A TWO-YEAR BIRD CENSUS ON SAN JUAN ISLAND, WASHINGTON

BY MALCOLM R. MILLER

THE San Juan islands comprise a large group of islands situated between the northwestern coast of Washington and the southern end of Vancouver Island. San Juan Island, the second largest of these islands, is about eighteen miles long by seven miles wide. The flora and fauna are for the most part similar to those found on the mainland of northwestern Washington. The greatest difference between the mainland and the islands is in the greater dryness of the latter due to their rocky nature in addition to a small rainfall as compared with the mainland. As indicated by the fauna and flora the region is transitional. An abundant and varied group of birds is found on the islands; a complete list of the species was published in 'The Murrelet' for September, 1935.

During the summers of 1936 and 1937, the bird populations of three types of areas were counted on San Juan Island. The areas chosen for survey were: (1) a fairly heavily timbered coniferous forest, (2) a meadow, and (3) an inland second-growth. A previous investigation of these stations showed that they were representative of the various types of biotic areas on San Juan Island, as regards both vegetation and abundance of birds. The physical conditions of these areas has been constant for a number of years and seems likely to remain unchanged for some years to come.

W. W. Cooke, in a report of the U. S. Biological Survey (1915), suggests that in taking bird censuses, a pair of birds should be assumed for each male bird seen or heard. Other workers, such as Shaver (1933), consider this method inaccurate and state that the total count should be attained by counting only those birds actually seen or heard. The writer's observations show that almost as many females as males are seen due to flushing as one passes close to a nesting spot. Hence, in this survey, only birds actually seen or heard have been counted.

Each area was covered approximately once a week. In each report the birds were listed as nesting or breeding residents and feeding birds, or as birds nesting in some other area but using the area under survey as a feeding ground. The majority of the birds counted in these three areas from the first of June until the twenty-seventh of July were residents. After this time the greater number of birds in the second-growth area were feeders or non-residents, while in the forest

and meadow areas there were only a few non-resident feeders and a continually diminishing number of original residents.

The meadow area consists of approximately thirty acres of grassy meadowland. It is bounded on the east by a fairly well-traveled road separating the meadow from an evergreen forest, and on the three other sides by similar meadowland from which it is separated by fences, ditches, and small bushes. Except for a sparse scattering of thistles and small bushes, the territory consists largely of a grassy growth.

The second-growth area consists of fifteen acres of scattered willow, alder, and madroña trees. At intervals there are small open patches of scrubby firs and several dead stubs. This area is bounded on the north and east by a thick, deciduous area and on the south and west by cultivated fields.

The coniferous-forest area consists of ten acres of fairly heavy evergreen growth. The undergrowth varies in density, consisting mainly of bracken, sweet briar, and nettle. Except for two small groups of alders, the area is mainly homogeneous in nature.

TABLE 1

BIRD POPULATION OF A MEADOW AREA AT INTERVALS DURING THE SUMMERS OF 1936 AND 1937

	Date	*6–8–'36*	*6–13–'37*	*6–15–'36*	*6–20–'37*	*6–25–'36*	*7–2–'37*	*7–9–'36*	*7–10–'37*	*7–17–'36*	*7–20–'37*	*7–22–'36*	*7–28–'37*	*8–3–'36*	*8–1–'37*	*8–10–'36*	*8–12–'37*	*8–18–'36*
Nesting residents																		
1. Dwarf Savannah Sparrow		25	28	24	23	24	41	23	38	25	18	26	20	18	15	16	10	8
2. Puget Sound Sparrow		13	6	9	10	10	12	10	14	8	9	9	10	10	11	12	11	8
3. Rusty Song Sparrow		12	4	10	6	6	10	6	12	7	4	6	7	8	10	10	10	0
4. Western Meadowlark		10	6	12	8	10	10	10	8	12	8	8	6	4	5	8	6	2
5. Brewer's Blackbird		4	6	6	16	4	21	4	0	2	0	0	0	0	0	0	0	0
6. Western Chipping Sparrow		6	2	4	3	2	4	0	3	2	3	4	0	0	0	0	0	0
7. California Yellow Warbler		3	4	1	4	1	4	1	4	0	1	0	0	0	0	0	0	0
8. Killdeer		4	0	2	0	0	0	2	0	2	0	0	0	0	0	0	0	0
9. Lutescent Warbler		1	2	2	1	0	4	1	4	1	0	0	0	0	0	0	0	0
10. Pacific Nighthawk		0	0	0	0	2	0	2	0	4	0	4	0	0	0	0	0	0
Totals		78	58	68	72	59	106	59	83	63	43	56	43	40	41	46	39	18
Feeding birds																		
1. Willow Goldfinch		2	0	6	3	0	5	4	6	16	12	24	18	20	15	18	16	18
2. Northwestern Robin		2	3	4	5	8	6	4	3	0	4	2	2	2	2	0	4	3
3. Violet-green Swallow		2	2	2	2	6	0	4	0	2	0	0	2	2	2	0	4	2
4. Barn Swallow		0	2	2	4	4	6	0	0	0	0	0	0	0	0	0	0	0
5. Northwestern Flicker		4	1	0	0	0	0	0	0	0	0	14	0	0	0	14	5	18
6. Seattle Wren		0	0	0	0	0	4	0	3	0	3	0	0	0	3	0	1	5

TABLE 2

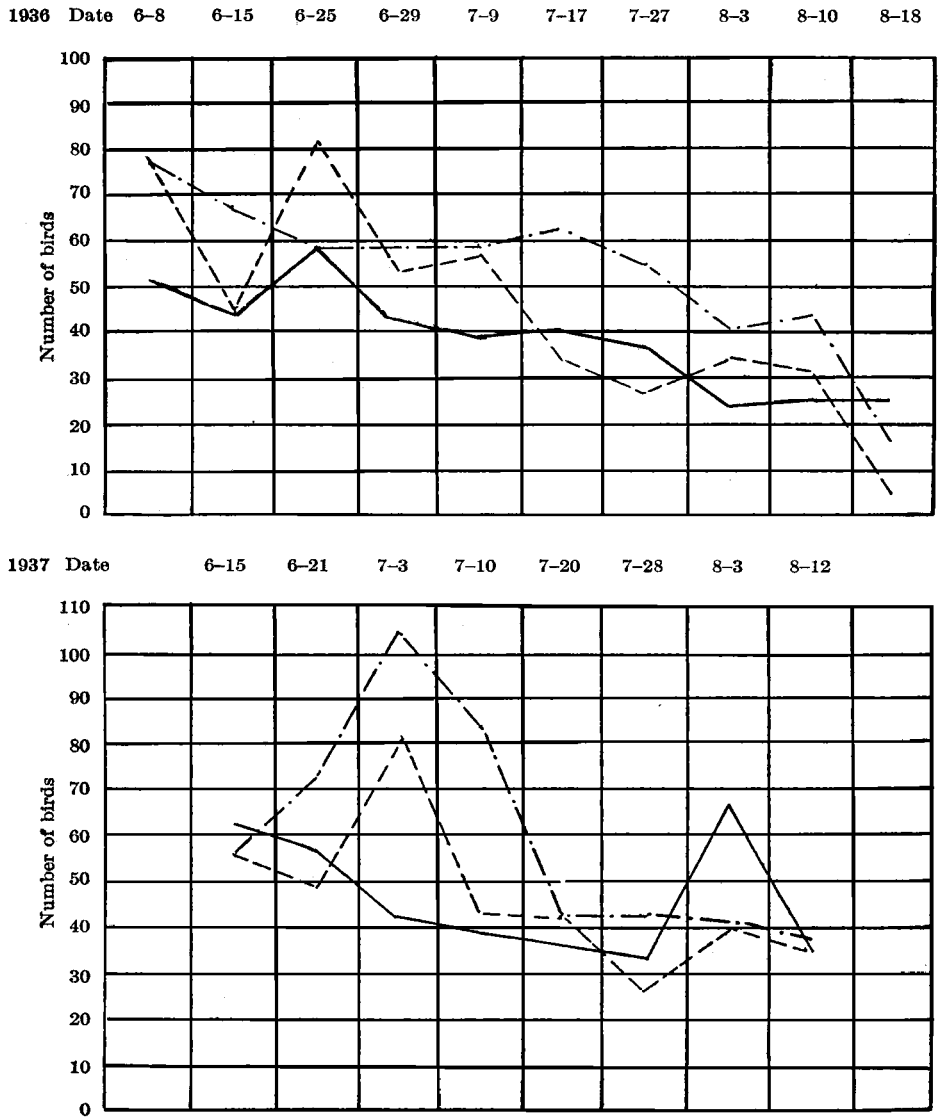
BIRD POPULATION OF A SECOND-GROWTH AREA AT INTERVALS DURING THE SUMMERS OF 1936 AND 1937

	Date	*6–9–'36*	*6–15–'37*	*6–18–'36*	*6–21–'37*	*6–22–'36*	*6–27–'36*	*7–3–'37*	*7–9–'36*	*7–10–'37*	*7–18–'36*	*7–20–'37*	*7–27–'36*	*7–28–'37*	*8–4–'36*	*8–11–'37*	*8–11–'36*	*8–18–'36*
Nesting residents																		
1. Western Chipping Sparrow		8	12	6	10	6	4	8	6	10	8	6	8	12	8	6	7	2
2. Puget Sound Sparrow		7	12	10	11	6	4	9	4	12	6	6	9	15	8	10	8	3
3. California Yellow Warbler		7	4	5	2	5	2	1	3	4	1	1	1	4	0	0	2	0
4. Little Flycatcher		3	2	4	3	4	3	1	2	2	2	1	1	5	0	0	0	0
5. Western Flycatcher		4	2	3	2	4	3	2	4	2	2	2	2	2	1	1	1	1
6. Northwestern Robin		3	4	2	4	4	2	2	4	2	6	2	4	3	0	2	0	8
7. Russet-backed Thrush		2	3	2	3	3	3	1	4	3	2	2	0	3	0	0	0	0
8. Oregon Towhee		4	4	4	4	2	1	2	2	4	3	2	3	5	2	0	2	6
9. Seattle Wren		2	2	2	2	2	2	2	1	8	1	4	5	4	5	4	5	5
10. Western House Wren		3	2	3	2	3	4	3	4	3	4	3	4	4	0	3	0	2
11. Rusty Song Sparrow		2	2	3	2	4	2	0	2	0	3	2	3	7	0	2	0	0
12. Lutescent Warbler		2	5	1	6	2	3	2	2	2	1	0	0	0	0	0	0	0
13. Chestnut-backed Chickadee		0	6	0	4	0	0	3	0	6	0	0	6	0	6	5	8	12
14. California Purple Finch		2	2	0	2	0	0	4	1	3	1	0	1	0	0	0	0	0
Totals		51	62	45	57	45	43	40	39	61	40	32	37	63	24	33	25	25
Feeding birds																		
1. Violet-green Swallow			2	2		2			3					10				24
2. Willow Goldfinch												2	6	5	6		8	22
3. Barn Swallow		2	2		2			2							6			8
4. Northwestern Flicker			1		2				2			2	1	2	1		1	2
5. Shufeldt's Junco												1	3					11

TABLE 3

BIRD POPULATION OF A CONIFEROUS FOREST AREA AT INTERVALS DURING THE SUMMERS OF 1936 AND 1937

	Date	*6–11–'36*	*6–14–'37*	*6–16–'36*	*6–22–'37*	*6–22–'36*	*6–26–'36*	*7–4–'37*	*7–9–'36*	*7–10–'37*	*7–18–'36*	*7–20–'37*	*7–27–'36*	*7–31–'37*	*8–4–'36*	*8–11–'37*	*8–12–'36*	*8–18–'36*
Nesting residents																		
1. Chestnut-backed Chickadee		6	8	4	7	10	6	6	8	10	6	10	12	12	18	16	24	0
2. Pileolated Warbler		6	8	1	8	8	6	5	5	5	3	3	0	2	1	0	0	0
3. Rusty Song Sparrow		8	5	5	4	9	6	10	6	8	4	3	3	4	3	4	3	2
4. Townsend's Warbler		8	6	5	6	5	2	0	6	0	0	0	0	0	0	0	0	0
5. Russet-backed Thrush		6	3	5	2	7	4	6	4	7	2	2	0	4	2	3	1	0
6. Western Flycatcher		11	4	4	3	7	6	6	5	3	3	2	0	2	2	2	2	1
7. Lutescent Warbler		8	3	2	1	6	4	1	4	0	2	3	0	0	0	0	0	0
8. Western Warbling Vireo		6	2	3	3	5	0	1	0	1	1	0	0	1	0	0	0	0
9. Little Flycatcher		3	3	2	4	5	4	2	4	2	2	1	0	1	0	0	0	0
10. Cassin's Vireo		3	6	4	3	2	2	2	1	0	0	0	0	0	0	0	0	0
11. California Yellow Warbler		2	2	2	2	2	2	2	0	2	0	2	0	0	0	0	0	0
12. Brown Creeper		2	0	0	0	1	2	0	2	0	3	0	4	2	6	2	0	3
13. Seattle Wren		2	2	1	1	1	3	2	3	3	2	3	5	5	1	1	1	0
14. Western Winter Wren		2	0	0	0	5	1	0	1	0	0	0	0	0	0	0	0	0
15. Oregon Towhee		2	0	2	0	2	1	0	0	1	0	0	0	0	0	0	0	0
16. Macgillivray's Warbler		1	2	1	2	2	2	2	2	2	3	2	0	2	1	0	0	0
17. Red-breasted Nuthatch		1	0	1	0	1	1	0	2	0	1	1	1	1	1	1	0	1
18. California Purple Finch		0	4	0	3	1	1	1	0	1	1	0	0	0	0	0	0	0
Totals		79	58	42	49	81	53	43	57	42	34	28	28	40	34	29	31	7



TEXT-FIGURE 1.—Fluctuation of the total resident bird population during the summers of 1936 and 1937.

Legend: Second Growth Area ———; Forest Area - - - -; Meadow Area -.-.

CONCLUSIONS

The results of this study show that on San Juan Island a coniferous-forest area having a fairly close undergrowth and a few deciduous trees has the largest number of birds per acre. The density of population per unit acre of the forest is 4.87 birds; the meadow, 2.17 birds; and the second-growth, 2.18 birds. Observation shows that a purely coniferous forest devoid of undergrowth has a much smaller population than does a mixed forest.

The chart illustrating the fluctuation of the population during the summer is a picture more of seasonal behavior than of the fluctuation of the population. During the first part of June, the breeding season is at its height and the whole of the bird population is extremely active. Such activity makes it easy for the observer to see most of the birds present in an area. However, after mating activities have ceased there is considerably less activity and hence it becomes difficult for one to see even a majority of the birds present in any territory. For this reason the graph shows a drop in the population near the end of June. This apparent drop in population is, then, to be accounted for by a decrease in activity rather than by the disappearance of any of the birds from the territory.

About the first of July, the population increases considerably due to the addition of the young birds. If one were able to see all of the young that were produced by every pair of parent birds, the increase in population would undoubtedly be found much greater than is indicated by the graph. However, many natural factors make it almost impossible to see even the larger proportion of the young birds present. Beside the concealment of the young by the parents, it happens that many birds remove their progeny away from the nesting territory as soon as the young are able to move. The writer has observed this to be especially true of Townsend's and MacGillivray's Warblers, Cassin's Vireos, and Brewer's Blackbirds. Also, because certain birds nest earlier and leave a territory before others, the total population does not fluctuate in accordance with preconceived theories. While theoretically the population should increase greatly due to the addition of the young, in reality it is liable to many variations because of the differences in the habits and activities of individual species.

As the breeding season draws to a close near the end of July, most of the original inhabitants of an area travel widely and are generally found congregated where the feeding conditions are the most favorable. For this reason it becomes impossible to determine which birds are the original inhabitants of an area, and hence the counts made

during August do not accurately indicate the remains of the original breeding population. It is also interesting to note that many of the birds which have reared their young in the forest and the meadow are, for the most part, to be found during August in second-growth areas. This is especially true of the flycatchers, warblers, vireos, swallows, sparrows, and goldfinches.

As there has been very little work done on bird populations in the Northwest, and as this survey is too limited to serve as a basis, any comparisons between the density of bird life in this part of the country with that of other parts is not advisable.

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THE TYPE LOCALITIES OF SOME MEXICAN BIRDS OF THE GENERA *APHELOCOMA, CYANOCITTA,* AND *PEUCEDRAMUS*

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IN the following paragraphs, type localities are established for the names of eight Mexican birds, referable to six species and subspecies. In some cases these names were proposed without definite locality, and for others the locality originally given has proved erroneous. Thanks are due the authorities of the Academy of Natural Sciences of Philadelphia and the United States National Museum for the use of material, and to A. J. van Rossem for information on certain types preserved in European museums. This study was aided by a grant from the Faculty Research Fund of the University of Michigan, made available through the Board of Governors of the Horace H. Rackham School of Graduate Studies.

Aphelocoma ultramarina ultramarina (Bonaparte)

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Garrulus sordidus SWAINSON, Philos. Mag., (new ser.) 1 (5): 437, 1827 (Real del Monte, error).

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