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THE FRESHWATER INVERTEBRATES
OF THE LAKES OF POINT REYES NATIONAL SEASHORE

A Progress Report

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Zoology 199

Introduction

Near the southern end of Point Reyes National Seashore, on the coastal side of Inverness Ridge, are a series of nine small, permanent, freshwater lakes. These lake are from 500 to 4,000 feet from the beach and from 150 to 600 feet in elevation. They were formed by the accumulation of water in closed depressions formed on landslide blocks no more than 10,000 years ago (Clague 1969). Although the depths of all the lakes are not presently known, two of the larger ones, Wildcat Lake and Bass Lake, reach a maximum depth of 23 and 85 feet, respectively (personal communication with David Rose, Park Ranger). The lakes are in a variety of topographical situations. Some lie in valleys which run north-south, while others lie in valleys which run east-west. There are both sheltered and unsheltered lakes near the beach and further inland. The larger lakes are isolated from each other by low ridges, while the four smallest ones are situated within a few hundred feet of each other on a common flat area. There is also a wide range of the amount of dissolved oxygen in the lakes (Ibid. D.Rose).

Long Termed Objectives

These lakes offer an interesting opportunity for study of freshwater invertebrate faunas because of their proximity, common age, diversity of topographical setting, and diversity of lake flora. The long termed objectives of this study will be to survey the freshwater invertebrates present in these lakes and to make some quantitative determinations of the abiotic environments (e.g. depth, oxygen content of water, mineral content of

water, temperature stratification). It would also be desirable to study the population dynamics of the Cladocera of one or two of the lakes. Finally, these data and other pertinent data could be used to determine the factors responsible for the distribution of the species among the lakes.

Immediate Objectives

The immediate objective for the next few months is to sample the invertebrate populations in these lakes and identify the species present.

Procedure

A collecting permit was obtained from the National Park Service for freshwater invertebrates in the Wildcat Lake vicinity in September of 1970. It will expire in June of 1972. An application for a new permit which will include the other lakes will be filed during the next few months.

To this date all collecting has been confined to Wildcat Lake. All collecting was done from a wooden pier on the northwestern shore of the lake using a silk dip net (mesh work: 1225 per square centimeter) mounted on an 8-foot pole. Samples were taken from the sublittoral and pelagic zones within the reach of the dip net. Organisms such as Hydra, planarians, and gastropods were collected from decaying vegetation.

Specimens were placed in four-ounce mason jars and concentrated into as small a volume of water as would allow organisms to assume life position. A solution of formalin (at a concentration which would result in a 10% formalin solution after

addition to water with suspended organisms) which was heated to 80°C was added to the specimens so that the final volume of the fixative and specimens was about 100 ml.

Samples were examined using a dissecting microscope with a magnification range from 16X to 48X. Specimens suitable for mounting were then chosen.

Specimens were then dehydrated through an ethyl alcohol series, cleared with xylene, and mounted in xylene-Canada balsam. The following stains were used borax carmine, Weigert's haematoxylin, methylene blue, iron-aceto-carmine, fast green, orange G, and Bouin's solution. Borax carmine was found to be most suitable for crustaceans and fast green for coelenterates.

Specimens were identified using Ward and Whipple, Second Edition.

Results

Collecting was conducted on the following dates: 31 October 1970, 28 December 1970, 27 March 1971, 22 May 1971. No collecting was done after mid-June of 1971 due to the destruction of the wooden pier by the Park Service. It was not feasible to collect from other points along the lakeshore because the perimeter of the lake is covered by a dense layer ^{of} reeds. All future collection will be conducted from an inflatable plastic raft. This will allow specimens to be collected from all parts of the lake.

Balsam mounts of coelenterates, cladocera, ostracods, copepods, arachnids, and insect larvae have already been made. In addition, nematodes, tardigrades (Macrobiotus?), planarians, and gastropods have been found in samples, but not prepared as slides.

The following genera have been identified from the mounted material: Hydra, Ceriodaphnia, and Bosmina. Identification of these genera down to species and the other mounted specimens will have to await examination of dissected specimens and/or the setting of the balsam (to allow examination under high magnification.)

References

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