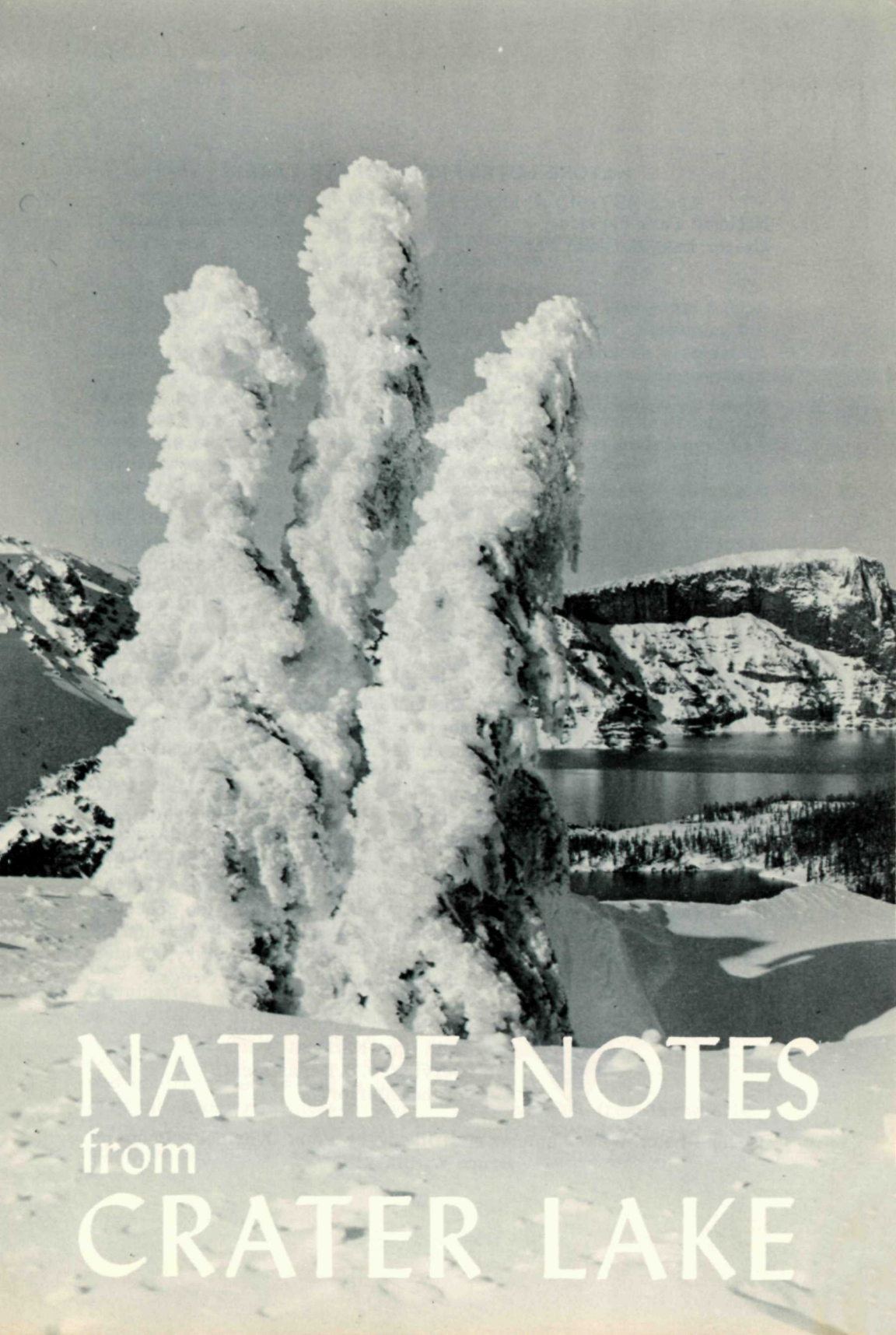




NATURE NOTES
from
CRATER LAKE

NATURE NOTES FROM CRATER LAKE

National Park Service
Crater Lake National Park

Crater Lake Natural
History Association

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W. Ward Yeager
Superintendent

Bruce W. Black
Editor

INTRODUCTION

One of the objects of the Crater Lake Natural History Association is "to aid in the distribution of information on all subjects pertaining to the park." It is in keeping with this aim that this 1956 number of **Nature Notes from Crater Lake** is presented. Reprinting of **Nature Notes** articles is encouraged; it is requested that acknowledgment be given both to the author and to this publication.

Each summer a dedicated National Park Service interpretive staff presents an excellent program of talks, nature trips, exhibits, and other informational services. The material found in the following articles is the result of staff members' activities seldom brought to the attention of the visitor--the gathering of new information. Such efforts both document and give new information for talks.

The Crater Lake Natural History Association was founded in 1942 to promote and assist the interpretive program offered park visitors to further the investigation of subjects of popular interest and importance and to aid in the distribution of information on all subjects pertaining to the park. Toward this end it sponsors **CRATER LAKE NATURE NOTES** and operates a publications sales counter, the proceeds from which are used entirely to support this work. A list of items for sale may be obtained by writing to the Executive Secretary, Crater Lake Natural History Association, Box 97, Crater Lake, Oregon.



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Cover Photo: Winter splendor at Discovery Point Overlook. Photo by
Bruce W. Black.

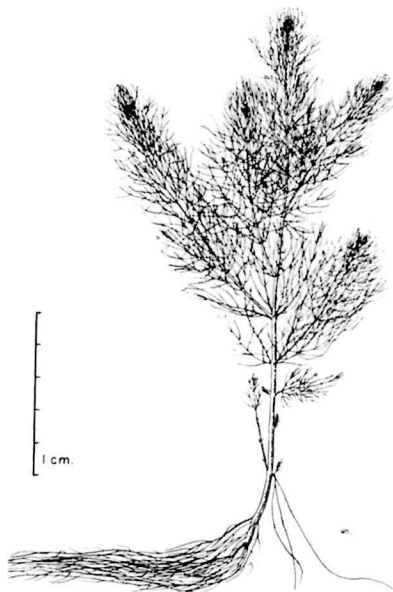
THE DISCOVERY OF MYRIOPHYLLUM IN CRATER LAKE

John R. Rowley and Joanne S. Rowley
University of Minnesota

Among the adventurously inclined, flower hunting may seem a poor substitute for arctic exploration or hunting elephants. Searching for aquatic flowering plants in Crater Lake, however, has an element of excitement which we believe greatly exceeds the general impression of such endeavor. Besides the exhilaration of just being on Crater Lake with its beautiful water encircled by the sheer cliffs of the caldera, the scarcity of flowering aquatics in the lake makes new discoveries especially rare and thrilling. Until recently only four species, occurring in small isolated colonies, were known (Rowles & Fairbanks 1954). Another intriguing factor is the great depth at which plants generally occurring in shallow water are found in this lake.

During the 1956 summer, after searching much of the shore area of Crater Lake, we located a spot to the northwest of Wizard Island which seemed to have a colony of plants of some kind growing on the rocky bottom. Grappling for the suspected plants in 20 to 25 feet of water was a slow process due to a wind which greatly reduced visibility and made boat operation difficult. After several unsuccessful attempts we brought up a water-milfoil, a plant which had never been reported before in Crater Lake National Park.

There was no doubt that the new plant was water-milfoil and belonged to the genus Myriophyllum, for this genus is a distinctive assemblage of plants. Determination of the species was more difficult since keys to species of Myriophyllum depend in large part upon flowers, fruits and emergent leaves and we had only the submerged leaves and stem (Fig. 1). Our new plant could be any of the three major



Drawing made from the whorl-leaved milfoil collected in Crater Lake.

species in Oregon: American milfoil (Myriophyllum exalbescens Fernald), whorl-leaved milfoil (M. verticillatum L.), or western milfoil (M. hippurioides Nutt.).

The morphological features of the submerged leaves, such as the number of leaf whorls at each node and the number of leaflets per leaf, and the reported ecological distribution of these three species were compared with the Crater Lake plant by Richard McP. Brown, assistant park naturalist at Crater Lake National Park, Doctors J. W. Moore and T. Morley, Department of Botany, University of Minnesota, and ourselves. We have each independently concluded that Myriophyllum verticillatum is the most likely possibility, although a more positive identification must await the acquisition of emergent leaves and flowering material.

References

- ROWLEY, JOHN R., and FAIRBANKS, C. WARREN, 1954. "Aquatic flowering plants of Crater Lake." *Nature Notes from Crater Lake* 20:36-39.

SUNDEW WITH A BIG APPETITE

Richard W. Fredrickson, Ranger-Naturalist

Boggy places are well known to the botanist as the habitat of carnivorous plants. Perhaps "carnivorous" is a little strong here, for it implies that the plants eat meat; "insectivorous" is more appropriate. The reason usually given for the relative abundance of such plants in bogs is that bog soils are poor in nitrogen, an element essential to all living things; nitrogen is a substantial constituent of protein, which animals possess in abundance. If a plant can become adapted to obtain its nitrogen from some animal source, then it can flourish in places where the salts of this element in the soil are absent or in low quantity.

Several rather extensive sphagnum ("peat") bogs are found in the northwestern part of Crater Lake National Park. One of the most interesting of these, in the vicinity of Crater Spring, south of the Crater Spur Motorway, I became acquainted with on July 27, 1956. On this date, a number of us made a trip into this boggy region to gather information on the fauna and flora; the story of this has been reported on elsewhere by Ranger-Naturalist John Wirtz.

One of the abundant insectivorous plants in the area was the mountain bladderwort, Utricularia intermedia Hayne; its small yellow flowers were conspicuous here and there in patches on the surface of the shallow water. The bladderworts possess small but complicated bladder-like traps, with which they capture crustaceans, aquatic

insects, and occasionally other tiny animals. Also, growing abundantly in the sphagnum were two species of sundew, the round-leaved, Drosera Rotundifolia L., and the long-leaved, D. anglica Huds. Almost solid mats of these covered large parts of the marshy area, the leaves appearing red because of the myriads of reddish, sticky-tipped hairs which line their upper surfaces. The hairs are glandular, the tips provided with a flypaper-like secretion which entraps insects or occasionally other minute animals.

One of the abundant groups of insects in these boggy areas is that of the butterflies of the family Lycaenidae, the small kinds commonly called "blues." As is habitual with many butterflies, one or more species of "blues" may often be seen hovering in a little cloud about a small wet space or other spot, numbering from a few to hundreds of individuals. I was not surprised then, to find on a single plant of Drosera rotundifolia, five little blue butterflies, each hopelessly entangled by the sticky secretion of the glandular hairs. One of the five was being shared with a leaf from an adjacent plant, the individual plants growing so closely together that it was difficult to segregate single plants. I took the five hapless butterflies, all but two of which appeared to be alive yet, and when I return to the laboratory, identified them. Four I determined to be Plebeius acmon West. and Hew.; the fifth, a closely related species, P. battoides Behr. What an easy way for a butterfly collector to obtain his specimens!

A PINE SISKIN MEETS THE PUBLIC

Edward A. Burnham, Seasonal-Naturalist

Thursday, July 26, 1956, was a routine day for the four employees at the Standard Gas Station near park headquarters. Norm Mitchell, Bill Owens and Bill Lewis went about the usual tasks of filling gas tanks, checking oil and wiping windshields.

Station manager Don Crary decided on placing a "bug bomb" in the rest rooms at about 10:00 in the morning. This, too, was routine. However, a short time later, someone saw a bird, smaller than a sparrow, with a gray breast and yellow in the wings, picking up the dead insects in the men's restroom. It was a pine siskin.

All the rest of that first day he spent getting himself into a familiar routine. When cars came into the pump block he would eat the grasshoppers that fell off the front end of the vehicles. He was decided in his tastes and wouldn't touch dragonflies.

He stayed under an Eastwood willow bush at the east edge of the filling station building. Seldom flying, he scampered along like a road-runner. Gradually adapting himself to human beings, he climbed onto hand or fingers and took water from the cupped hand, also allowing

himself to be photographed. He would even climb on to a hand and allow himself to be raised or lowered.

The crew at the station became quite attached to this accommodating chap, and it was with a feeling of losing a friend when he finally left unannounced on the 1st day of August, after having spent six days with free room and board, entertaining the public.

MARTEN ANTICS

John Mees, Ranger-Naturalist

The marten, *Martes americana*, has been described as having a savage, sour disposition and as being "Public Enemy No. 1" in the weasel family. It has even been said that he hates everyone, even members of his own family. However, the marten has one trait that does not seem to fit in with such a reputation--an extreme curiosity in respect to man. This is especially true in our National Parks, where these animals are protected.

During the winter months, the marten is a frequent visitor to the homes of residents in the park. In his search for food, caution seems to be thrown aside, and the marten on many occasions, when the door is left open, enters and takes food. This behavior continues through the winter months, but in the spring and early summer the visits gradually become fewer in number and finally cease as the natural food supply becomes more plentiful.

During the summer of 1956, an exception to this usual procedure occurred. Mrs. Jim Brooks reported that a family of three martens lived under their house near park headquarters. During the daytime they frequently took sun baths on the window sill and showed very little concern about the movements of the Brooks family. The activity at night, however, wasn't exactly appreciated. The martens would run up and down the partitions of the rooms making rather loud noises and disturbing the sleep of the occupants. Apparently they were having a great deal of fun chasing each other up and down the partitions in a type of animal game.

An obstruction placed over their entrance failed to work as one or two martens were usually caught, and the obstruction had to be removed.

The problem was finally solved when the martens left on their own accord. They were scared when workmen, strangers to the



"Marten. N.P.S. photo."

marten, arrived to do some painting. Thereafter, they returned only at irregular intervals.

A SAD EPISODE

Norman D. Wild, Ranger-Naturalist

While on duty at Sinnott Memorial Overlook in the late afternoon of August 15th, I received an unexpected visit from Ranger Joseph Meeker. Cupped in his hand was the feathery bundle of a frightened mountain bluebird, *Sialia currucoides* (Bechstein). The bird, a female, (the male of the species is a much deeper blue) had been struck by an automobile. Its leg was presumably broken.

I placed the bird in a binocular case, the only available container, and set it on a shelf in the back room until closing time. The lid was left ajar, so the bird would not suffocate. It did not appear too perturbed with its new surroundings, but remained there quietly.

An examination later, at the naturalist laboratory, showed there were no broken bones in the leg. Had a break occurred, the injured member could have been splinted, with a fair chance for recovery. There was very little that could be done, as the pelvic region was badly damaged. It was put gently in a small cage with a dish of water. The bluebird hobbled so violently that a cover was used to quiet its actions.

The next morning, the poor creature, though still alive, was sitting uncomfortably in the corner of the cage, in much pain. Its chances of recovery nil, a few drops of ether, that merciful messenger of sleep, quickly ended the suffering.

I shall always remember this sad episode. Perhaps our departed friend, wherever it may be, is chirping the song Bluebird of Happiness.

A JOURNEY INTO LLAOS HALLWAY

Willis G. Downing, Ranger-Naturalist

Most visitors to Crater Lake National Park are impressed by the geology of the rim wall and the story of the collapse of a mighty mountain. The formation of Crater Lake did provide an area worthy of preservation as a National Park. It is fortunate, too, that the park boundaries include geologic formations outside the caldera which, while not of National Park status in themselves, are of interest to both the employees of the park and the visitors. The spectacular gorges carved out of pumice and scoria flows by Annie, Castle, and Sand Creeks are examples.

Llaos Hallway is a lesser chasm created by Whitehorse Creek, a

small tributary of Castle Creek. Erosion through scoria deposits by the flowing of Whitehorse Creek has carved out a chasm which is two hundred feet deep in some places, yet narrow enough to be spanned at the top by outstretched arms.

Late in August of 1955 two of the fire guards (Fred La Bar and Jim Pritchard) and I decided we would like to take a journey into Llaos Hallway. After obtaining permission from the rangers' office, we set out in Fred La Bar's Model A, whose construction, by good chance, makes it an excellent vehicle to drive through the pumice-laden, sand-like roads in the park. This time we did not need to enter a fire road, but parked along the West Entrance road alongside an emergency telephone.

As evidence of the fact that this was a real first adventure for all of us, we did not immediately find Whitehorse Creek, as we should have, but rather picked up an even smaller stream-bed nearby which ran into Whitehorse Creek at a point where the walls of Llaos Hallway were about fifty feet high. Whitehorse was just a trickle.

Now the moments of discovery began. Stepping and jumping from



"Llaos Hallway. N.P.S. photo."

rock to rock, we usually avoided getting wet. In some spots there were drops of four to six feet which required adroit co-operation or, perhaps, well placed jumps. We always kept in mind, of course, the fact that we would want to ascend again what we had just descended. In two spots we encountered snow banks protected even from the hot summer sun by deep shade. These banks can sometimes present moot problems. Should you go under them with the stream? Or are they strong enough and situated so that it is best to go over them? We did both; once we went under, and once over.

As we continued down this slit, the sky looked farther and farther away.

One hundred and fifty feet above us was a crack and sunlight. Sometimes we could touch both walls at the bottom with outstretched arms. But as we continued down, the canyon assumed a teardrop, cavelike shape. It was obvious that stream action had been undercutting and that the walls above us could fall in large or small chunks at any time.

Toward the end of the Hallway, we saw that this deduction was correct. A section of the wall ahead had collapsed, damming up the stream and forming a pool about twenty feet in width and forty feet long. We judged the water over six feet deep. This water was so cold that even the intrepid explorer, Fred La Bar, was persuaded that this should be the end of our venture. As we stood contemplating the pool, rocks two to six inches in diameter fell into the water from the walls above us. We were protected from their fall by the overhanging nature of the wall above. Any rocks dislodged immediately above us would have fallen only six to ten feet.

As we turned back, I felt that this was not the place to let out with an ape cry or a Swiss yodel. This was certainly an area of rapid erosion in terms of geologic time. We were beneath a spot where a misplaced footstep of a golden-mantled ground squarrel could cause a shower of medium sized rocks.

Continuing back up Llaos Hallway, we saw curves and formations we had not seen before. For a trail traversed from the opposite direction almost always reveals something overlooked or unseen from the wall the other way.

TRAGEDY ON THE LAKE TRAIL

Edward A. Burnham, Ranger-Naturalist

It was Friday afternoon, July 27, 1956. I was all alone placing plant and flower identification markers on the as yet unopened trail to Crater Lake.

At about 3:15 two park employees came down the trail checking on the telephone line, getting it ready for any emergency or routine needs.

At 3:30 one of the workers, Gene Cott, breathing heavily from rushing up trail, came up to me at a switchback below the telephone box at the halfway point on the lake trail.

In his cupped hands lay a tiny, baby, golden-mantled ground squirrel he had found lying on the trail where he had been hit by a falling rock. On his left flank was a mark made by the blow.

The little fellow was trembling. I placed him in a cardboard box in which I had been carrying signs and placed him on a ledge above the trail while I finished my labeling work to the lake.

At park headquarters I picked up a medicine dropper and a live trap from the naturalist laboratory to use as a cage.



"Adult golden-mantled ground squirrel. N.P.S. photo."

At our cabin we warmed milk and fed him one and a half droppers full of milk. We put a sleeve of flannel pajamas into the can part of the live trap and laid him gently in. The warmth from the milk and my cupped hands seemed to help stop his trembling.

Next morning he was again shivering. He took only a little warm milk and made a squeaking sound when fed. That afternoon the little fellow was still not hungry and had one eye open and one eye shut. We placed some cotton batting in his cage and he went about making a nest in which he curled up.

When we again took him out to feed at about 6:00 P.M. he was asleep and kept his eyes closed when we attempted to feed him.

On Sunday, the following day at 10:00 A.M., the baby ate three half-medicine droppers full of warm milk with a bit of sugar added. He became more active, took a sun bath and walked around in the cage. At 2:00 P.M. he took two whole medicine droppers full of warm milk with a little added sugar. Both eyes were open; he lay in the sun and was quite active.

On Monday, July 30th, we found him gone from this world into the beyond of the "Golden-Mantled Ground Squirrel." He was too tiny and the rock was too big.

A JOG IN THE BOG

John Wirtz, Ranger-Naturalist

There is little doubt that Crater Lake National Park is one of the most beautiful, and geologically speaking one of the most interesting of our 29 National Parks. The visitor, too, has more than ample opportunity to become acquainted with some of the wildlife of the park. Displayed at the Information Building are many of the wildflowers commonly seen in the park. In addition, the flowers along the trails are identified by signs.

There are, however, areas in the park which are accessible only by way of fire control roads. These areas are rich in flowers which are not found elsewhere in the park, and therefore are not seen by the

visitor. I would like to tell you about such an area, and some of the things that can be seen.

Our field trip was planned when there was still a considerable amount of snow on the ground, and all of us were eagerly looking forward to the day when the roads would be open. Finally in late July, Dick Brown, our Assistant Park Naturalist, announced that the road was clear and that we would go to Crater Spring Bogs the following day.

We met early the next morning all loaded down with cameras, lunches, maps, boots, mosquito lotion, lunches, hand lenses, picks, fishing rods, and lunches. An hour's drive over a dusty, bumpy road brought us to our area. After walking through a dry forested area for several hundred feet we were suddenly in ankle deep water. Stretched before us in large yellow patches was the mountain bladderwort, Utricularia intermedia Hayne. We soon forgot about wet feet in the excitement of finding this insectivorous plant in flower. At the time we didn't know it but we were in for many pleasant surprises. We sloshed along a few more feet, when Felicia, my wife, exclaimed over the great abundance of sundews, Drosera anglica Huds. and Drosera rotundifolia L. The sundews are also insect "eating" plants, differing from the bladderworts in that the many green leaves of the sundew have many red sticky hairs which trap the insects. A little more searching soon revealed the small, delicate, white flower of the sundew. I was quite pleased and for myself the day would have been complete. However, there was still more in store for us. We splashed along for awhile working our way through some heavy willow growth and suddenly came before a deep pool. A close look revealed quite a bit of wildlife present. The most abundant form was the tadpole stage of the cascade frog, Rana cascadae Slater. Two forms of aquatic insects were noted, (1) the back swimmer, Notonecta sp. and (2) one of the water striders, family Gerridae. Lying on the bottom of the pool was a long dark form, a salamander of some sort. Nothing would do, but that we should have a closer look, so Naturalist Brown went into the pool, where he succeeded in stirring up the water but no salamanders. After Dick became thoroughly wet and chilled, we found our game in ankle deep water a few feet from the edge of the pool. Close examination showed our catch to be the northwest salamander, Ambystoma gracile Baird.

As we sloshed along a species of plant known as Montia chamissoi (Ledeb.) Greene was found. This find was of particular interest for it had not been found in this area previously.

As we approached the wooded section of the bog we found lungwort, Mertensia paniculata sulcordata (Greene) Macbride growing in great profusion. The lungwort is a beautiful plant, growing several feet tall, with large oval leaves, and clusters of pale blue trumpet shaped flowers. This was truly an impressive sight.

The bog areas frequently present hazards to the uninitiated. Dick warned us about the deep holes that were omnipresent. We no sooner had the words uttered, when lo and behold I found myself in cold, muddy water up to the waist. The day was warm, however, and I was soon dry.

The climax to our field trip came late in the afternoon when we drove into the Boundary Springs region. These springs are the beginning of the Rogue River, which is noted for its fine salmon fishing. As we walked around the area we were awe struck by the beauty of the many springs bubbling out from the rocks to cascade over the moss with the pleasant sound of rushing water. Just then a water ouzel landed on a rock across the stream. This gray bird with tilted up tail sat there long enough for us to get well acquainted. As we watched, the ouzel went through his curious dipping actions as though he were doing deep knee bends. Suddenly he jumped into the fast moving stream and disappeared from sight, thus ending a perfect day.

COMPARATIVE STOMACH ANALYSIS OF CRATER LAKE FISHES

Dick S. Baird, Ranger-Naturalist

On account of the great interest in fishing in Crater Lake, many studies have been, and are being, carried out to try to find out more about the fish in Crater Lake. In any program such as this, one of the first projects to be carried out is a stomach analysis to determine what types of food present are being utilized by the fish.

Crater Lake, having no known inlet or outlet, could have no native fish. All of the fish in the lake are either planted fish, or offspring of planted fish. The first planting was carried out in 1888 by William G. Steel. At that time he planted 37 rainbow trout fingerlings into the lake waters. Since that time there have been many other plantings. The first recorded plantings of the rainbow trout, (Salmo gairdnerii) and the sockeye salmon, (Oncorhynchus nerka), were carried out in 1909 by park personnel. The last plantings were in 1937 for the sockeye salmon, and 1941 for the rainbow trout.

For the last few years fishing in Crater Lake has not been exceptional, in fact many people would refer to it as poor. The long duration since the last stocking is undoubtedly one of the factors affecting the condition of the fishing, but by no means the only one.

On the basis of analyzing six rainbow trout stomachs, and four sockeye salmon stomachs, it was found that insect forms, both adult and larval, are the most used source of food for the fishes. Every stomach examined contained some sort of insect material.

There is a great deal of variety among the types of insects used by the fish, as they represented nine orders or groups, and many more families. These orders listed according to frequency of occurrence



"Crater Lake fish. Two large rainbow flanked by Sockeye salmon.
N.P.S. photo."

are; the flies (Diptera), the moths and butterflies (Lepidoptera), the beetles (Coleoptera), the bees, ants, and wasps (Hymenoptera), the caddis flies (Trichoptera), the mayflies (Ephemera), the stone flies (Plecoptera) the snake flies (Phaphidiodea) and the biting and sucking bugs (Hemiptera).

Along with the insect forms were found the fresh water shrimp (Hyalella), a snail, and a spider.

The breakdown as to the type of insects per species of fish is as follows:

Rainbow Trout (six stomachs)

Lepidoptera	five stomachs
Diptera	three stomachs
Hymenoptera	three stomachs
Coleoptera	three stomachs
Trichoptera	two stomachs
Phaphidiodea	one stomach
Hemiptera	one stomach

Sockeye Salmon (four stomachs)

Diptera	three stomachs
Coleoptera	one stomach
Trichoptera	one stomach
Plecoptera	one stomach
Ephemera	one stomach
Hymenoptera	one stomach

It can be seen from the above that many groups of insects are used by both types of fish fairly equally, while other orders are used more by one type of fish than by the other. The Diptera, Trichoptera, Coleoptera, and Hymenoptera were used by both types of fish. The rainbow trout also made use of the Lepidoptera, Hemiptera, and Phaphidiodea, while the sockeye salmon made use of the Plecoptera and the Ephemera.

Some of these differences in food habits can be explained without too much trouble. The abundance of the Lepidoptera in the rainbow trout, and the lack of the same in the sockeye salmon, is due to the fact that all of the rainbow trout were taken in 1952, which happened to be a year of great abundance for the California tortoise-shell butterfly in this area also. The sockeye salmon were taken in 1953 when the California tortoise-shell butterfly was no longer in abundance, therefore they do not occur in the sockeye salmon stomachs.

The Plecoptera and the Ephemera in the sockeye salmon stomachs and not in the rainbow trout stomachs might be explained as a matter of chance. Although the individuals in the stomachs were in abundance, all of the Plecoptera found were from the one stomach, while all of the Ephemera found were also taken from but one stomach.

The presence of the Phaphidiodea and the Hemiptera in the rainbow trout can probably be explained much the same way, merely the chance happening across some concentrated specialized food supply, and not a matter of different food preference between the two types of fish.

All of the fresh water shrimp, along with the snail and the spider, were taken from merely isolated stomachs also, which could lead one to apply the same explanation there as used above.

As far as can be determined by this study, the food preferences in the two types of fish in the waters of Crater Lake do not differ. Both species of fish would probably use the same types of food if they were available to the fish. This is born out not only by this study, but by the angling information also, as both species of fish inhabit the same areas, and can be taken on the same kinds of fishing lures.



"Aerial view of Crater Lake from south." Photo by Lowell Sumner.