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Cladocera and Copepoda in McNary Reservoir, 1965-66

A limnological study of McNary Reservoir was undertaken by the Bureau of Commercial Fisheries in 1965-66, but a comprehensive report at this time would be premature. This paper summarizes briefly the methods and findings of the work in relation to the Cladocera and Copepoda.

Study Area and Methods

McNary Reservoir is in Oregon and Washington on the main stem of the Columbia River, 292 miles above the river mouth (U.S. Army Corps of Engineers, 1946, 1952). It was formed in 1957 at the completion of McNary Dam, which is operated by the U.S. Army Corps of Engineers. The reservoir lies in a semi-arid region used primarily for grazing and cultivation; flowing through the area are three major tributaries, the Walla Walla, Snake, and Yakima rivers.

The basic physical features of McNary Reservoir are:

Normal pool elevation (m.s.l.)	340 feet
Normal pool length	59 miles
Normal pool area	37,900 acres
Shoreline	242 miles
Maximum width	9500 feet
Maximum depth	120 feet
Average depth	65 feet
Volume	1,345,000 acre feet

Sampling, conducted from August 1965 through September 1966, was at one- or two-week intervals during the summer but was irregular during the other seasons. Plankton collections were made at 24 sampling stations, at which water depth ranged from about 20 to 85 feet. The entire water column was sampled by a vertical haul at each station.

A half-meter Nansen-type net, constructed of No. 10 monofilament nylon bolting cloth, was used; the samples were preserved in 5 per cent formalin, identified, and enumerated in terms of organisms per cubic meter.

Species and Relative Abundance

Twenty-four species of Cladocera and Copepoda were collected, which represented 13 and 6 genera, respectively (Ward and Whipple, 1963). More species of Cladocera (17)

than Copepoda (7) were found, but as a group the cladocerans were usually outnumbered by the copepods. The species taken in McNary Reservoir were:

- I. Order Cladocera
 1. Family Leptodoridae
Leptodora kindtii (Focke) 1844
 2. Family Sididae
Sida crystallina (O. F. Müller) 1875
Diaphanosoma brachyurum (Léven) 1848
 3. Family Daphnidae
Daphnia galeata Sars 1864 *mendotae* Birge 1918
Scapholeberis kingi Sars 1903
Ceriodaphnia pulchella Sars 1862
 4. Family Bosminidae
Bosmina longirostris (O. F. Müller) 1785
 5. Family Macrothricidae
Ilyocryptus sordidus (Léven) 1848
Macrothrix laticornis (Jurine) 1820
 6. Family Chydoridae
Monospilus dispar Sars 1861
Leydigia quadrangularis (Leydig) 1860
Alona quadrangularis (O. F. Müller) 1785
Alona costata Sars 1862
Pleuroxus denticulatus Birge 1878
Pleuroxus trigonellus (O. F. Müller) 1785
Pleuroxus aduncus (Jurine) 1820
Chydorus sphaericus (O. F. Müller) 1785
- II. Order Copepoda
 - A. Suborder Calanoida
 1. Family Temoridae
Epischura nevadensis Lilljeborg 1889
 2. Family Diaptomidae
Diaptomus ashlandi Marsh 1893
 - B. Suborder Cyclopoida
 1. Family Cyclopoidae
Cyclops vernalis Fishcher 1853
Cyclops bicuspidatus Claus 1857 var. *thomasi*
 - C. Suborder Harpacticoida
 1. Family Canthocamptidae
Mesochra alaskana M. S. Wilson 1958
Canthocamptus staphylinoides Pearse 1905
Bryocamptus zschokkei (Schmeil) 1893

Cyclopoids¹ ranked first in abundance. Numbers increased gradually in the spring, peaked in late August and early September, declined slightly later in September, and then increased to a less pronounced peak in October. The population dropped off rapidly in late fall and remained relatively low throughout the winter and early spring.

Seasonal variation of *Bosmina*, second in abundance, was almost identical to that of the cyclopoids, except that the spring increase occurred more rapidly and the population peak was reached slightly earlier—in July and early August. The seasonal variation of *Daphnia*, third in abundance, was not significantly different from the cyclopoids or *Bosmina*. The calanoids ranked fourth; numbers remained consistently high throughout the spring and summer and then decreased markedly in the fall. Although sampling data were limited in the winter, population levels appeared to be similar to those in the spring and summer.

Alona, *Sida*, *Ceriodaphnia*, and *Pleuroxus* followed typical patterns of seasonal change, generally building up in the spring, peaking in the summer, and decreasing in the fall.

¹In enumeration, the Copepoda were identified to suborder and the Cladocera to genera.

A notable exception was *Illyocryptus*; its population was low in the winter and summer and high in the spring and fall. *Chydorus* remained stable throughout the year. *Leptodora*, the largest of the cladocerans, appeared sporadically in the summer and fall.

The relative abundance of organisms by percentage showed that in the spring, summer, and fall, cyclopoids and *Bosmina* constituted the major portion of the population. Calanoids constituted the largest segment of the population in the winter.

The numbers of the remaining Cladocera and Copepoda collected were small and constituted only a minor portion of the total population. All Cladocera with the exception of *Monospilus dispar* have been reported in the state of Washington.²

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²"Cladocera of Washington," presented by Rufus W. Kiser at the 31st Annual Meeting of the Northwest Scientific Association, Spokane, Washington, December 27, 1957.