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A Preliminary Checklist of Invertebrates Collected from Lake Tahoe, 1961-1964[1]

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Many invertebrates were collected at Lake Tahoe from 1961 through 1964 as part of the Nevada and California joint Lake Tahoe fisheries study. Most sampling was done at Cave Rock, Crystal Bay, McKinney Bay and South Tahoe with plankton nets and bottom dredges. Some specimens were recovered by dipnet, hand and rotenone.

Most of the material was sent to various authorities for identification. To date, many of the specimens have been identified. We are indeed grateful to those specialists who have contributed their time and effort which made this list possible. The list contains only those forms which were collected in this study.

Lake Tahoe is an oligotrophic lake at 6,229 feet elevation in the central Sierra Nevada Mountains (Figure 1). It has a maximum depth of 1,645 feet and a shoreline of 71 and one-half miles. It is 22 miles long and 12 miles wide. Total volume is about 126,500,000 acre feet.

Despite its unique position among the world's lakes, very few biological studies have been conducted at Lake Tahoe. This is particularly true regarding the invertebrate fauna. What is believed to be the first effort was reported by Ward (1904: 137): "Some collections of Entomostraca, made in the lakes of the Sierras, by G. Eisen, were studied by Lilljeborg and reported by de Guerne and Richard (1889). The localities

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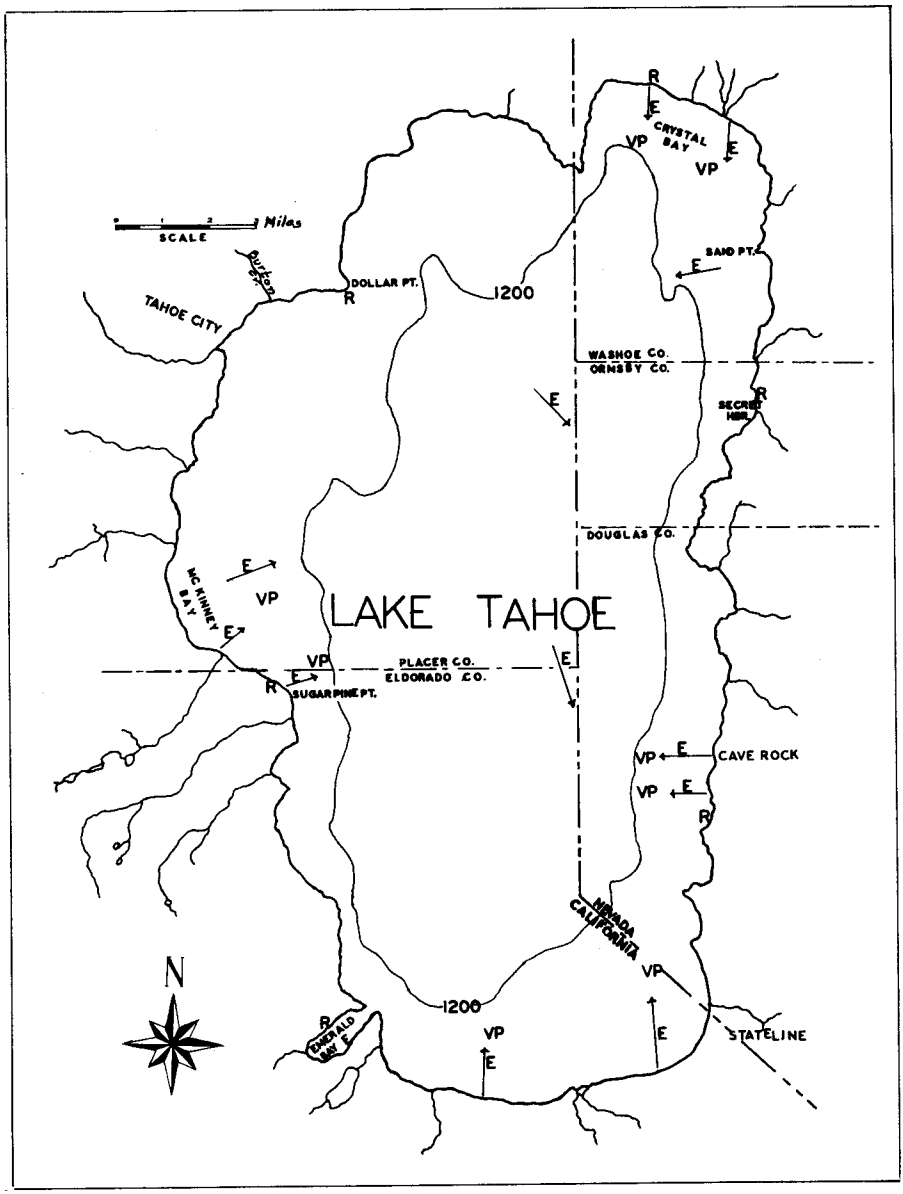

Fig. 1. Map of Lake Tahoe. E ⟶ Ekman Dredge Sampling Areas.

VP—Vertical plankton tows.

R—Rotenone sampling areas.

are given in general terms, except for *Epischura nevadensis*, which was collected in Lake Tahoe and Echo Lake; . . ." The second study was a survey made in the summer of 1904 by Juday (1907). From plankton hauls he identified certain rotifers, copepods and cladocerans. For several days in the summer of 1913, Kemmerer, Bovard and Boorman (1923) conducted a brief limnological survey of Lake Tahoe. They also described zoöplankton from their collections. Hanna and Smith (1937) described mollusks collected in the summers of 1933 and 1936. In 1962 a detailed limnological survey of Tahoe was conducted for the Lake Tahoe Area Council by a private engineering firm (McGauhey, *et al.*, 1963).

Invertebrate introductions have been few. The amphipod, *Gammarus lacustris*, was introduced in the past, but apparently has not become established. A freshwater shrimp, *Mysis relicta*, was introduced from Canada in 1963, 1964 and 1965 (Linn and Frantz, 1965). As yet it is unreported from the lake.

LIST OF SPECIES

Phylum P O R I F E R A, Sponges

Class *DEMOSPONGEA*, Common Sponges

Order HAPLOSCLERINA, Freshwater Sponges

1—Family Spongillidae

(1) *Spongilla* sp. was taken in 10 inches of water east of the mouth of Burton Creek. Freshwater sponges appeared to be of minor importance in the lake.

Phylum C O E L E N T E R A T A, Coelenterates

Class *HYDROZOA*, Hydras and Hydroids

Order HYDROIDA, Hydras

2—Family Hydridae

(2) *Hydra* sp. were most abundant at the south end of the lake. During 1963, 28 specimens were collected from this area at depths between 127 and 289 feet. One specimen was taken at McKinney Bay at 228 feet.

Phylum P L A T Y H E L M I N T H E S, Flatworms

Class *TURBELLARIA*, Free-living Flatworms

Order TRICLADIDA, Planarians

3—Family Planariidae

(3) *Phagocata nivea* Kenk new subspecies. This is a pigmented form.

4—Family Dendrocoelidae

(4) *Dendrocoelopsis* new species. Non-pigmented and restricted to the lake floor.

Dr. Masaharu Kawakatsu of the Fuji Women's College, Japan, who examined the material, stated this is the third United States record (excluding Alaska) for *Dendrocoelopsis*. He is presently describing the new species and subspecies. Planarians are widespread, occurring in depths less than 15 feet to the lake floor.

Phylum N E M A T A, Nemas
Class *ADENOPHOREA*
Order ENOPLIDA

5—Family Mononchidae

(5) *Cobbonchus* probably *pounamua* W. C. Clark.

Dr. B. G. Chitwood of Western Washington State College identified the nemas. They were found at depths between 400 and 500 feet. Dr. Chitwood stated that those taken at Crystal Bay and Cave Rock were closely related to the genus *Hydromermis* or *Gastromermis*, but perhaps were a new genus. The only identified genus was *Cobbonchus*, which appeared in dredge samples from McKinney Bay and South Tahoe.

Phylum A N N E L I D A, Annelid Worms
Class *OLIGOCHAETA*, Oligochaetes
Order PLESIOPORA

6—Family Naididae

(6) *Arcteonais lomondi* (Martin). 50 to 100 feet.
(7) *Uncinais uncinata* (Ørsted). Less than 100 feet.

7—Family Tubificidae

(8) *Peloscolex beetoni* Br. Widespread.
(9) *Limnodrilus hoffmeisteri* Claparède.
(10) *Isochaeta nevadana* Br. Scarce, but widely distributed.
(11) *Psammoryctides minutus* Br. Mainly littoral.
(12) *Rhyacodrilus brevidentatus* Br. 300 to 1,623 feet.
(13) *Rhyacodrilus sodalis* (Eisen). 100 to 1,623 feet.
(14) *Ilyodrilus frantzi* Br. Common.

Order OPISTHOPORA

8—Family Haplotaxidae

(15) *Haplotaxis* sp. 200 to 650 feet.

Order PROSOPORA

9—Family Lumbriculidae

(16) *Rhynchelmis rostrata* (Eisen).

(17) *Kincaidiana* new species.

Dr. Ralph O. Brinkhurst of the University of Liverpool, England, identified the oligochaetes of three families, and cooperated with Dr. D. G. Cook of the same university in the identification of material in the Family Lumbriculidae. Five new species in the Family Tubificidae have been described and one new species in Lumbriculidae is being made known. Distribution of the species varied with some restricted to specific depths and others being widespread.

Class *HIRUDINEA*, Leeches

Order RHYNCHOBDELLIDA

10—Family Glossiphoniidae

(18) *Helobdella stagnalis* (Linnaeus). 20 to 250 feet.

11—Family Piscicolidae

(19) *Illinobdella moorei* Meyer. Attached to chub.

Order PHARYNGOBDELLIDA

12—Family Erpobdellidae

(20) *Erpobdella punctata* (Leidy). Shoreline, scarce.

Dr. Marvin C. Meyer of the University of Maine identified the leeches. Most were caught at the south end of the lake. One species was found attached to the fins of the Tui Chub (*Siphateles bicolor* (Girard)).

Phylum ARTHROPODA, Arthropods

Class *CRUSTACEA*, Crustaceans

Order CLADOCERA, Waterfleas

13—Family Sididae

(21) *Latona setifera* (O. F. Müller). Bottom, scarce, 20 to 265 feet.

14—Family Daphniidae

(22) *Daphnia rosea* Sars emend. Richard. Pelagic, Emerald Bay.

(23) *Daphnia pulex* Leydig emend. Richard. Pelagic, widespread.

(24) *Simocephalus serrulatus* (Koch). Bottom, scarce, 95 to 97 feet.

15—Family Bosminidae

(25) *Bosmina longirostris* (O. F. Müller). Pelagic.

16—Family Macrothricidae

(26) *Drepanothrix dentata* Euren. Bottom, infrequent, 19 to 70 feet.

(27) *Ilyocryptus acutifrons* Sars. Bottom, scarce, 17 to 23 feet.

(28) *Eurycercus lamellatus* (O. F. Müller). Bottom, common, 4 to 470 feet.

(29) *Camptocercus rectirostris* Schødler. Bottom, scarce.

(30) *Acroperus harpae* Baird. Bottom, scarce, 4 to 6 feet.

(31) *Alona affinis* (Leydig). Bottom, widespread, shoreline to 100 feet.

(32) *Alona quadrangularis* (O. F. Müller). Bottom, scarce, 70 feet.

(33) *Pleuroxus denticulatus* Birge. Bottom, scarce, 4 to 6 feet.

(34) *Chydorus latus* Sars. Bottom, infrequent, shoreline to 25 feet.

(35) *Chydorus sphaericus* (O. F. Müller). Bottom, scarce, 4 to 6 feet.

Dr. R. W. Kiser of Centralia College, Washington, identified the cladocerans. Many inhabit substrate areas at depths to 470 feet. Pelagic forms were taken near the surface to depths of 600 feet, but were most abundant between 100 and 300 feet during daylight.

Order OSTRACODA, Clam Shrimps

17—Family Cypridae

(36) *Candona* new species.

18—Family Cytheridae

(37) *Uncinocythere* sp. Found on crayfish.

Dr. Edward Ferguson, Jr., of Lincoln University, Missouri, examined the free-living ostracods. Only one new species was found which is being described by Dr. Ferguson. Distribution extends from shallow water to the lake floor with greatest numbers between 200 and 300 feet. Dr. Horton H. Hobbs, Jr., of the Smithsonian Institution identified the parasitic or commensal ostracod found on the crayfish.

Order COPEPODA, Copepods

19—Family Temoridae

(38) *Epischura nevadensis* Lilljeborg. Pelagic, lakewide, surface to 100 feet and shoreline.

20—Family Diaptomidae

(39) *Diaptomus tyrrelli* Poppe. Distribution same as for No. 38.

21—Family Cyclopidae

(40) *Cyclops vernalis* Fischer. Bottom, 248 to 293 feet at South Tahoe.

(41) *Macrocyclops albidus* (Jurine). Same distribution as No. 40.

22—Family Lernaeopodidae

(42) *Salmincola edwardsii* (Olsson). Occasionally found on the gills of the Rainbow Trout (*Salmo gairdneri irideus* Gibbons).

The first lot (1962) of free-living copepods has been identified by Mrs. Mildred S. Wilson, of Anchorage, Alaska.

Order AMPHIPODA, Scuds

23—Family Talitridae

(43) *Hyalella azteca* (Saussure). Near shore, not common.

(44) *Hyalella inermis* (S. I. Smith). 16 to 100 feet, not common.

24—Family Gammaridae

(45) *Stygobromus hubbsi* Shoemaker. Common, 200 feet to the bottom. Only once was this species obtained between 100 and 200 feet.

These species were identified by Mr. Leslie Hubricht, of Meridian, Mississippi.

Order DECAPODA, Crayfishes, Shrimps

25—Family Astacidae, Crayfishes

(46) *Pacifastacus leniusculus* (Dana). Widespread.

Crayfish were abundant and widespread from the littoral area to 500 feet. They were identified by Dr. Horton H. Hobbs, Jr.

Class *INSECTA*, Insects

Order EPHEMEROPTERA, Mayflies

26—Family Leptophlebiidae

(47) *Paraleptophlebia* spp. of the *packi, bicornuta, zayante* and *helinae* groups (may include a new species).

27—Family Tricorythidae

(48) *Tricorythodes fallax* Traver.

(49) *Choroterpes* sp.

28—Family Heptageniidae

(50) *Heptagenia* sp.

(51) *Siphlonurus* sp.

(52) *Centroptilum* sp.

(53). *Callibaetis* sp.

Dr. George F. Edmunds, Jr., of the University of Utah, examined the mayfly nymphs. They were found most frequently in rocky, rubble areas in extremely shallow water and rarely taken at depths below 15 feet.

Order ODONATA, Dragonflies

29—Family Gomphidae

(54) *Gomphus kurilis* Hagen. Emerald Bay.

Mrs. Leonora K. Gloyd of the Illinois Natural History Survey, identified the few dragonfly nymphs collected.

Order PLECOPTERA, Stoneflies

30—Family Nemouridae

(55) *Capnia lacustra* Jewett. Widespread between 95 and 470 feet, with greatest concentrations between 200 and 300 feet.

(56) *Capnia* new species. Collected during emergence along the shoreline south of Sand Harbor.

(57) *Nemoura* sp. Scarce, one specimen from 16 feet.

31—Family Perlidae

(58) *Acroneuria* sp. Along shoreline at Sugar Pine Point.

Mr. Stanley G. Jewett, Jr., of Portland, Oregon, examined the stonefly nymphs (except *Acroneuria*). He identified two species of the genus *Capnia*, and described the one from deep water. Both are apterous species. Mr. Jewett sent the second species of this genus to Mr. Alan Nebeker of the University of Utah for description.

Order HEMIPTERA, True Bugs

32—Family Belostomatidae, Giant Water Bugs

(59) *Lethocerus americanus* (Leidy). One specimen found at the mouth of Burton Creek.

Order COLEOPTERA, Beetles

33—Family Dytiscidae, Predaceous Diving Beetles

(60) *Hydroporus striatellus* Le Conte.

(61) *Agabus disintegratus* Crotch.

(62) *Colymbetes rugipennis* Sharp.

34—Family Hydrophilidae, Water Scavenger Beetles

(63) *Tropisternus ellipticus* (Le Conte).

(64) *Laccobius ellipticus* Le Conte.

Dr. Ira La Rivers, of the Biological Society of Nevada, Verdi, identified the Coleoptera. All species were taken in shallow water near the mouth of Burton Creek, and *Colymbetes rugipennis* was also found in Emerald Bay. Aquatic beetles are undoubtedly much more common about the lake than these samples indicate.

Order TRICHOPTERA, Caddisflies

35—Family Hydroptilidae

(65) *Hydroptila* sp. Shallow water in Glenbrook Bay.

36—Family Limnephilidae

(66) *Limnephilus* sp. 10 to 25 feet.

(67) *Hesperophylax* sp. Shallow water at Lake Forest.

Mr. D. G. Denning of Moraga, California, examined this group (excluding *Hesperophylax*). Caddisfly larvae were seldom encountered during dredging. One leptocerid was taken at 16 feet.

Order DIPTERA, True Flies

37—Family Heleidae

(68) *Palpomyia* group sp. One specimen from Emerald Bay.

38—Family Tendipedidae

Subfamily Pelopiinae

(69) *Pentaneura* (melanops group) sp. One from McKinney Bay.

(70) *Ablabesmyia monilis* (Linnaeus). One from South Tahoe.

(71) *Natarsia* possibly *florens* (Johannsen). Infrequent, McKinney Bay.

(72) *Procladius bellus*? (Loew). Widespread, but not abundant, less than 100 feet.

Subfamily Diamesinae

(73) *Syndiamesa pertinax* (Garr). Scarce.

(74) *Prodiamesa bathyphila* (Kieff). Widespread below 100 feet.

Subfamily Orthocladiinae

(75) *Metriocnemus* near *lundbecki* (Johanssen). Widely distributed.

(76) *Paratrichocladius* sp. Infrequent, less than 500 feet.

(77) *Orthocladius obumbratus* (Johanssen). Scarce.

Subfamily Tendipedinae

Tribe Tendipedini

(78) *Cryptochironomus* near *fulvus* (Johanssen). Usually less than 100 feet.

(79) *Harnischia* (*Cladopelma*) near *nais* Townes. Widespread below 500 feet.

(80) *Harnischia (Cladopelma)* sp. Primarily restricted to west side and less than 500 feet.

(81) *Polypedilum* near *scalaenum* (Schrank). Scarce.

(82) *Polypedilum parascalaenum*? Beck. Scattered, less than 500 feet.

(83) *Endochironomus* near *nigricans* (Johanssen). Widespread to 1,000 feet.

(84) *Stictochironomus* sp. Less than 100 feet on west side.

(85) *Phaenopsectra* near *profusus* Townes. Scarce.

(86) *Tendipes* near *modestus* (Say). Scarce.

Tribe Tanytarsini

(87) *Tanytarsus (Atanytarsus)* sp. No. 1. Less than 500 feet at south and west sides.

(88) *Tanytarsus (Atanytarsus)* sp. No. 2. Infrequent.

(89) *Tanytarsus (Rheotanytarsus)* sp. Scarce.

(90) *Tanytarsus* (Group A) sp. Crystal Bay and South Tahoe above 500 feet.

(91) *Tanytarsus (Tanytarsus)* near *guerla* (R.). Scarce.

Dr. Selwin S. Roback of the Academy of Natural Sciences of Philadelphia identified the midge larvae. One species of the Family Heleidae and 23 of the Family Tendipedidae were represented.

Class *ARACHNOIDEA*, Arachnoids

Order ACARI, Mites

39—Family Lebertiidae

(92) *Lebertia* sp. Widely distributed to 200 feet.

40—Family Hydrovolziidae

(93) *Hydrovolzia* sp. Widespread between 100 and 405 feet.

41—Family Hygrobatidae

(94) *Hygrobates* sp. West side to 57 feet.

42—Family Limnesiidae

(95) *Limnesia* sp. To 96 feet or more.

43—Family Pionidae

(96) *Piona* sp. Not abundant, less than 100 feet.

Water mites (1962 collection) have been identified by Dr. Rodger Mitchell, University of Michigan. He stated that the general fascies represented by these genera, excluding *Piona*, is strikingly that of a stream—not a lake—fauna. He considered it most unusual to find *Hydrovolzia* in deep water.

Phylum M O L L U S C A, Mollusks

Class *GASTROPODA*, Snails

Order BASOMMATOPHORA

44—Family Physidae

(97) *Physa virgata* (Gould). North end of lake in 3 to 12 inches of water.

45—Family Lymnaeidae

(98) *Lymnaea bulimoides?* Lea (juveniles). A few specimens from Cave Rock, 20 and 24 feet.

46—Family Planorbidae

(99) *Carinifex newberryi* (Lea). Frequent at south end from 5 to 150 feet.

(100) *Parapholyx effusa* (Lea). Common at south end from 70 to 300 feet.

47—Family Ancylidae

(101) *Ferrissia fragilis* (Tryon). One specimen in 23 feet of water at Crystal Bay.

Class *PELECYPODA*, Clams
Order HETERODONTA

48—Family Sphaeriidae

(102) *Pisidium* sp. Although not abundant, clams are widespread from the shallows to 443 feet. They were most common between 200 and 300 feet.

Dr. William J. Clench of Harvard University made these determinations. He stated that one badly corroded snail may be in the genus *Littoridina*.

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