

KEY TO THE
ZOOPLANKTON OF YELLOWSTONE NATIONAL PARK

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KEY TO THE ZOOPLANKTON OF YELLOWSTONE LAKES

Zooplankton from the lakes of Yellowstone National Park can be identified with this preliminary key. The samples used in preparing the key were collected by the U.S. Fish and Wildlife Service, Yellowstone National Park, from all major and most backcountry lakes in the park. A list of the species present in each lake is available from the Fish and Wildlife office.

A few notes to aid in accurate use of this key may be useful. For more specialized terminology and further identification, reference should be made to the texts indicated.

Order Rotifera

Rotifer taxonomical terms are complex and forms are very diverse. Figure 17, a pictorial key, must be used for rotifer identification.

Order Copepoda

Males should be used in identification of calanoid copepods, as female characteristics can be ambiguous. The right first antenna of a male is geniculate (sharply bent or kinked), where that of a female is straight. Immatures (nauplii) are frequently encountered, and do not exhibit key characters, so mature specimens should be used.

Order Cladocera

Male Cladocera are rarely seen. Key characters are based on females. Cladocera lengths given do not include shell spine.

ZOOPLANKTON OF YELLOWSTONE LAKESSPECIES LISTCopepoda

Diaptomus shoshone
Diaptomus ashlandi
Diaptomus lintoni
Cyclops bicuspidatus thomasi

Cladocera

Daphnia schodleri
Daphnia pulex
Daphnia rosea
Diaphanosoma leuchtenbergianum
Holopedium gibberum
Leptodora kindti
Polyphemus pediculus
Bosmina coregoni
Bosmina longirostris
Alona rectangula
Ceriodaphnia pulchella
Ceriodaphnia reticulata

Rotifera

Kellicottia longispina
Keratella cochlearis
Keratella quadrata
Conochilus unicornis
Notholca sp.
Filinia sp.
Ploesoma sp.
Asplanchna sp.
Brachionus quadridentata
Lecane luna
Polyarthra sp.
Hexarthra sp.

KEY TO THE ZOOPLANKTON OF YELLOWSTONE NATIONAL PARK

1. With bivalve shell which may or may not entirely cover body...
.....Cladocera 5
- Without a shell-like covering on the body, with 4 or 5 biramous legs.....Copepoda 2
2. First antennae reach at most to end of metasome, 17 antennal segments (Fig. 1). Length 0.9-1.2 mm.....
.....Cyclops bicuspidatus thomasi
- First antennae longer than metasome.....Diaptomus 3
3. First antenna left side, setae on segments 17, 19, 20, and 22 with the end stiffly hooked (Fig. 4). Distal segments of male first antennae often bright pink. Length 1.7-3.0 mm.....
.....Diaptomus lintoni
- First antenna left side, setae unhooked..... 4
4. First antennae at most reaching proximal end of caudal rami. Red or blue coloration frequent. (Fig. 3). Length 2-4 mm.....
.....Diaptomus shoshone
- First antennae reaching beyond distal end of caudal rami. Never red or blue. (Fig. 2). Length 0.9-1.2 mm...Diaptomus ashlandi
5. Bivalve shell covering entire body..... 7
- Bivalve shell not covering entire body..... 6
6. Body elongated, head small (Fig. 5). Length up to 15 mm.....
.....Leptodora kindti
- Body short and truncated, head and eye large (Fig. 6). Length up to 1.5 mm.....Polyphemus pediculus
7. Enclosed in a large, globular, transparent gelatinous case. Basal spine on postabdominal claw, conical projection on postabdomen (Fig. 7). Length 1.5-2.2 mm.....Holopedium gibberum
- Without gelatinous case..... 8

8. Head small, narrow, and contiguous with bivalve shell, rostrum and antennules pointed down ventrally, dorsal valve edge arched concavely..... 14
- Head broad, anteriorly rounded, ventral valve edge convexly rounded..... 9
9. Rostrum and shell spine present. Cervical sinus absent..Daphnia 12
- Rostrum and shell spine absent. Cervical sinus present..... 10
10. Ocellus absent. Elongate body form. Antennae large and stout proximally. No anal spines, claw with 3 basal spines (Fig. 10). Length 0.9-1.2 mm.....Diaphanosoma leuchtenbergianum
- Ocellus present. Rounded body form. Anal spines present..... Ceriodaphnia 11
11. Claw without pecten. Up to .5 mm. long. (Fig. 11)..... Ceriodaphnia pulchella
- Claw with pecten, up to 1.4 mm. long. (Fig. 12)..... Ceriodaphnia reticulata
12. Teeth of all 3 pectens small, and about the same size (Fig. 16). Shell spine 1/3 to 1/2 valve length. Length 1.2-2.0 mm..... Daphnia rosea
- Teeth of proximal and middle pectens larger than teeth of distal.. 12
13. Shell spine short, 1/5 to 1/3 valve length. Broadly rounded valves. Ventral margin of head concave. Ventral spinulation covering only posterior 1/2 of valves (Fig. 14). Middle pecten stout. Body may have brownish color. Length 2-4 mm..... Daphnia pulex
- Shell spine long, 1/2 to 2/3 valve length. Valves form narrow oval. Ventral valve spinulation exceeds posterior 1/2. Ventral margin of head straight or sinuate. Middle pecten stout or fine. Under 2 mm. (Fig. 15)..... Daphnia schodleri
14. Rostrum and antennules not greatly exceeding ventral valve edge. Postabdominal claw with single basal spine, body evenly arched. Yellow coloration frequent. Length 0.2-.42mm. (Fig. 13)..... Alona rectangula
- Rostrum and antennules elongated forming tusklike structures, curving downward from anterior end of head and exceeding ventral valve edge..... Bosmina 15
15. Posterior shell spine short and triangular (Fig. 9). Length to 0.5 mm..... Bosmina longirostris
- Posterior shell spine long and curved (Fig. 8). Length to 0.6 mm. Bosmina coregoni

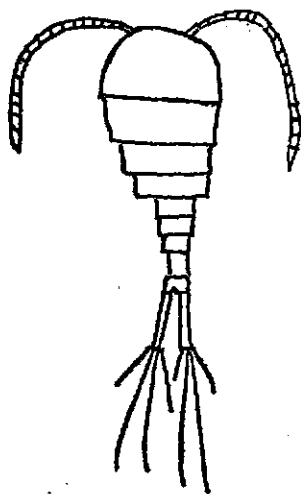


Fig. 1. Female Cyclops bicuspidatus thomasi

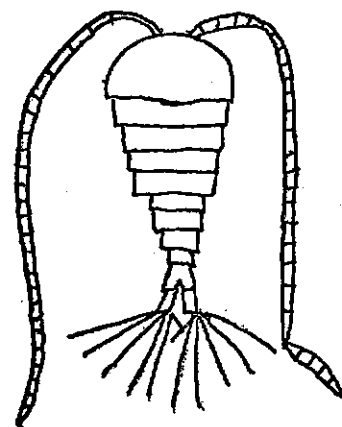


Fig. 2. Male Diaptomus ashlandi

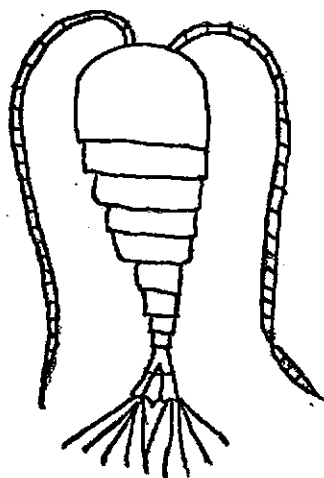


Fig. 3. Male Diaptomus shoshone

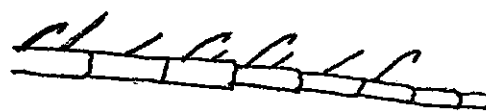


Fig. 4. Diaptomus lintoni,
left first antenna,
segments 17-22

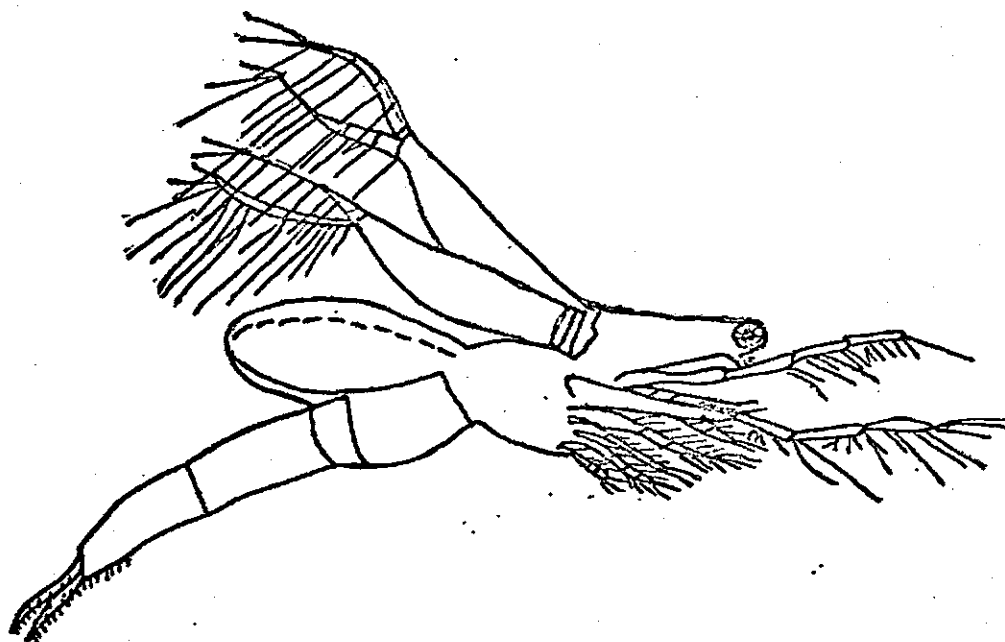


Fig. 5. Female Leptodora kindti

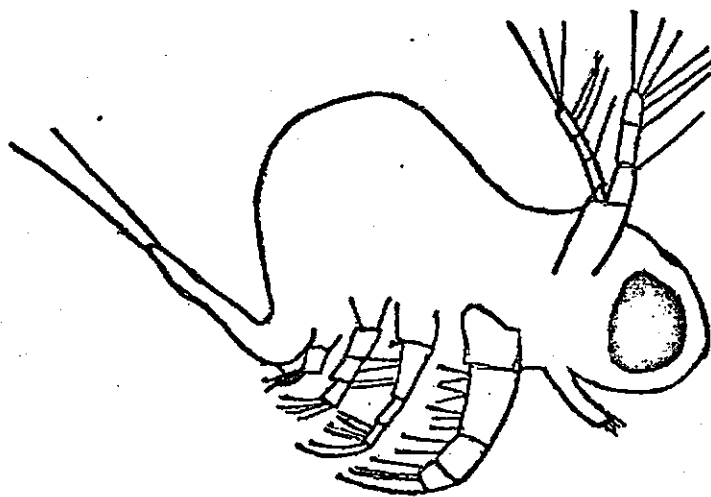


Fig. 6. Female Polyphemus pediculus

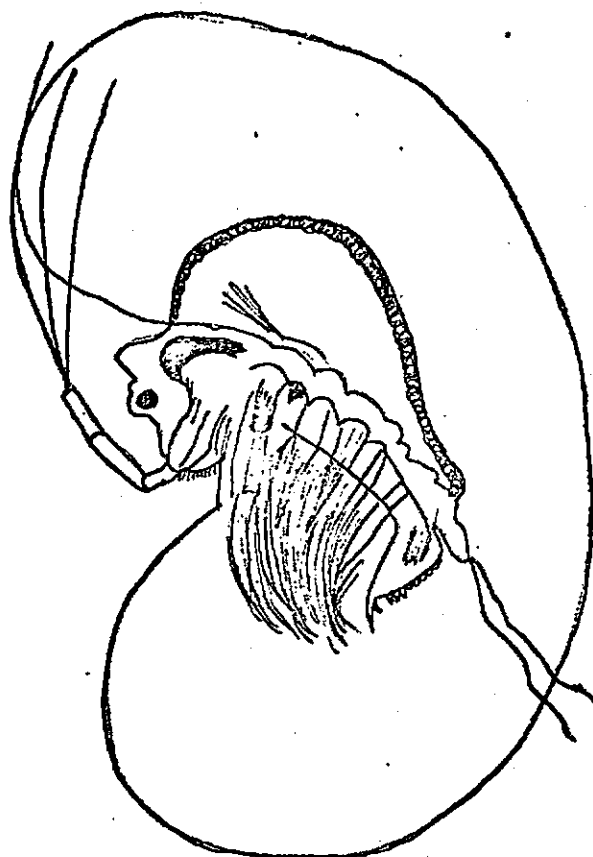


Fig. 7. Female Holopedium gibberum

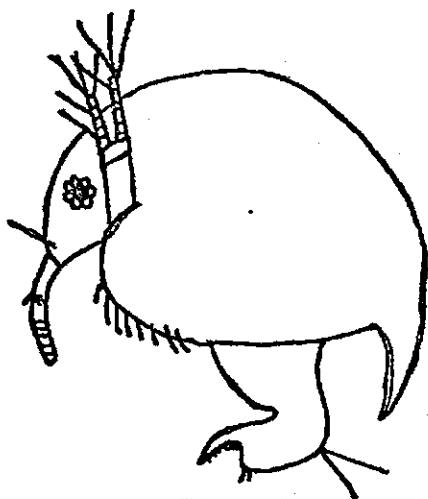


Fig. 8. Female Bosmina coregoni

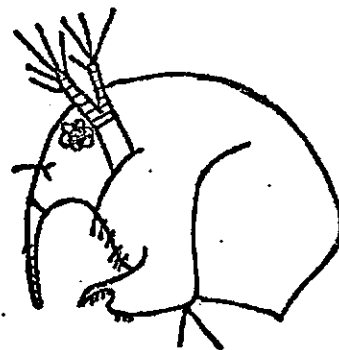


Fig. 9. Female Bosmina longirostris

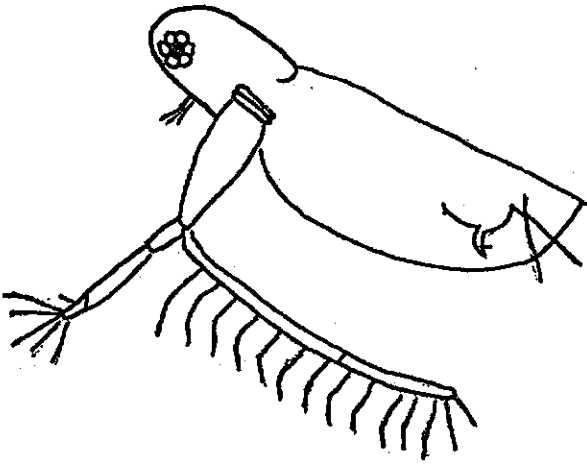


Fig. 10. Female Diaphanasoma
leuchtenbergianum

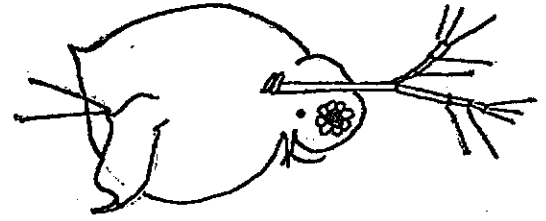


Fig. 11. Female Ceriodaphnia
pulchella

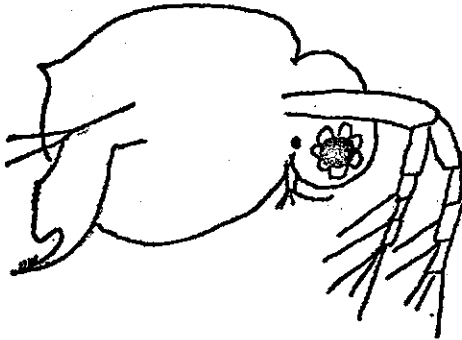


Fig. 12. Female Ceriodaphnia
reticulata



Fig. 13. Female Alona
rectangula



Fig. 13a. Alona rectangula
postabdomen

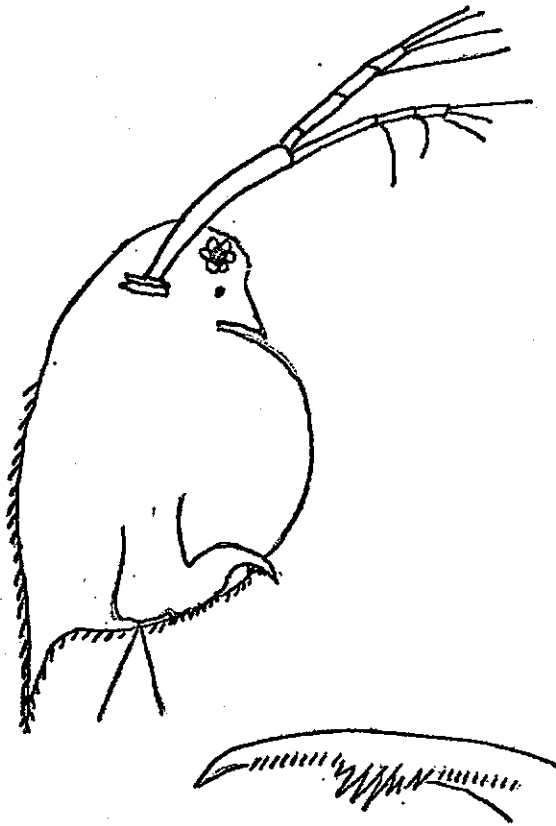


Fig. 14. Female Daphnia pulex
and postabdominal claw

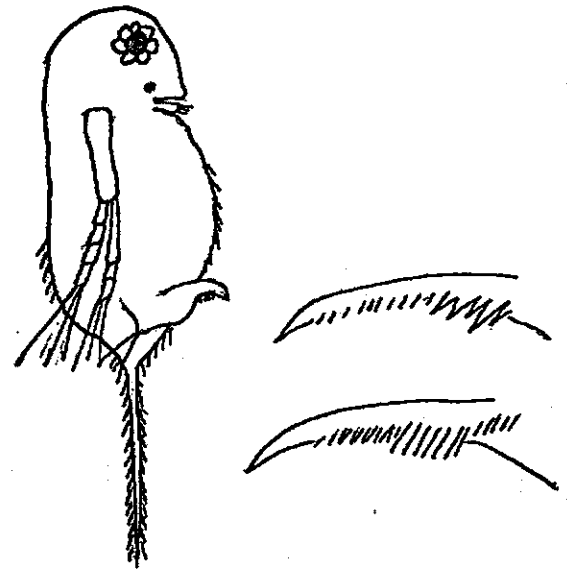


Fig. 15. Female Daphnia schodleri and two
variations of
postabdominal claw

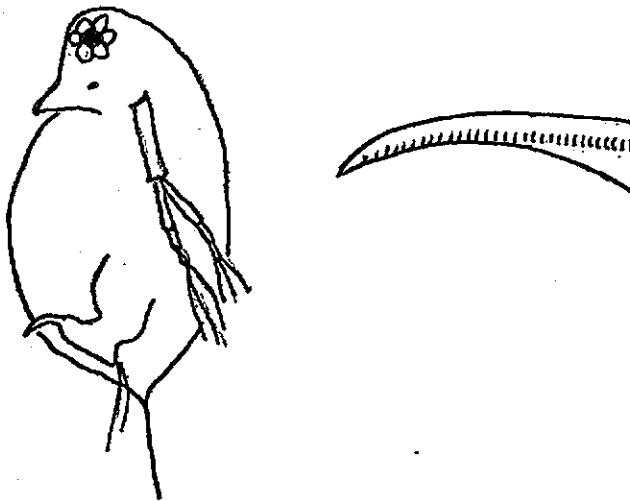


Fig. 16. Daphnia rosea and
postabdominal claw



Fig. 16a. Immature female
Daphnia rosea

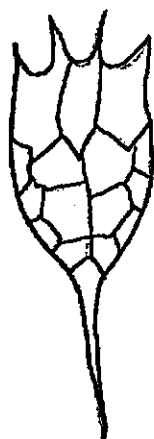
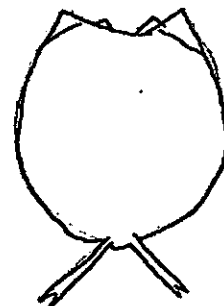
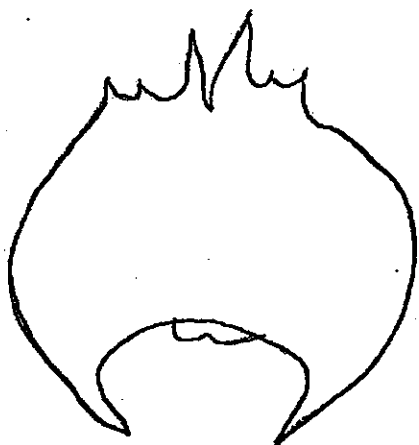
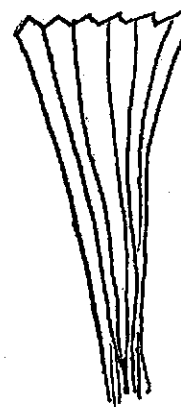
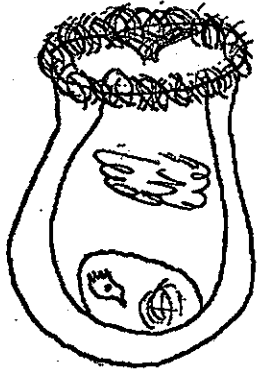
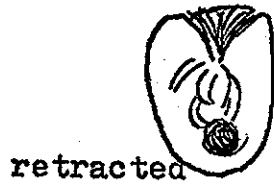
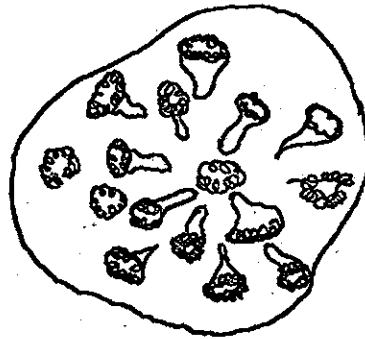
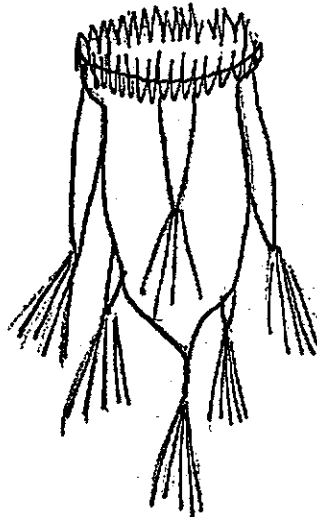
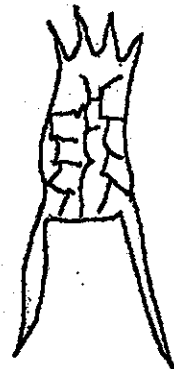
Figure 17. Rotifera17a. Kellicottia
longispina17b. Keratella
cochlearis17c. Lecane luna17d. Brachionus
quadridentata17e. Filinia sp.17f. Notholca sp.

Figure 17 cont. Rotifera17g. Asplanchna sp.17h. Conochilus unicornis
colony17i. Ploesoma
sp.17j. Polyarthra sp.17k. Hexarthra sp.17l. Keratella
quadrata

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