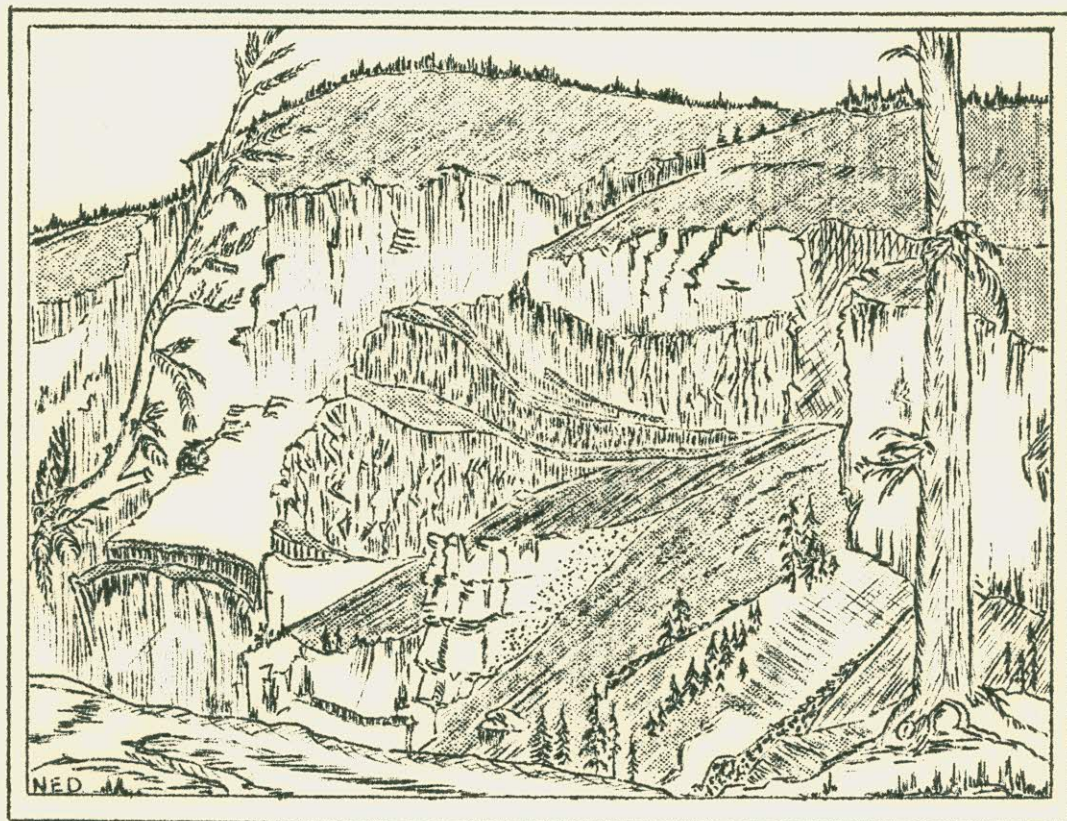


NATURE NOTES

Crater Lake National Park

— OREGON —



THE PUMICE CASTLE

VOLUME XI ~ AUG. 1938 ~ NUMBER 2



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

CRATER LAKE NATIONAL PARK

NATURE NOTES

Volume XI

August 1938

Number 2

Nature Notes from Crater Lake National Park are issued during the summer months. These pamphlets contain articles describing the natural features of the Park, Oregon Caves National Monument and Lava Beds National Monument, the two monuments being administered by the staff of Crater Lake National Park. Copies of Nature Notes may be obtained from the Park Superintendent, Crater Lake, Oreg. The reprinting of the articles appearing in Nature Notes is encouraged. Please give credit to the pamphlet and author.

E. P. Leavitt
Superintendent

John E. Doerr, Jr., Editor
Park Naturalist

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PREFACE

CRATER LAKE NATIONAL PARK

The park includes an area of 250 square miles on the crest of the Cascade Range in southern Oregon. The area was established as a national park in 1902, preserving the unsurpassed scenic beauty of Crater Lake, a deep lake, the clear fresh water of which is famous for its everchanging hues of blue. Its setting is unique. The lake, having an area of 20 square miles, is cupped within the crater of an extinct volcano. Cliffs 500 to 2000 feet high completely surround the lake. The crater walls are partially mantled with hemlock, fir, and pine trees. On the gentle outer slopes of the mountain which one ascends in approaching Crater Lake there are deep canyons, magnificent forests and open meadows supporting a colorful display of mountain wild flowers. Hiking and fishing are popular outdoor sports during the summer months. Skiing is popular in the winter, the park being accessible throughout the winter months by the west entrance road from Medford and the south entrance road from Klamath Falls.

OREGON CAVES NATIONAL MONUMENT

This national monument, an area of 480 acres, is located in the Siskiyou Mountains in southwestern Oregon. The caves, named "The Marble Halls of Oregon" by Joaquin Miller, are truly marble halls. Underground water penetrating to great depth along fractures in the marble formation has dissolved out an extensive system of chambers. Water dripping from the ceilings and walls has decorated the halls and passageways with fantastic stalactites and stalagmites which stimulate one's imagination as well as one's appreciation of the beauties of nature in caverns never touched by sunlight. In the magnificent forest around the cave entrance there are trails along which one gets inspiring views of forest-covered mountains and valleys. Along the trails one can observe many species of trees, mammals, and birds.

LAVA BEDS NATIONAL MONUMENT

Located in northeastern California, the monument includes an area of 45,000 acres. As the name suggests, volcanic formations, some of quite recent origin, are of greatest importance. There are hundreds of lava tubes which were once the passageways for streams of molten lava. Volcanic cones rise above the general level of the adjacent country. There are excellent examples of various types of lava. Within the monument there are interesting historical features including battlefields of the Modoc War of 1872-73. There are important ethnological and archaeological features. Petroglyphs on cliffs and pictographs in caves are evidence that the region was inhabited by primitive people long before the coming of the white man.

The Editor

BIRD SPECIES CENSUSES in CRATER LAKE NATIONAL PARK

Check lists of bird species in specific areas are indispensable to the scientific investigator but not much use to the average tourist who is interested in birds. The tourist may be impressed with the richness of the display on paper, which many years of investigation on the part of a number of observers has accumulated, but what he would like to know is, "What birds am I likely to see in a given locality if I go there during a certain season of the year".

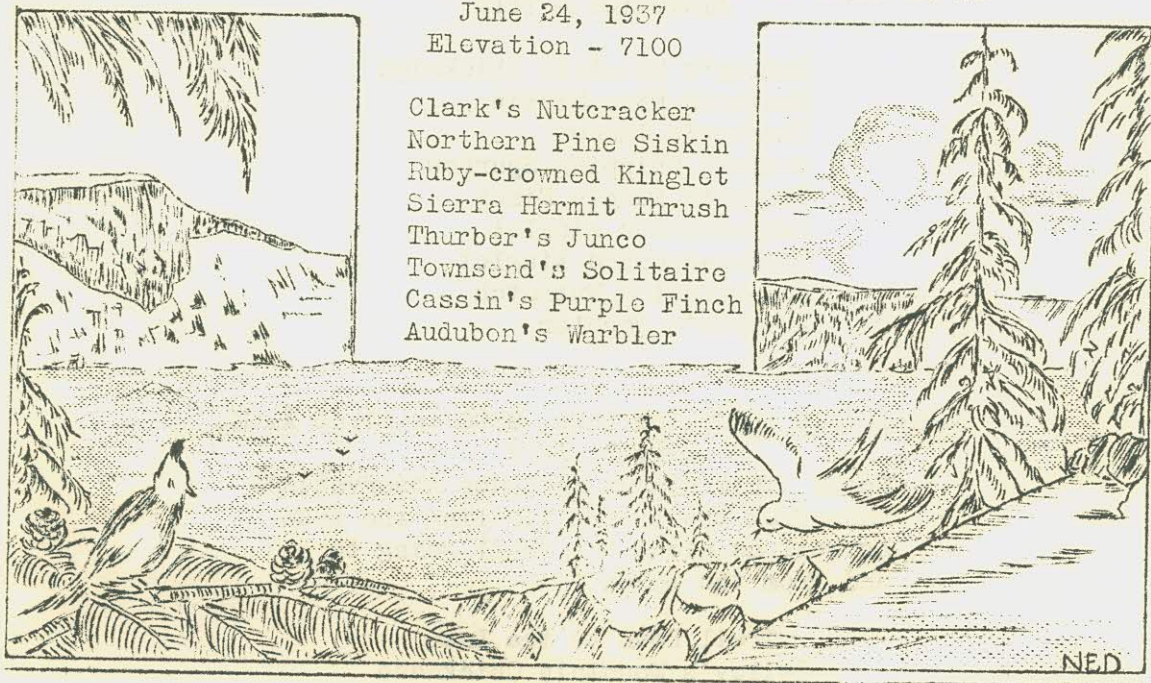
To fill this need a few bird census reports have been made of some of the areas in Crater Lake National Park which are readily accessible to tourists who may wish to study birds. Vernacular names for the observed species are used and they are written in the order in which the birds were encountered.

Head of Lake Trail, Rim Village, 8:30 to 10:00 A. M.

June 24, 1937

Elevation - 7100

Clark's Nutcracker
Northern Pine Siskin
Ruby-crowned Kinglet
Sierra Hermit Thrush
Thurber's Junco
Townsend's Solitaire
Cassin's Purple Finch
Audubon's Warbler



Information Building, Rim Village, 1:00 P. M.

June 26, 1937

Elevation - 7100

Bailey's Mountain Chickadee
Black-headed Jay
Townsend's Solitaire
Hawk (Sharp-shinned)
Cassin's Purple Finch
Thurber's Junco
Clark's Nutcracker
Northern Pine Siskin
Western Robin

Crater Lake Rim Village Area, 8:30 to 11:30 A. M.

June 27, 1937

Elevation - 7100

Clark's Nutcracker
Cassin's Purple Finch
Mountain Bluebird
Western Robin
Northern Pine Siskin
Thurber's Junco
Western Chipping Sparrow
Audubon's Warbler

Sun Notch, East Rim of Crater Lake, 9:00 to 11:30 A. M.

July 2, 1937

Elevation - 7115

Bailey's Mountain Chickadee
Northern Pine Siskin
Thurber's Junco
Western Chipping Sparrow
Cassin's Purple Finch
Ruby-crowned Kinglet
Golden-crowned Kinglet
Red-breasted Nuthatch
Audubon's Warbler

Launch Trip on Crater Lake, 9:00 to 11:45 A. M.

July 7, 1937

Note: This report includes observations made from the launch circling the lake as well as along the trail going to and from the lake.

Trail Down to the Lake

Bailey's Mountain Chickadee
Ruby-crowned Kinglet

Red-tailed Hawk

Near Wizard Island
Olive-sided Flycatcher
Thurber's Junco
Townsend's Solitaire
Spotted Sandpiper

Steel Bay
Red-tailed Hawk

Grotto Cove
Bald Eagle

Danger Bay
Violet-green Swallow

Trail up from Lake
Audubon's Warbler
Cassin's Purple Finch
Western Tanager

Forest Road West of Pinnacles and Sand Creek Valley, 9:00 to 11:00 A.M.

July 11, 1937

Elevation - 5,500 to 6,000

Western Robin
Mountain Bluebird
Green-tailed Towhee
Black-headed Jay
Western Chipping Sparrow
Western Tanager
Sierra Hermit Thrush
Bailey's Mountain Chickadee
Red-breasted Nuthatch
Calaveras Warbler
Red-breasted Sapsucker
Thurber's Junco
Olive-sided Flycatcher
Western Flycatcher
Rough-winged Swallow
Northern Pine Siskin
Swainson's Hawk
Golden Pileolated Warbler

Sand Creek Valley, 9:00 to 11:00 A. M.

July 13, 1937

Elevation - 5,500 to 6,250

Mountain Bluebird
Olive-sided Flycatcher

Black-headed Jay
 Western Chipping Sparrow
 Sierra Hermit Thrush
 Western Tanager
 Bailey's Mountain Chickadee
 Red-breasted Nuthatch
 Calaveras Warbler
 Red-breasted Sapsucker
 Green-tailed Towhee
 Thurber's Junco
 Western Pileated Woodpecker
 Audubon's Warbler
 Golden Pileolated Warbler
 Cassin's Purple Finch
 Western Flycatcher
 Northern Pine Siskin
 Swainson's Hawk
 Rough-winged Swallow

It may be seen from the above lists that certain birds like the Siskins, Juncos, Audubon's Warblers, Chickadees, Chipping Sparrows, and Olive-sided Flycatchers are widely distributed in the park. The lists explain too, why many tourists comment on the poverty of bird life in the park. Tourists spend most of their time along the rim where possibly because of the antiquity of the Clark's Nutcrackers, very few species are to be found. At elevations lower than the rim, especially in the well watered valleys, twice as many species may easily be observed.

by R. R. Huestis
 Ranger Naturalist
 1937

The PUMICE CASTLE

Of the many colorful volcanic formations in the walls surrounding Crater Lake, The Pumice Castle, on the east wall, attracts the attention of all visitors making the launch trip around the lake, and of many visitors viewing the crater walls from the rim, particularly when the afternoon sunlight emphasizes the pattern of color on the east wall.

The Pumice Castle is part of an extensive lenticular bed of fragmental pumice outcropping on the crater wall about 1,300 feet above the level of the lake, or 400 feet below the crater rim just south of Cloudecap. The bed of pumice has a maximum thickness of 190 feet. Below it much of the section of the crater wall is hidden by talus, except for a few thin layers of lava and beds of fragmental material. Immediately above the lenticular bed of pumice is a thick, massive bed of andesite. Above the andesite occurs the pumice which mantles the remnants of Ancient Mount Mazama and the region extending for many miles beyond.

Following is a measured section from the top to the bottom of The Pumice Castle.

4 feet	of brownish red fragmental pumice
2 "	" light buff to pink fragmental pumice
4 "	" brownish red fragmental pumice
60 "	" gray fragmental pumice
60 "	" reddish brown fragmental pumice
6 "	" black obsidian
30 "	" brownish red fragmental pumice
4 "	" brown andesite containing numerous small lenses of black obsidian
20 "	" reddish brown fragmental pumice

A study of the section, composed of layers of hard, resistant material such as the andesite and obsidian interspersed in the soft, less resistant layers of fragmental pumice, explains why erosion has produced the castle-like feature.

In addition to the scenic value of The Pumice Castle, it is a significant scientific feature in that it is evidence of a pumice

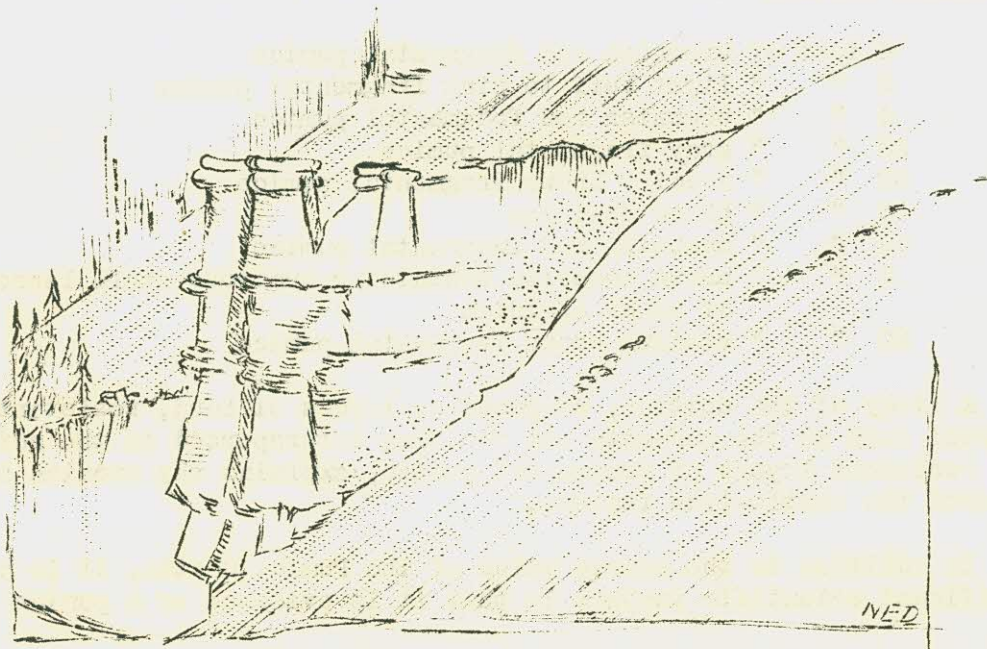
eruption which occurred earlier than the ejection of material represented by the great thickness of pumice exposed at the top of the crater wall, and which mantles the region for miles beyond the crater rim.

Beds of fragmental pumice, similar to that exposed at The Pumice Castle, are exposed at several places in the north wall. At the Llao Rock flow and at Palisade Point the pumice occurs beneath thick lava flows. Whether these lenticular outcrops of pumice are of the same age, or represent material ejected during one eruption, has as yet not been determined. Field studies to date suggest that they represent material ejected during one eruption. From further field studies it may be possible to determine not only whether the pumice was ejected during one eruption but also to determine the approximate location of the vent or vents from which the material was ejected.

The Pumice Castle, the product of volcanic activity and erosion, exemplifies the combination of scenic and scientific values typical of Crater Lake, scenic in that its coloring and architecture stimulate the imagination, scientific in that it tells part of the story of the building and destruction of Mount Mazama.

by Wayne E. Kartchner
Ranger Naturalist

and
John E. Doerr, Jr.
Park Naturalist



The Pumice Castle

A CREEL CENSUS

For

CRATER LAKE

Season of 1938

This is a report of the second creel census for Crater Lake. The first report by Hasler (Nature Notes, July and August 1937) when compared with this shows a decrease in the number of fish caught. Table 1 summarizes the data for the 1938 fishing season, the season being considered as from July 1 to September 1, the period when boats are available. In July 1937 the catch per hour per fisherman was 0.83 fish; for July 1938 the catch amounted to 0.52 fish. In August 1937 the catch per hour was 0.66 fish; for August 1938 it was 0.39 fish. During both the 1937 and 1938 seasons the August fishing showed a slump over July. While the yield of fish during the 1938 season shows a decrease over that for 1937 the quality of the fish caught during 1938 was quite satisfactory and equal to last year.

TABLE 1

1938 Creel Census for Crater Lake

Month	Number of Boat Reports*	Number of Anglers	Total Fishing Hours	Number of Fish Taken	Number of Fish Per Hour
July	149	268	476	248	0.52
August	178	356	447	176	0.39

*Boats used for one hour or less not included.

TABLE 2

1938 Creel Census for Crater Lake
as taken from the Records of Fishing by Park Employees

Month	Number of Boat Reports*	Number of Anglers	Total Fishing Hours	Number of Fish Taken	Number of Fish Per Hour
July	5	10	14	29	2.07
August	13	24	39.5	53	1.34**

*Reports of fishing after 3:00 P. M.

**The number of fish caught per hour between 8:00 A. M. and 3:00 P. M. was 0.34, an average obtained from 26 hours of fishing.

by Arthur D. Hasler
Ranger Naturalist
1938

MUSKRATS

in

CRATER LAKE NATIONAL PARK

On June 12, 1937, Ranger Bernie Hughes brought in a muskrat killed in the vicinity of the dining room at Park Headquarters. The specimen, an immature female, was put up and the skull, somewhat damaged in taking the specimen, was preserved. Since then, rangers have reported two other specimens; one observed dead in a small creek four miles from the west entrance of the park, and another killed on the road near Godfrey's Glen. In all cases these animals were found a considerable distance from a body of water of any appreciable size.

Neither Anthony (1935) nor Bailey (1936) list muskrats in or near the park. The latter author says; "They have not been taken in the Klamath or Pit River Valleys nor in Summer, Abert, or Warner Lake Valleys, although these great lakes and tule marshes seem admirably adapted to their requirements and very similar to the Malheur

Lakes where they abound." (1) On the other hand a number of Crater Lake National Park rangers either resident in or very familiar with the district assert positively that the region of the Upper Klamath Lake abounds in muskrats, and that large numbers have been skinned and marketed in recent years. It is suggested in reconciliation of these opposed statements that the muskrats taken in the Klamath region represent the descendants of escaped animals recently introduced in the region for purposes of fur farming, and that the specimens seen in the park are immigrants from the Upper Klamath Lake. If inquiry shows this to be the explanation, the taxonomic position of park muskrats will be problematical because commercial animals may be from various sources.

The muskrat, Ondatra zibethica, (*Fiber zibethicus*, according to Bailey) should make an interesting addition to the park fauna if it is able to establish itself. It is a large rat with relatively small ears and eyes, and thick dark brown fur. The long, almost naked tail is laterally compressed. The fore feet are small but the hind feet are relatively large, the toes being slightly webbed at their bases and supplied with heavy lateral fringes of bristles. The tail and hind feet are thus highly adapted to swimming. As in many rodents, there are four toes on the fore feet and five toes on the hind feet.

In still water muskrats build large dome-shaped houses, the bases of which are submerged. Entrance is from underneath. In streams or in lakes with steep banks they burrow in from under the water, inclining their tunnels upward to a nesting room which they hollow out above waterline. Their food consists of bulbs, roots, leaves, tubers or other portions of plants which grow adjacent to or in the water. The name muskrat comes from the fact that certain glands produce a musky secretion.

The muskrat has been one of the most important fur-bearing animals on a continent famous for its fur trade. The writer remembers seeing as a boy, in Edmonton, Alberta, the greatest shipment of raw furs ever brought in from the Mackenzie River country. In this shipment, pictures of which were common in Canadian press releases at the time, the muskrat skins outnumbered all others combined, and formed a pile on the floor of the skating rink approximately six feet high and some thirty feet in diameter.

Catches in all parts of Canada and the United States have been much reduced in recent years. The future supply of these valuable furs will probably have to be produced by artificial propagation which may very well be the cause of this addition to the fauna of Crater Lake National Park.

by R. R. Huestis
Ranger Naturalist
1937

(1) Bailey, Vernon, *The Mammals and Life Zones of Oregon*, North Amer. Fauna, No. 55, U.S.D.A., Bur. of Biol. Sur., 1936, p. 215.