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NOTES AND COMMENT

FALL DISTRIBUTION OF BIRDS IN A PALOUSE RIVER CANYON

During the fall and winter of 1953 the writers undertook a general ecological study of a portion of the Palouse River valley, near Armstrong, Whitman County, Washington. During the course of these investigations records were kept on the numbers of birds observed and the vegetation in which they were located. It was anticipated that these observations might indicate bird-use of the major vegetational types found in the area.

Several investigators (Dumas 1950; Wing 1949) have published distributional data for birds of the Palouse grassland during the nesting period, but few have been concerned with distribution patterns during the fall migration.

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LOCATION AND VEGETATION

The area of study was located about one mile north of Armstrong, and included a representative section of the river canyon. This area measured approximately one-half by one mile, parallel to the river, and included the river bottom and the adjoining slopes. A variation of about 100 feet vertical distance was found between the river and the top of the canyon slope.

According to Daubenmire's classification (1942) the study area lay within the *Festuca-Agropyron* zone. However, local conditions were apparently drier than average, with the result that the area showed the aspect of the *Agropyron-Poa* zone, which is typical of conditions farther west. The *Agropyron-Poa* association was found on the upper slopes on both sides of the river canyon. Most of this vegetation exhibited extreme disturbance from overgrazing. The *Agropyron-Poa* association was bounded on the upper side of the valley slope by wheat and pea fields and on the lower side by thickets of *Crataegus douglasii*.

Crataegus occurred in erosion gullies on the canyon slopes and also was an important representative of the floodplain forest found on the valley floor. Other dominant trees of the floodplain forest included *Betula microphylla*, *Populus tremuloides*, *Populus trichocarpa*, and *Salix* spp. *Crataegus* and *Betula* commonly formed dense stands which almost completely excluded herbaceous undergrowth. In one large area *Populus tremuloides* was dominant over *Crataegus*, and excluded other woody species completely, with the exception of a few tall cottonwoods, *Populus trichocarpa*.

A moist meadow dominated by *Elymus cinereus* occurred on a level part of the valley floor. In the *Elymus* community *Rumex* spp., *Sisymbrium altissimum*, *Arctium minus*, *Dipsacus sylvestris*, and *Heracleum lanatum* were present. A few woody shrubs, mainly *Symphoricarpos albus* and *Rosa* spp., also occurred here.

Minor vegetational areas included a small marshy depression near the river. The very moist conditions allowed a dense growth of *Phalaris arundinacea* around the borders of the water. *Carex* spp. and *Poa* spp. made up the rest of the marsh vegetation. Other portions of the valley floor were cleared for pasture and wheat fields.

The importance of each vegetational type in the study area is shown in the following tabulation:

Vegetational Type	Per Cent
Floodplain forest	40
Agropyron-Poa	36
Elymus	3
Annual Weeds	1
Other	20
Total	100

METHODS

Trips to the study area were made at weekly intervals from September 26 to December 19, 1953. Observations were made approximately an hour after sunrise. Routes included both in a longitudinal and transverse transect of the river canyon. One observational transect ran along both sides of the Palouse River and included plowed fields, the floodplain forest, the *Elymus* community, patches of annual weeds, and the small marsh. The second transect ran principally through the *Agropyron-Poa* association, and the floodplain forest. Notes were taken on all birds seen within the study area, recording the vegetational type or plant species each bird or group of birds was utilizing.

RESULTS AND DISCUSSION

The relative value of each vegetational type to birds is presented in Table I. Occurrence indicates that a bird or group of birds was observed feeding, perching, or hiding in or under that particular vegetation. "Other" refers to plowed fields, pasture, or uncommon habitat not included in the table.

Since the floodplain forest covered almost one-half of the study area, it was expected that this vegetational type would be most important to birds. Birds observed here

TABLE I. Occurrence of single birds or groups of birds in major vegetational types

Species	Major Vegetational Type				
	Floodplain Forest	Agropyron-Poa	Elymus	Annual Weeds	Other
California quail.....	8	..	1	3	..
Ring-necked pheasant..	14	4	4	5	3
W. mourning dove.....	2	..	..	..	..
Red-shafted flicker....	12	..	..	..	..
American magpie.....	9	..	..	..	..
Black-capped chickadee.	27	..	..	3	1
American robin.....	22	2	..	..	1
Ruby-crowned kinglet..	4	..	..	1	..
Cedar waxwing.....	7	..	..	3	1
Western meadowlark....	..	3	..	..	..
Evening grosbeak.....	2	..	..	..	..
Common redpoll.....	1	..	..	..	..
Pale goldfish.....	1	..	2	..	..
Spotted towhee.....	1	..	..	..	..
Oregon junco.....	20	1	1	4	5
White-crowned sparrow..	3	..	..	3	..
Song sparrow.....	12	..	1	1	..
Total.....	145	10	9	23	11

TABLE II. Occurrence of single birds or groups of birds in the floodplain forest

Species	<i>Crataegus</i>	<i>Betula</i>	<i>Populus tremuloides</i>	<i>P. trichocarpa</i>
California quail	8	..	..	..
Ring-necked pheasant	12	1	1	..
W. mourning dove	2	..	..	..
Red-shafted flicker	8	..	..	4
American magpie	8	1	..	..
Black-capped chickadee	24	..	..	3
Western robin	13	..	1	8
Ruby-crowned kinglet	4	..	..	..
Cedar waxwing	5	..	1	1
Evening grosbeak	1	..	1	..
Common redpoll . . . . .	..	1	..	..
Pale goldfinch	1	..	..	..
Spotted towhee	1	..	..	..
Oregon junco	20	..	..	..
White-crowned sparrow	3	..	..	..
Song sparrow	11	..	1	..
Total	121	3	5	16

were also generally thicket-dwelling species. Occurrence of birds in the dominant tree species of the floodplain forest is presented in Table II. It will be seen immediately that *Crataegus* was by far the most important part of the native vegetation for birds during the period of study. This was probably the result of the profuse fruit

it produces as well as the excellent protection which its dense and thorny branches provide. Although cottonwood was a relatively rare tree on the area, it was used to a fairly large extent, particularly by robins and cedar waxwings which seemed to prefer the open view and height which it provided. Although the proportion of birch was nearly one-half that of *Crataegus*, it was almost completely ignored by birds.

Certain species, such as the western meadowlark, were restricted to one or two vegetational types. Other species, such as the Oregon junco, were seen almost everywhere. Despite this variation, it is evident that *Crataegus* assumed a position of importance which far exceeded its percentage composition of the total vegetation.

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