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CLADOCERA OF DES MOINES AND VICINITY.

BY B. O. GAMMON.

This investigation was begun in April, 1901 and collections were made at various intervals during that spring. During the summer of 1901 eight or nine weeks were spent in collecting and identifying specimens. Again in the summer of 1902 the work was taken up for about five weeks and during the early part of the summer of 1903 further collections were made. At odd times during all this period new specimens have been noted as they were found in material collected for work in the Drake Zoological Laboratories.

Collections of more or less richness have been made from the following bodies of water:

Zoo Lake.

South Park Pond.

Pools near North Sixth Ave. Bridge.

Pools near Belt Line Car Bridge.

Flood Ponds at East Tenth and Vine Streets.

Forty-second street sloughs.

Waveland Park pond.

Old Fair Ground Lake.

Nourse's Slough.

Slough at Fortieth and Kingman Avenue.

Slough near Camp Douglas.

Casey's Lake.

Sherman's Lake.

In naming these collection grounds the commonly accepted name has been used in all cases where it is known to the writer, otherwise a name has been applied explanatory of the location.

Zoo Lake from which the greatest number of collections were taken, is a horse-shoe shaped body of water located about a half mile north and a little west of Sixth Avenue bridge. Nearly all collections were taken from the east arm which is deepest and largest. The depth is said to be from twenty to twenty-five feet near the center but all collections were made from shore in water not exceeding six to eight feet in depth. Myriophyllum abounds along the entire shore and other aquatic plants are quite common; the water is clear over a muddy bottom. Shore line shaded except at north and south ends. Water always fresh, coming from springs. Buffalo fish are reported quite plentiful and small mud catfish and other small fishes are frequently caught. During extremely high water the Des Moines River is in communication with Zoo Lake and during the floods of July 1902 and May 1903 quite a strong current

was established through the east arm. In the floods of 1903 this current was so strong that collections made some three weeks after the waters subsided were altogether negative in results as regarded living entomotraca.

South Park pond is an oblong body of water about one and one-half acres in area located in South Park about a quarter mile south of South Ninth Street Bridge. It was formed by throwing a dam across a ravine which drains quite an area of land west of South Ninth Street. Its greatest depth is about fifteen feet, though no hauls were made at a greater depth than four to five feet. Green algæ cover much of the shore waters and aquatic plants of higher organization are fairly abundant. The waters are clear and fresh though over a muddy bottom which caused more or less dirt to be caught in the dredge at nearly every haul. Practically the entire shore line is shaded except at the north end. Minnows and small fishes are found here but no large ones.

Sixth Avenue Bridge Pools are long narrow ponds cut off from the river by levees. They lie east and west of the north approach of the bridge and parallel to the Des Moines River with which they communicate during freshets. They are well shaded and water stands here the year round. Those east of the bridge are very weedy and the surface is usually covered with duckweed. The one west of the bridge is open and free from vegetation though shaded. Turtles are abundant here but no fish. Neither of these pools exceeds thirty feet in width though some of them are five or six rods long. Depth ranges to five feet, collections mostly at three. Waters clear.

Belt Line Bridge Pools resemble those of the Sixth Avenue bridge but were much poorer collection grounds.

Flood Ponds at East Tenth and Vine Streets are located in the midst of a network of railroad embankments, East of Ninth street and South of Vine street in East Des Moines. Only one of them is permanent. It is located between Tenth and Eleventh streets and just South of the Rock Island tracks. Just south of it is another semi-permanent pond from which some hauls were made. Each of these ponds is about three-fourths of an acre in extent. The depth does not exceed two and one-half to three feet. No vegetation is present except occasionally a little duckweed and green algæ. The waters are clear, bottom muddy. The water source is overflow from Des Moines River and rain. There is no shade. Fish are never taken though cray-fish and turtles are sometimes seen.

Forty-second Street Slough is a very shallow though permanent prairie slough located about three-fourths of a mile North of the north entrance to Waveland Park. It varies from one-half to one acre in extent, depending upon rainfall. The depth does not exceed two feet. Cat tails and other rushes abound and clover and prairie grasses border the slough and extend into the water for several feet from shore. The water is clear above the weedy bottom. Its source is from surface drainage; no shade. No fish but sometimes a few frogs are found.

Waveland Park Pond is an open pond of about one-half acre in extent, surrounded by grassy and weedy banks. It is located in the north central part of Waveland Park in a low ravine. Its depth is unknown to me

but no collections were made in water exceeding four feet in depth. The water is clear over a muddy bottom with little littoral vegetation. It is the drainage basin of a considerable area of rolling, wooded, bluegrass upland. No shade except on the north. Occasionally turtles but no fish are found here. Water is fresh. Only negative results were obtained here, Cladocera or other orders never having been found in any of the collections made from this pond.

Old Fair Ground Lake is an open pond of perhaps four acres extent and comparatively shallow. Part of the shore is overgrown with rushes. Muddy bottom. Water supply from springs and natural drainage. Few if any fish. Negative results.

Nourse's Slough is a small shallow basin surrounded by weedy marsh. On the north and west are clumps of trees but the east and south shores are open. It is located on North Twentieth street about two miles north of Forest avenue. Crayfish are generally abundant. Waters usually somewhat roiled and often quite foul. Bottom muddy.

At Fortieth and Kingman Avenue, is a shallow slough grown full of cat-tail and other rushes. It is not more than one-fourth acre in extent and does not exceed eighteen inches in depth. Only one collection was made here.

Casey's Lake is a spring fed pond of perhaps five acres extent located near east Twentieth and Court avenue. It is apparently an ideal habitat for Entomostraca being full of grass and aquatic vegetation. The waters are clear above a sandy bottom with duckweed generally covering the entire surface. Its depth ranges to eight or ten feet. Negative results, as regards Cladocera attended all dredging here though a few forms of Copepoda and Ostracoda were usually found.

Sherman's Lake is a long narrow pool about a half mile south of East Ninth Street bridge surrounded by high banks made mainly of coal slack and ashes. No vegetation along shore. The results here were negative as regards all animal forms of the higher phyla.

Camp Douglas Slough is a deep basin of small area about one-fourth mile south of Camp Douglas. It is shaded on three sides but open to the north. Weeds and rushes abound on the banks. Frogs and crayfish are generally abundant and small mud cat-fish are common. Water clear above a muddy bottom. Hauls made at a depth of three to four feet.

The "Birge Cone Dredge" designed by Prof. E. A. Birge of the University of Wisconsin was used in making practically all of these collections.

RICHNESS OF POOLS; LIST OF SPECIES FOUND.

Zoo Lake: 23 visits.

Sida crystallina
Daphnella brachyura
Daphnia pulex
Daphnia sp(?) (see notes)
Simocephalus vetulus
Scapholeberis mucronata
Ceriodaphnia sp (?) (see notes)
Bosmina longirostris
Camptocercus rectirostris

Alona guttata
Alona testudinaria var. *inermis*
Pleuroxus denticulatus

Chydorus sphaericus

South Park Pond: 8 visits.

Daphnia pulex
Simocephalus vetulus
Bosmina longirostris
Macrothrix laticornis
Pleuroxus denticulatus
Chydorus sphaericus

Sixth Avenue Bridge Sloughs: 7 visits.

Daphnia pulex
Daphnia sp (?) (see notes)
Simocephalus vetulus
Scapholeberis mucronata
Ceriodaphnia sp (?) (see notes)
Pleuroxus procurvatus

Pools at Belt Line Bridge: 4 visits.

Daphnia pulex
Simocephalus vetulus

Flood Ponds at East Tenth and Vine Streets: 5 visits.

Sida crystallina
Daphnia pulex
Simocephalus vetulus
Moina paradoxa
Bosmina longirostris
Alona guttata

Forty-second Street sloughs: 3 visits.

Daphnia pulex
Simocephalus vetulus
Scapholeberis mucronata
Scapholeberis angulata
Ceriodaphnia sp (?) (see notes)
Lathonura rectirostris
Alonopsis latissimus
Alona guttata
Dunhevedia setiger

Nourse's Slough: 3 visits.

Daphnia pulex
Ceriodaphnia sp (?) (see notes)

Fortieth and Kingman: 1 visit.

Pleuroxus denticulatus

Camp Douglas Slough: 3 visits.

Daphnia pulex
Simocephalus vetulus

Zoo Pool: 9 visits.

This is a small pool cut off to the south of Zoo Lake very shady and a muddy bottom. Few hundred square feet in area. Not described above.

Findings

Sida crystallina
Daphnia pulex
Simocephalus vetulus
Moina paradoxa
Bosmina longirostris
Chydorus sphaericus
Dunhevedia setiger.

Some notes on unidentified species.

Daphnia sp (?) This is a form evidently belonging within the *pulex* group but resembling more or less the form described by Prof. Forbes of Illinois in his Yellowstone Park Report as *D. dentifera*. It has the same prominent two toothed angle on the dorsal outline between the heart and eye as described in *dentifera* but differs therefrom in having the spines well forward on the dorsal outline, a single process to close the brood chamber rather than two such processes and in having an accessory comb present while it is absent in *D. dentifera*. The form was found only in Zoo Lake and the Sixth avenue Bridge pools.

Ceriodaphnia sp (?) A form closely resembling *C. reticulata* but differing therefrom in having two long, jointed flagella rather than blunt ones at the junction of the post-abdomen and abdomen, process for closing the brood chamber absent or very obscure and seven rather than eight anal teeth. Found only at the Zoo, Sixth Ave., Forty-second street and Nourse Pond.

Total findings.

Sida crystallina
Daphnella brachyura
Daphnia pulex
Daphnia sp(?)
Simocephalus vetulus
Moina paradoxa
Scapholeberis mucronata
S. angulata
Ceriodaphnia sp(?)
Bosmina longirostris
Camptocercus rectirostris
Lathonura rectirostris
Alonopsis latissimus
Alona guttata
A. testudinaria var. *inermis*
Pleuroxus denticulatus
P. procurvatus
Macrothrix laticornis
Chydorus sphaericus
Dunhevedia setiger

This brings the list of Iowa cladocera up to 33 determined and 4 undetermined species reported to date, 23 determined and 2 undetermined having been reported in Vol. 3, and 6 determined species in Vol. 4 of the proceedings of the academy by L. S. Ross.