

WESTERN REDCEDAR SEED, A FOOD OF PINE SISKINS

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Destruction of forest tree seed has a direct influence on the amount of regeneration in the Douglas fir (*Pseudotsuga menziesii*) region of the Pacific Northwest. Land managers are becoming increasingly concerned about getting deforested areas back into tree production as soon as possible. Any information relative to this problem adds to the overall knowledge and helps to form a sounder basis for management. Western redcedar (*Thuja plicata*) is an important timber species in Douglas-fir forests. General observations of pine siskins (*Spinus pinus*) over an 11-year period and analysis of siskin stomachs suggest that western redcedar seed is an important fall, winter, and spring food of the species on the H. J. Andrews Experimental Forest, located within the Willamette National Forest in Linn and Lane counties, Oregon. The siskin specimens were collected in the spring of 1957 in connection with a study of animal influences of forest reseedling. A reasonably thorough perusal of the literature failed to produce any reference to western redcedar seed as a siskin food. Fowells (1965) lists only rodents as possible predators on artificially and naturally cast seeds of the redcedar.

#### METHODS

General observations were made of bird life on the forest at irregular intervals from April 1954 until the present. These have been intensified since the spring of 1964 when a periodic bird census was started on one of the cutover areas.

Seven pine siskins were collected for food habit studies during late April and early May 1957. Gullets and gizzards of these birds were examined by the writers at the Denver Wildlife Research Center, Bureau of Sport Fisheries and Wildlife. After washing and drying the gullet and gizzard contents, the various foods were identified, items were separated down to very fine material, and percentages, based on visual appraisal of the volume of each, were determined.

#### RESULTS AND DISCUSSION

Siskins have been noted in variable abundance in the Andrews Forest and immediate vicinity during every season of the year. Gabrielson and Jewett (1940) report them as permanent residents of timbered parts of Oregon and likely to appear anywhere in winter and spring. Jewett et al. (1953) found siskins to be permanent residents of Washington, chiefly in coniferous timber. The senior author noted that siskins were especially abundant on the Andrews Forest during good tree seed years in 1956-57, 1959-60, and 1965-66. Chapman (1912) indicated that irregular winter siskin movements are governed by their food supply. Forbush and May (1939) report that unusually large numbers result when there is a lack of their usual foods in the north. Taverner (1928), Jewett et al. (1953), and others also found siskins occurring irregularly but did not associate the movements with food supply.

Large flocks of feeding siskins are very noticeable. Generally, a whole flock will land near the top of a tree and start feeding while moving downward, working from all positions on the cones, much like chickadees (*Parus* sp.), and twittering all the while. The birds remove the endosperm of the seed, letting the discarded seed coats and wings flutter to the ground in a regular shower when large numbers of birds are involved. The top or "tail" of the flock constantly flutters downward in a sort of rolling motion toward the bottom or "head." Suddenly, as if at a signal, the flock will take wing in a downward swoop out of the tree amid a loud chorus and fly in their wave-like manner, perhaps in a circle, back to the tree they just left or to another.

Table 1. — Average percentage by volume of food found in 7 pine siskins

Food Items	6 Gullets	7 Gizzards	Average
Plant seeds:			
Western redcedar	41	37	39
Western hemlock	33	28	30
Douglas-fir	24	34	29
Total	98	99	98
Animal:			
Spiders	1	T	1
Butterfly or moth larvae	T*	0	T
Miscellaneous insects	1	1	1
Total	2	1	2
Grand total	100	100	100

\*T—trace

Siskins apparently have a preference for redcedar seed. In the fall, winter, and spring seasons, siskins were observed many times feeding in redcedar trees when western hemlock (*Tsuga heterophylla*) and Douglas-fir were equally, if not more, available, and all were bearing crops of seed. Seeds from all three species are important siskin foods, but redcedar seeds seem to be preferred. Redcedar cones have a tendency to point upward and it is probably a simple matter for birds to pick out the seeds. This may be a factor in the siskins' preference.

Analysis of the gizzard and gullet contents of 3 male, 3 female and 1 unsexed siskin specimens are given in Table 1. The results reveal a reasonably close agreement between gullet and gizzard contents. The average data show that tree seeds comprised 98 percent of the food. Spiders (Araneidae), butterfly or moth (Lepidoptera) larvae, and miscellaneous insects (Insecta) formed the remainder. Martin, Zim, and Nelson (1951) report a spring sample of 86 siskin specimens to contain 86 percent plant and 14 percent animal material. Although the sample here reported is small, the analysis suggested that redcedar is a preferred food, followed in order by hemlock and Douglas-fir. This supports observational data. Forbush and May (1939), and others, report northern white cedar (*Thuja occidentalis*) as a favorite siskin food in eastern North America.

Siskins have been observed feeding on the seeds of a few other plant species. These are: hairy cat's-ears (*Hypochaeris radicata*), white-flowered hawkweed (*Hieracium albiflorum*), dandelion (*Taraxacum vulgare*), red alder (*Alnus rubra*), and thin-leaf alder (*Alnus sinuata*).

## SUMMARY

Pine siskins were especially abundant on the H. J. Andrews Experimental Forest in the good tree seed years of 1956-57, 1959-60, and 1965-66. General observations for all seasons and a food habits study of 7 birds collected during the spring of 1957 suggested that western redcedar seed is a preferred fall, winter, and spring food. Western hemlock and Douglas-fir seeds were also readily consumed. — *U. S. Bureau of Sport Fisheries and Wildlife, Denver Wildlife Research Center, Corvallis, Oregon, and Denver, Colorado, 7 July 1966*

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