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Some Cladocera and Copepoda from the Upper Klamath River Basin

Literature showing the occurrence and distribution of Cladocera and Copepoda in Oregon is sparse (Brooks, 1957; Coker, 1943; Kincaid, 1953; Light, 1938; Marsh, 1933; Pearse, 1905; Wilson, 1941; Wilson, 1956a; Wilson and Light, 1951). This paper shows the occurrence and distribution of some species of Cladocera and Copepoda in the Upper Klamath River Basin which overlaps from Oregon into California. A detailed description of the Klamath River Basin and its water resources is given in Bulletin No. 83 (1964) of the Department of Water Resources, State of California.

The habitats sampled include springs, reservoirs, lakes, creeks, rivers, canals, sumps, sloughs, and an ox-bow (Fig. 1). One sampling site, Miller Lake, is not shown on the map of the study area. Miller Lake is about 50 miles north of Upper Klamath Lake and due west of Diamond Lake.

Two-hundred and fifty samples, collected from 25 different areas during 1963-1966, were analyzed for Cladocera and Copepoda. The samples were collected with a variety of different sizes and meshes of plankton nets. All specimens were killed in 10 percent formalin and preserved in 80 percent alcohol. Species of Cladocera and Copepoda were identified with the aid of keys by Brooks (1957, 1959), Pennak (1953), Wilson (1959), and Yeatman (1944, 1959).

Thirty-one species of Cladocera and 28 species of Copepoda (ten Calanoida, seven Cyclopoida, five Harpacticoida) were identified. The occurrence of species in various habitats, the number of species collected in each habitat, and the number of samples taken from each habitat are shown in Tables 1 and 2.

The most ubiquitous species were *Chydorus sphaericus*, *Cyclops vernalis*, *Eucyclops agilis*, and *Cyclops bicuspidatus thomasi*. *C. sphaericus* is a cosmopolitan species very common in a variety of aquatic types in most of North America. All of the above cyclopoid species occur in many different aquatic types throughout North America.

Moinia brachiata, *Diaptomus nevadensis*, and *Daphnia similis* were collected only in the saline water of Alkali Lake and in the Lost River in the area where water was pumped from the lake to the river.

Upper Klamath Lake, the largest and most sampled of the collecting areas, had the longest species list. The second longest list came from the Lost River System where only 12 samples were collected. Most of these species were probably washed into the river from the large and diverse drainage area.

Samples from almost all collecting areas were taken in the limnetic zones which results in small species lists for the mostly littoral cyclopoids and harpacticoids.

TABLE 1. The occurrence of Cladocera and Copepoda in various aquatic habitats south of Klamath Lake, Oregon during 1964-1965.

Species	Aquatic Areas Sampled										Area of occurrence
	Clear Lake	Gerber Reser.	Alkali Lake	Tule Lake	Lost River	Klamath River	Stukel Canal	K. Strait	ADY Canal	Lost R. Oxbow	
Number of samples taken	2	1	9	3	12	5	1	3	1	1	
<i>Leptodora kindtii</i>						X					1
<i>Diaphanosoma brachyurum</i>	X					X					2
<i>Daphnia magna</i>				X		X					2
<i>D. similis</i>			X		X						2
<i>D. galeata mendotae</i>		X								X	2
<i>D. retrocurva</i>	X				X						2
<i>D. pulex</i>				X	X	X	X	X	X		6
<i>D. schodleri</i>	X					X					2
<i>Simocephalus vetulus</i>					X		X	X			3
<i>Ceriodaphnia quadrangula</i>	X			X		X		X	X		5
<i>Moina brachiata</i>			X								1
<i>Bosmina longirostris</i>		X			X	X			X		4
<i>Eurycercus lamellatus</i>					X						1
<i>Leydigia quadrangularis</i>				X	X						2
<i>Alona costata</i>					X						1
<i>Pleuroxus procurvus</i>					X						1
<i>P. denticulatus</i>					X						1
<i>P. aduncus</i>	X				X		X				3
<i>Chydorus sphaericus</i>		X		X	X	X	X	X	X		7
<i>Diaptomus forbesi</i>	X					X		X	X		4
<i>D. nevadensis</i>			X		X						2
<i>D. eiseni</i>						X					1
<i>D. sicilis</i>	X	X	X	X	X	X	X	X			8
<i>D. ashlandi</i>					X	X				X	3
<i>D. novamexicanus</i>								X			1
<i>Eucyclops agilis</i>	X		X	X	X				X	X	6
<i>Cyclops vernalis</i>			X		X	X	X	X		X	6
<i>C. bicuspidatus thomasi</i>	X	X		X	X	X	X	X		X	7
<i>Mesocyclops leukarti</i>						X					1
<i>Macrocyclus albidus</i>					X		X	X			3
<i>Canthocamptus staphylinoides</i>		X			X				X		3
Total number of species in each area	9	6	6	8	20	15	7	10	7	5	

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TABLE 2. The occurrence of Cladocera and Copepoda in Upper Klamath Lake and in aquatic habitats north of Upper Klamath Lake, Oregon during 1963-1964.

Species	Aquatic Areas Sampled													Total areas of occurrence		
	Klamath Lake	Miller Lake	Lake of the Woods	Jack Spring	Mare's Egg Spring	Barclay Spring	Geary Sump	7-mile Sump	Tulana E. & W. Sump	Wood River	Williamson River	Geary Canal	Hooper Canal		Algoona Slough	
Number of samples taken	181	9	1	1	2	1	3	1	4	1	2	1	1	1		
<i>Leptodora kindii</i>	X															1
<i>Polyphemus pediculus</i>	X															1
<i>Diaphanosoma brachyurum</i>	X		X													2
<i>Daphnia rosea</i>	X															1
<i>D. galeata mendotae</i>	X	X	X			X										4
<i>D. parvula</i>									X							1
<i>D. pulex</i>	X	X										X				3
<i>D. schodleri</i>	X						X		X					X		4
<i>Simocephalus vetulus</i>	X						X		X							3
<i>S. serrulatus</i>								X	X							1
<i>Scapholeberis kingi</i>							X	X								2
<i>Ceriodaphnia reticulata</i>	X		X													2
<i>C. lacustris</i>	X															1
<i>C. quadrangula</i>	X							X								2
<i>Bosmina longirostris</i>	X	X					X		X				X			5
<i>Drepanothrix dentata</i>	X															1
<i>Macrothrix laticornis</i>	X															1
<i>Eurycercus lamellatus</i>	X															1
<i>E. glacialis</i>	X															1
<i>A. affinis</i>	X															1
<i>Alona guttata</i>		X														1
<i>Pleuroxus procurvus</i>	X											X				2
<i>P. denticulatus</i>								X								1
<i>P. aduncus</i>								X								1
<i>Chydorus sphaericus</i>	X				X		X	X					X			5
<i>Epischura nevadensis</i>	X													X		2
<i>Diaptomus lintoni</i>	X															1
<i>D. leptopus</i>	X															1
<i>D. clavipes</i>	X															1
<i>D. eiseni</i>	X															1
<i>D. sicilis</i>			X													1
<i>D. ashlandi</i>	X						X								X	3
<i>D. novamexicanus</i>								X								1
<i>Eucyclops speratus</i>								X								1
<i>E. agilis</i>	X		X		X		X	X	X		X					7
<i>Cyclops vernalis</i>	X						X	X	X	X		X	X	X		8
<i>C. capillatus</i>						X										1
<i>C. bicuspidatus thomasi</i>	X						X	X	X					X		5
<i>Macrocyclops albidus</i>	X						X		X		X		X			5
<i>Mesocbra rapiens</i>										X						1
<i>Canthocamptus staphylinoides</i>	X															1
<i>Attheyella nordenskioldi</i>					X											1
<i>A. illinoensis</i>										X						1
<i>A. dogieli</i>				X												1
Total number of species in each area	30	4	5	1	3	2	10	10	9	1	4	3	4	5		

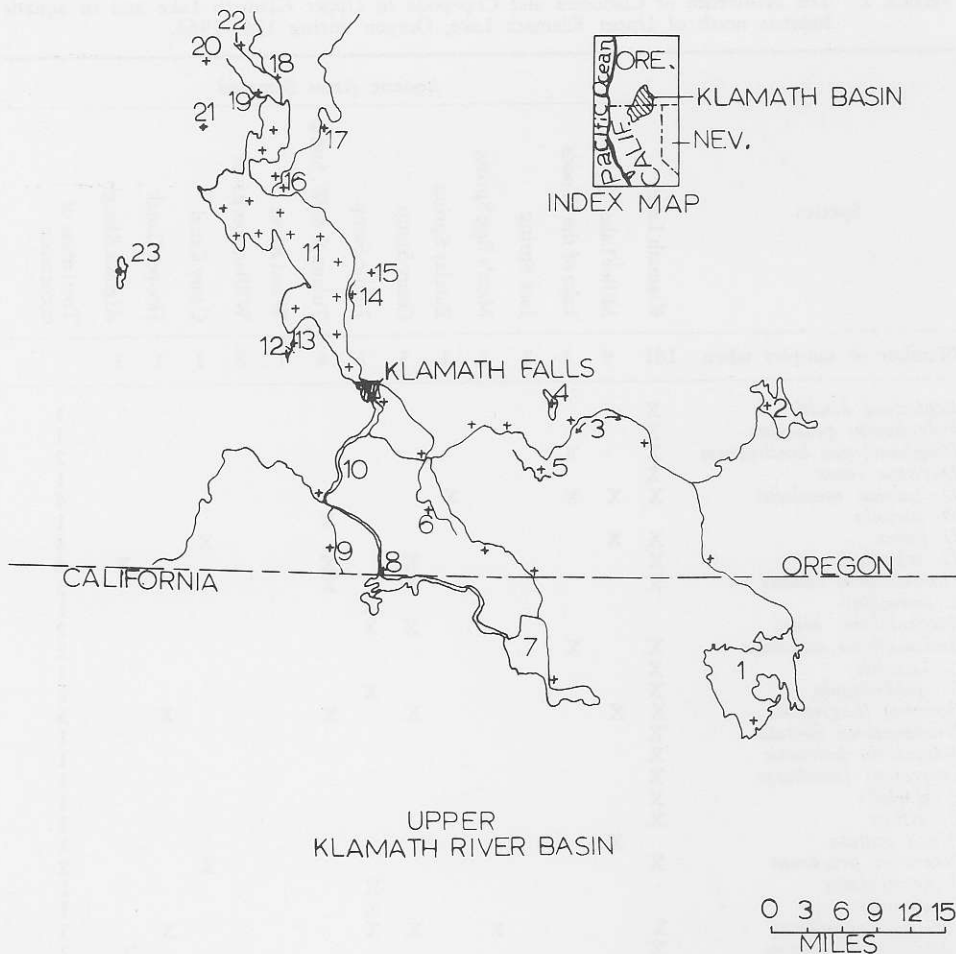


Figure 1. Zooplankton collecting areas in the Upper Klamath River Basin. The numbers correspond to collecting areas as follows: 1. Clear Lake; 2. Gerber Reservoir; 3. Lost River; 4. Alkali Lake; 5. Lost River Oxbow; 6. Stukel Drain; 7. Tule Lake; 8. Klamath Strait Drain; 9. ADY Canal; 10. Klamath River; 11. Upper Klamath Lake; 12. Geary Canal; 13. Geary Sump; 14. Algoma Slough; 15. Barclay Spring; 16. Tulana East and West Sumps; 17. Williamson River; 18. Wood River; 19. 7-mile Sump; 20. Mare's Egg Spring; 21. Jack Spring; 22. Hooper Canal; and, 23. Lake of the Woods. (+ = site sampled).

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