

BOTANY-ZOOLOGY PAPERS

Some Observations On the Flora of Shoshone County, Idaho

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As a contribution to the Northwest Scientific Association's project of completing an intensive study of the flora of the Pacific Northwest, a series of collecting trips were made into Shoshone County, Idaho, in the summer of 1941. Relatively little systematic collecting has previously been done in this area. The American botanist, John Leiberg, collected in the County around 1890. In recent years Dr. Carl Schaarsmith and Dr. Marion Ownbey, taxonomists at Washington State College, have made short trips into the region and W. R. Moore, a student at the college, has done some collecting while acting as a Forest Service "lookout" in the county.

The present study was undertaken in connection with the 1941 summer session of the State College, under the direction of Dr. Ownbey. Funds for financing the work were furnished jointly by the Northwest Scientific Association and the Botany Department of Washington State College.

Four trips, of three or four days each were made into the county, between July 9 and August 5. The first trip extended across the county from Clarkia in the southwest corner, along the Forest Service road across the central part of the county, through Avery, to Quarles Peak lookout station, on the Montana state line, northeast of Avery. The remaining trips were devoted to further collecting along the road from Clarkia to Avery with side trips to Jug Mountain and to Bearskull Ranger Station, also for a few miles along the new logging road running east from Gold Center, a few miles from Clarkia.

The variety of habitats included in the survey is considerable. The elevation varies from 2844 feet at Clarkia to 6400 feet at Quarles Peak. The southwest corner of the county is an old cut-over area, now partly in farm land. The central part of the county consists of a series of high ridges and isolated peaks, up to 6000 feet in elevation, and

with deep valleys and ravines drained by tributaries of the Clearwater and St. Joe rivers. The ridges and peaks of this section are quite generally bare of timber except on some of the northerly slopes. The valleys are mostly timbered. Not much lumbering appears to have been done in the region. The route followed crosses the Little North Fork of the Clearwater River at Clearwater Camp about fifteen miles south of Avery, and the road to Quarles Peak runs along the north fork of the St. Joe river for fifteen or twenty miles. Quarles Peak is on the main watershed of the Bitter Root Mountains. A number of small lakes and numerous mountain meadow, marsh and bog areas occur in the central region. Sheep are being run on parts of the area.

Four hundred and fifteen separate collections were made, ranging from one to ten or more specimens each. The identifications are not yet complete but approximately 240 species were collected. No attempt has been made to determine the number of new county records but it is estimated that perhaps half of the collections are new. At least one new record for the state of Idaho is included, *Parnassia intermedia*, in the Saxifrage family.

Some of the more conspicuous features of the flora, outside of the conifers, include: the Pine Lily, or Bear Grass, *Xerophyllum tenax*; Pearly Everlasting, *Anaphalis margaritacea*, var. *occidentale*, which occurs in abundance nearly everywhere; species of *Arnica*, mostly *Arnica longifolia*; the Mountain Daisy, *Erigeron salsuginosus*; Green Hellebore, *Veratrum Eschscholtzii*; the dainty, blue flowered, *Polemonium columbianum*; and the wild Heliotrope, *Valeriana sitchensis*. Several species of hawkweeds and lupines abound. About Quarles Peak the common Larkspur, *Delphinium Nelsoni*, and the wild Columbine, *Aquilegia formosa*, are common.

In the bogs, marshes, ravines and in the timber numerous representatives of the heather and orchid families occur. The heaths include such interesting forms as the Bog Heather, *Kalmia microphylla*; the parasitic Pine Drops, *Pterospora andromedea*; *Kinnikinnick* and *Pipsissewa*, or Prince's Pine; the Wild Beet, *Pyrola bracteata*; a bushy, thicket-forming species, *Ledum glandulosum*; common huckleberry, *Vaccinium membranaceum*, and the Grouseberry, *Vaccinium scorparium*. On some of the higher ridges are extensive patches of the beautiful Pink Heather, *Phylodice empetriformis*. The orchids include such species as the dainty white, Hooded Ladies' Tresses, *Spiranthes Romanzoffiana*, which grows among the peat moss of bogs; species of *Habenaria*, including the Tall White Bog Orchis and the Slender Bog Orchis; and in the woods, mostly under Hemlock trees, occurs the parasitic Spotted Coral Root, *Corallorrhiza maculata*.

In a marshy area on the side of Quarles Peak and in similar areas near Jug Mountain and along "Trail 32W" in the same locality, three umbellifers grew in abundance. They were the Water Hemlock, *Cicuta vagans*; Lovage, or *Ligusticum Canbyi*, and a species not yet identified. Another spot of special interest is a meadow below Freezeout Saddle in the vicinity of Freezeout Mountain, which is said to take its name from a tragic incident of the Chief Joseph Indian war. The meadow itself is nearly level and surrounded on three sides by high rocky ridges. In one part of it there was an extensive patch of the brilliantly yellow flowered St. Johnswort, *Hypericum Scouleri*. Another part is boggy, with a small stream meandering through it, along which there were many clumps of the large, blue-flowered gentian, *Gentiana calycosa*. At another place along a dry, rocky water course was a thick growth of a deeply blue-flowered speedwell, *Veronica Cusickii*, extending far up the side of the steep ridge from the edge of the basin. At another place there is an extensive thicket of a low growing, thick-leaved willow, probably *Salix*

sitchensis. On the southerly slopes of the ridge about Freezeout there were also extensive patches of the low-growing, mat-forming legume, *Lupinus aridus*, also a seemingly rare species of *Lomatium*, *Lomatium Sandbergii*.

Other plants of interest in the collection include the crimson Monkey Flower, *Mimulus Lewisii*, which occurs in large clumps in or near the water of the mountain streams and about cold springs: in the same kinds of places, but less commonly, occurs a larger cousin of the Dutchman's Breeches, *Carydalis Cusickii*; on a high rocky ridge at Quarles Peak was the large, pink-flowered legume, *Hedysarum occidentale*; in a restricted area along the St. Joe, north of Avery, *Penstemon Lyallii* occurs; along some of the lower canyon walls is seen the maple-leaved Mallow, or wild holyhock, *Sphaeralcea rivularis*; along the streams also may be seen the cone-shaped heads of the Nigerhead, *Rudbeckia occidentalis*; on nearly bare rocks or dry sandy knolls occur the mat forming sandwort, *arenaria formosa* and *Phlox rigida*. In a marsh at Clearwater Camp and also at Round Top Ranger Station a delicate little, prostrate St. Johnswort, *Hypericum anagalloides*, grows on the moss; in damp, cool places may be seen the striking looking pink-flowered Lousewort, *Pedicularis groenlandica*. *Cirsium edule*, a real thistle, growing seven feet high, may be seen along the river road north of Avery.

Plants making up much of the brush and deciduous thickets are the Sitka Alder, the Mountain Ash, Fool's Huckleberry, Ocean Spray, two *Spireas*, the Douglas Maple, Service Berry, Aspen, *Syringa*, Snowberry, Black-berried Elder, and the Black-berried and the Red-berried Twin-berry.

Some of the more important families represented in this collection are the composites with over 30 species, the Figwort family with over 20 species, the Heath family with 15, and the mustard, buttercup, Rose, Dock, Lily, and Saxifrage families with 10 to 15 species each. The Orchid, Pink, Legume, Umbel and Evening Primrose families are

also well represented. In all 38 different families are included.

This summer's work must be considered as only the beginning of a systematic study of the flora of Shoshone County. Collections should be made earlier in the season, and there are

large areas in the southeast, north, and northwest parts of the county which have not yet been visited.

It is expected that the identifications will be completed in the near future after which the material collected will be on file in the herbarium of the Washington State College, at Pullman.

ABSTRACTS

Isolation of Fungi Associated with Brown Cubical Heartrots of Western Redcedar

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An investigation of the brown cubical heartrots of western redcedar in northern Idaho has been initiated in the Forest Pathology Laboratory of the University of Idaho. Although their importance is generally recognized, very little is known about them, and it is the ultimate purpose of the project to formulate control measures for the rots. The immediate work is concerned with a study of the etiology and symptomatology of the two types of rots, the continuous trunk rot and the pocket trunk rot.

A large number and variety of fungi

have been obtained in pure culture from many different rot specimens. Recent work on the initial stage of decay has resulted in three isolates, as yet unidentified, which may be suspected as possible primary agents of decay. It is interesting that their position of occurrence in relation to the rot and to one another suggests the possibility that a synergic or metabiotic action may be involved. Experiments are also in progress to test their saprogenicity, by making artificial inoculations with these isolates, both on western redcedar heartwood test blocks, and in sound living trees.

Some New Uses for the 2 x 2 Projector

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Either sections or whole mounts of rather large material, prepared by the usual histological methods and fixed to 2 x 2" slides can be used to great advantage in the projector.

Such materials as whole chick embryos, feathers, the sclerotic bones from a duck's eye, whole insects, cross sections of plant stems or entire small leaves may be used.

Histological details fail to show but in cross sections of an embryonic dogfish the relationship of the principal organs like nerve tube, notochord, gills, myotomes, and intestine can be seen very plainly.

A special slide carrier that I made

to carry microscope slides has proved practical but the shape of the slides makes them harder to handle than the 2 x 2" size. I have not yet tried making a water cell for small aquatic forms but plan to do so very soon.

The low cost, brightness and ease of manipulation make the 2 x 2" projector a very useful teaching aid, especially since it is so easy to make Kodachrome slides with a miniature camera and at least one supply house is making photomicrographic slides to order from stained histological material. I am continuing my experiments with large histological subjects in order to widen a field that looks very promising to me.