jay, was found only in the Oak area and Valley Fence Rows. In the latter it was of irregular occurrence and then always in the larger and more dense fence rows. But in the Oak tract it was always present in fairly constant numbers (from two to four) and usually occurred within a certain area near the center of the tract.

Corvus corax

Ravens were often seen flying over the Oak area and the Conifer area, but in the case of the former it

undoubtedly had nothing to do with the presence of the Ravens. Even in the latter case their presence was evidently due to the proximity of the Coast range or a roost rather than the cover type. This contention was lent some support on February 14, when the Oak area was being checked late in the afternoon. Small flocks of from three to nine Ravens began flying in from somewhere out in the valley, all heading in the same direction toward the higher forested hills of the Coast range. In about a 45-minute period, some thirty-two Ravens were sounded flying overhead on this one evening. From this it would seem likely they would be found foraging in the valley during the day, but on only one occasion (March 29, Valley Fence Rows) were Ravens seen out on the valley floor.

Corvus brachyrhynchus

Small flocks of Crows occurred irregularly in or over all of the areas except the Cottonwoods river bottoms. They were more often seen in the Open Hillsides area than in the others, however.

Penthestes atricapillus

The Oregon Chickadees frequented the Oak area, the Cottonwoods area, and the Open Hillsides. They were

regularly abundant in the first of these areas and only a little less abundant in the Cottonwoods, but in the Open Hillsides where the brushy areas were interspersed with cultivated fields, the numbers fell off by about one-third. Not once did P. atricapillus show up in the Conifer Forest area and only once did it appear along the Valley Fence Rows when a flock of six were seen on December 13. When feeding in the Oak area, the Chickadees would often be found working over the clumps of wild rose close to the ground, although they also ranged up and down in the higher oaks freely.

Penthestes rufescens

The Chestnut-backed Chickadees were found exclusively in the Conifer Forest area. They were very often found working down to the lower levels of the smaller fir trees as well as in the higher old-growth stands.

Psaltiriparus minimus

Only once, on December 13, the Bush-tits recorded, when a flock of twelve were seen along the Valley Fence Rows. However, small flocks were twice seen in Corvallis during the winter.

Sitta carolinensis

The White-breasted Nuthatches were found most frequently in Oak area and here there were always at least two present. In November and December, their numbers increased a little and six or eight were present during the checking periods. After that they remained constant at two or three. In the Cottonwoods area they were irregular but were present approximately half the times checked. They were not recorded at all from the Conifer Forest area and only once or twice in the Open Hillsides area and Valley Fence Rows.

Sitta canadensis

The Red-breasted Nuthatch, like the Chestnut-backed Chickadee, was found only in the Conifer Forest area and here they occurred on an average of about six per checking period. Only three or four times were birds seen well enough to distinguish them by sight but their nasal quank was easily recognized and most of the recordings were by this means.

Certhia familiaris

The Brown Creepers were more frequently in the Cottonwoods area and then but one or two were seen on only half the checking times. Single birds were seen on only two occasions in the Conifer Forest area. They were

not recorded from the other areas.

Nannus hiemalis

The Western Winter Wren, of course, was most abundant in the Conifer Forest area where on an average of seven per checking period were recorded. They also occurred regularly but in smaller numbers (two to four) in the Cottonwoods area. The scolding notes of the bird were recognizable when the bird could not be seen, but the sight of the bird itself was most common. They began to sing about March 17.

Thryomanes bewicki

The Bewick's Wren was most often seen in the Oak area where it frequented the wild rose bushes and scrub oak patches. It was also seen, a little less frequently, in a brushy section of the highest part of the Open Hillsides area. In addition, it was recorded twice in the Conifer Forest area and twice in the Cottonwoods area, and once along the Valley Fence Rows.

Turdus migratorius

The Robin, like the Flicker, was well-nigh universal in distribution over the areas checked. They were more constant in occurrence and more numerous along the Valley Fence Rows than in any of the other areas.

March 14 seemed to be in the middle of the spring migration as two-hundred and fifty Robins were counted along the Fence Rows on the date. In the Cottonwoods area the Robins were as constant but their numbers fluctuated considerably for no apparent reason. In the other three areas they were irregular in numbers and erratic in occurrence.

Ixorius naevius

The Varied Thrush was usually present in the Conifer Forest area though in small numbers, and in the coldest part of the winter during the first part of January they appeared twice (December 31 and January 20) in the Oak area and once (January 20) in the Open Hill-sides area.

Hylocichla sp.

A single thrush of the genus Hylocichla was seen in each of two areas on near corresponding dates -- on December 31 in the Oak area and December 28 in the Open Hill-sides area. On each occasion it was doubtful whether the bird was H. guttata or H. ustulata so the specie name was withheld despite the fact that all the probabilities were toward guttata.

Sialia mexicana

The Western Bluebird was recorded from all the checking areas but was more abundant in the more open areas (Open Hillside and Valley Fence Rows) where its occurrence was fairly constant but its numbers varied considerably, due principally to the varying size of the flocks that happened to be in the vicinity. Three times they were recorded from the Cottonwoods area and twice from the Oak area. In the Conifer Forest area two to four were seen always along the roadside edge of the clearing from February 28 to April 7 (during the four checking periods), none before.

Regulus satrapa

The Golden-crowned Kinglets were abundant in the two areas where tall trees were numerous (Conifer Forest area and Cottonwoods area). However, they were more than twice as numerous in the Conifer area, averaging fifty-three per checking period as compared to an average of only seventeen in the Cottonwoods. They usually kept to the higher trees but occasionally came down to lower levels where growth was shorter. Only rarely were they seen in any of the other areas and then only in small numbers.

Corthylio calendula

The Ruby-crowned Kinglet was regularly found in the Oak area and only rarely in all of the other areas. In the Oak area its numbers averaged seven or eight from November to February 1, but after that fell off to one or two. In the other areas the occurrence was erratic.

Anthus spinoletta

Pipits were seen around the campus and adjoining open field throughout most of the winter but only once were they recorded from any of the checking areas, when three were seen in the Oak area on November 30.

Bombycilla cedrorum

The Cedar Waxwing was another bird that was abundant around the campus except during the months of January and February but was not recorded at all from any of the checking areas.

Lanius sp.

Twice during the winter (November 24 and February 3) a single Shrike was seen along the Valley Fence Rows in the same general locality near Philomath. On the first date the Shrike was seen hunting over a swale and was watched for ten or fifteen minutes, and upon returning an hour and a half later, it was still there.

On the latter date within a half a mile of this place, the other was seen to fly across the road in front of the car and work along a fence, flying from fence post to the ground and then on to the next fence post.

Vireo huttoni

On two separate occasions in the Conifer Forest area Hutton's Vireos were recorded (January 17 and April 7).

Vermivora celata

The first Lutescent Warbler was seen in a brushy section of the Open Hillsides area on April 7.

Dendroica auduboni

The Audubon Warbler was regularly abundant only in the Oak area and there only from November 15 to February 1. Only eight were seen on the first date and five on the last date, but in the four checking periods between, an average of thirty-seven were recorded. After this they completely disappeared from the Oak area, except that four stragglers were seen on March 17. During this period of abundance in the Oak area, they were not recorded at all from the Conifers or the Cottonwoods and but once from the Open Hillsides and Valley Fence Rows, but during March, a month after their disappearance from

the Oaks, they appeared in all of these other areas in straggling groups as compared to the compact flocks found in the Oaks.

Passer domesticus

The English Sparrows appeared only in the Valley Fence Rows and then irregularly and always in proximity to buildings of some kind.

Sturnella neglecta

Meadowlarks occurred regularly in the two areas in which there were open fields (Open Hillsides and Valley Fence Rows). In the Open Hillsides area, their numbers were few and fairly constant except on February 12, when a unit flock of thirty-five were observed. This flock, when flushed, rose high and flew away from the vicinity. Along the Valley Fence Rows they averaged about five per checking period up to March 29. On this date and on April 6 the number increased to twenty-four and fifteen, respectively, but this big increase was probably at least partially due to singing birds being recorded.

Agelaius phoeniceus

Northwestern Redwings were recorded from the Valley Fence Rows only on March 29 and April 6. Nowhere else were they seen in any of the checking areas, but several flocks were known to have wintered around Corvallis.

Euphagus cyanocephalus

Brewer's Blackbirds were found in Open Hillsides area and Valley Fence Rows. In the former area they were recorded only three times but on November 10 there was a flock of about five hundred here. The flocks toured the open country so their being recorded in any one area was necessarily erratic. The same thing was true along the Valley Fence Rows, a flock of about two hundred and fifty being observed on March 14. After that the numbers recorded on the two remaining checking periods thirty-five and thirty-seven, respectively, and on these dates the birds were in pairs or small flocks of from four to eight or ten. On three dates in February, Brewer's Blackbirds were seen flying over the Oak area but this was undoubtedly of no significance as they never fed in this area.

Hesperiphona vespertina

The Western Evening Grosbeaks appeared in wandering flocks in the Valley after the middle of February but were so erratic that they were recorded only once in each of the three following areas: Valley Fence Rows, Open Hillsides, and Cottonwoods area. All three were in the latter part of March. The Grosbeaks were always present in the trees on the State College campus.

Spinus pinus

Pine Siskins occurred once in the Oak area when a small flock was seen on November 15 and also in the Conifer Forest area on February 17 when several flocks aggregating about seventy birds were recorded. These held to the high tops of the fir trees.

Spinus tristis

The Willow Goldfinches appeared in considerable flocks in the Conifer Forest area on March 29 and April 6, and in the Cottonwoods area on April 6.

Pipilo maculatus

The Oregon Towhee were always present in the Oak area and in the Open Hillsides and almost always in the Valley Fence Rows. They were also seen once in the Cottonwoods area and three times in the Conifer Forest area.

Towhees averages about ten per period in the Oak area and about eight in the Open Hill-sides. During the mid-winter months loosely-knit transient flocks made the counts rise, but in late fall and early spring they had to be routed out of their particular brush patches before they were seen. The birds were usually close to or on the ground but occasionally would climb to ten or twelve feet in the scrub oak, never any higher.

Junco oreganus

The Oregon Juncos were abundant in all of the areas except the Conifer Forest area. In the Open Hill-sides area they were in bigger flocks than elsewhere and averaged forty-two birds per period. Along the Valley Fence Rows the average was twenty-seven and in the Oak area, nineteen. In the Cottonwoods the flocks were smaller and more erratic in occurrence than in the above areas. Throughout most of the winter they were totally absent from the Conifer Forest area but on the last two checking periods (March 29 and April 6) nineteen and ten were seen, respectively. On these two dates the numbers of Juncos had either greatly reduced or disappeared completely from the other areas. Further comparison was seen in the fact that in the winter months the Juncos had always been in at least fairly large flocks but on

the aforementioned dates the birds seen were either always in pairs or small flocks of even numbers.

Zonotrichia leucophrys

The White-crowned Sparrows were occasionally seen in small flocks along the Valley Fence Rows during the winter. A straggling group of three were seen with a large number of "Golden-crowns" in the Oak area on November 15. Five "White-crowns" were seen along the edge of the Conifer Forest area on April 6. These were singing and evidently ready to take up territory. Also the "White-crowns" were singing in territories in and around Corvallis about this date.

Zonotrichia coronata

A loose flock of about ten Golden-crowned Sparrows were seen in the low rose bushes on November 15 in the Oak area. On November 28 and March 12, three and four "Golden-crowns", respectively, were seen in the Open Hillsides area. Later (April 3), one was seen in the same area in approximately the same place as the previous groups were seen. On one date (December 13), a flock of about fifteen was seen along the Valley Fence Rows.

Passerella iliaca

Four Fox Sparrows were seen on the same date as the above along the Valley Fence Rows in about the same place as the "Golden-crowns." The only other record of Fox Sparrows was a lone bird seen on April 6 in the Conifer Forest area.

Melospiza lincolni

On November 10 in a brushy patch on the Open Hillsides, three Lincoln's Sparrows were studied with glasses for some minutes.

Melospiza melodia

The Song Sparrows were constant in numbers and regular in occurrence along the Valley Fence Rows. An average of about four per period was to be found here. There were usually two or three present in the Cottonwoods brushy areas but occasionally were not seen at all there. One or two were seen a few times in the Conifer Forest area and Open Hillsides brushy patches, but not once was a Song Sparrow recorded from the Oak area.

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