

BIRDS OF SHEEP CREEK VALLEY

Report for 1991

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INTRODUCTION: Objectives and methods.

Our objective for 1991 was to census the birds of the major vegetation types on the floor of Sheep Creek Valley. We used two principal methods:

1) Weekly visual/auditory censuses ("point census" method) along a regular route through the three main habitats (alder/willow thickets, 10 points or stations; cottonwood stands, 10 stations; conifer stands, 7 stations) in the breeding season (May-June). At each point or station, two persons recorded all birds seen or heard in that habitat during an 8-min. period. The use of two censusers reduced the problem of inter-observer bias, which is known to be a major source of bias in avian censuses. All censuses were done in the morning (dawn to late a.m.), but the order in which the census stations were visited was changed regularly, to minimize the effects of time of day. Point censuses were conducted twice weekly, in all kinds of weather. This was necessary because of the few days of good weather in the 1991 season but, in any case, we observed that birds were singing actively even in the rain.

2) Mist-netting in understory in alder/willow thickets and cottonwood stands. Twenty mist-nets were equally distributed in these two principal habitats, and operated weekly when weather permitted (nets are not operated in the rain), from dawn until late morning. We operated nets in both the breeding and the post-breeding seasons (auditory censuses do not work outside the breeding season, because birds stop singing). The netting operation gave an estimate of breeding productivity (production of juveniles) and the detection of non-singing adult birds that used the valley (e.g. on migration, or after the breeding season).

3) In addition, we recorded birds seen or heard outside our plots and netting areas).

Effort expended in point censuses: 18 census days (at 27 point-census stations), by 2 persons in May and June; 225 person-hours; plus about 12 person-days for trail-cutting and maintenance. Effort expended for mist-netting: 20 netting days, by 2 persons, June-Sept; 360 person hours; plus about 14 person-days for trail-cutting and maintenance. About 28 person-days were used to enter and analyze data and to prepare this report.

In all, the equivalent of 53 person-weeks were invested in field work for the project in 1991, plus about 4 person-weeks for analysis of data and preparation of the report. Funds from Echo Bay Mines supported the equivalent of about 11.5 person-weeks of fieldwork.

RESULTS

Visual/auditory censuses, breeding season.

A) Average diversity and abundance of birds/station. We counted averages of 2-5 avian species and 3-8 individual birds per station (Table 1). Censuses began after some species had arrived and begun to nest (e.g. fox sparrow, American robin), but we recorded the arrival of a number of species. In general, both diversity and abundance of birds was higher in alder/willow thickets and cottonwood than in conifer vegetation (Table 1, Figs. 1 and 2).

B) Seasonal changes in detectability. Birds in spring are usually easy to detect, because their songs are conspicuous. Many species sing frequently upon arrival but only rarely after nesting is underway. Therefore, a species may be recorded commonly for 2-3 weeks after its arrival and then appear to be rare (examples in Figs. 3-5). This gives the (false) impression that the species is uncommon, and means that the average number of birds/station (reported above) is actually an underestimate of the real diversity and abundance of birds on the site at a particular time. The orange-crowned warbler, for instance, was conspicuous and detectable in midMay (Fig. 3A), but detected much less often thereafter. But we know that they were still present and common, from the netting data.

These within-season changes in detectability and the underestimates yielded by the average counts/station, necessitate a second way of summarizing the data, i.e. the cumulative totals of species and individuals.

C) Cumulative numbers of species and individuals, by habitat. Alder/willow thickets accumulated slightly more species (23) than cottonwood (20) or conifer (21) (Table 2, Fig. 6). However, the cumulative abundance of birds was much greater in both alder/willow and cottonwood habitats (ca. 12 birds/station in June) than in conifer habitat (ca. 8-9 birds/station; Table 2, Fig. 7).

Sheep Creek Valley supports breeding populations of five species whose abundance is apparently declining in Alaska (fox sparrow, orange-crowned warbler, blackpoll warbler, American robin, varied thrush) and eight species whose abundance may be increasing (S. Droega, USFWS, pers. comm.).

Mist-net censuses

A) Breeding season. Mist-netting operations were greatly constrained by rainy weather in the summer of 1991. As a result, data are missing for a few weeks and the sample for the remaining weeks is smaller than anticipated.

Differences in capture rates between alder/willow thickets and cottonwood stands tend to be small, in general (Table 3, Figs. 8, 9). The number of species recorded in the breeding season and the postbreeding season are similar, but abundance was often higher during the breeding

season than in the postbreeding season (Table 3 vs. Table 4). This suggests that Sheep Creek Valley may be more important as breeding habitat than as migration habitat for most species.

Mist-nets confirmed the breeding of Tennessee warblers in the valley, documented the presence of blackpoll warblers, and provided most of the observations of redstarts.

B) Postbreeding season. In August and September, several additional species were recorded in the mist-net censuses, although the abundance was not generally elevated (Figs. 10, 11). Species present principally on migration include "myrtle" warbler, white-crowned sparrow, and "Oregon" junco. Some species that bred in the valley apparently left their breeding area by the end of August (e.g. yellow warbler), whereas others stayed into September (e.g. orange-crowned warbler).

Postbreeding diversity and abundance in alder and cottonwood habitats in Sheep Creek were commonly higher than that observed in similar habitat near Herbert River (up to 2x greater) during the same time period. Because many more birds were caught in alder and cottonwood than in conifer at Herbert River, and this habitat difference parallels that observed in Sheep Creek visual/auditory censuses, we can confidently assume that the nettable population in Sheep Creek conifer stands would have been low.

These results allow the preliminary conclusion that Sheep Creek supports a locally diverse and abundant avifauna, especially in the breeding season. The deciduous vegetation provides habitat for numerous birds, and the concentration of birds in the valley appears to be high.

Neotropical migrants

Neotropical migrants comprised roughly half of the avian population in alder and cottonwood habitats but less than that in conifer vegetation, in the visual/auditory censuses (Table 5). In the mist-net (understory) census, the proportions were somewhat lower in the deciduous vegetation (38-40% of species; 36-47% of individuals; Table 6).

Several species of neotropical migrant birds were recorded from Sheep Creek Valley (Table 7). Four of the five warblers recorded from the conifer habitat are known to be marginal and uncommon in that vegetation (orange-crown, yellow, Wilson's, redstart), and Townsend's warbler is marginal in deciduous vegetation; that is, their apparent presence in the focal habitat is probably due to the proximity of their preferred breeding habitat. Excluding these from consideration here, the list of neotropical migrants is clearly longer for alder and cottonwood than for conifer.

Thus, the deciduous vegetation supports a number of species (some very abundant) that are of interest to the national program on neotropical migrant birds.

Breeding productivity

From the mist-net captures, we can estimate the relative production of young, by the proportion of juveniles in the total for each species (Table 8). For most species, juveniles comprised >25% of the total catch in mist nets, indicating some success in breeding and use of the valley by young birds. The low numbers of young Lincoln sparrow probably reflects merely the fact that we did not net in their preferred habitat, but the low number of yellow warbler juveniles suggests that breeding for this common species was not very successful this year.

List of all species recorded in the valley

Table 9 presents the list of all species of birds we recorded in the valley in 1991. Scientific names, official abbreviations for common names (Bird banders' alpha codes), and numbers of mist-net captures are given in Table 10. The most abundant birds in the valley habitats are indicated in Figures 12-14 (based on visual/auditory censuses); these include fox sparrow, American robin, Wilson's warbler, yellow warbler, orange-crowned sparrow, and ruby-crowned kinglet. The valley hosts several species that are rare in Southeast Alaska, including blackpoll warbler, American redstart, and Tennessee warbler.

SUMMARY

We recorded a total of 34 species in our formal censuses (both methods) and a total of 41 species using the valley. The alder/willow thickets and cottonwood stands generally support more species and individuals than conifer stands. Preliminary comparisons indicate that the density of birds in the valley may be higher than in other apparently similar habitats elsewhere near Juneau. The valley supports substantial breeding populations of a number of species, including several neotropical migrants, and several species that are rare in Southeast Alaska.

