Some Rotifers from the South Pacific Islands and Northern Australia

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[*Received by the Editor, October 8, 1956.*]

Abstract

Little has hitherto been known of the rotifer fauna of the South Pacific Islands, and this paper lists twenty-nine species collected from this area and from Northern Australia. It is suggested that some specimens of the genus *Lecane* which have been described as new species or varieties are merely partly contracted animals referable to well known species.

Introduction

The rotifers listed in this paper were all collected by Dr. Marshall Laird from the South Pacific Islands and Northern Australia while engaged on the malarial mosquito investigation initiated by the Royal New Zealand Air Force and supported by a grant from the Department of Scientific and Industrial Research. When the preliminary identification of the rotifers was completed there remained several unidentified specimens, and several duplicate collections to be examined. In the examination of any collection a few specimens will be overlooked and it was decided to re-examine all of the material collected by Dr. Laird; a few more specimens were found, and with the exception of contracted Bdelloids, all material identified.

On the distributional map of the Rotatoria the South Pacific Islands have been shown as virtually a blank space, but we now know that a rich rotifer fauna exists in which members of the genus *Lecane* appear to be dominant. No new species were found, and the rotifers collected were, except for a few tropical forms, of species generally found in temperate zones.

One interesting fact has emerged from the present work, and that is the morphological changes that take place in some rotifers due to types and methods of fixation The degree of contraction of the animal may entirely alter some of the specific characteristics upon which identification is based. This effect is particularly noticeable in the case of some members of the genus *Lecane* of which *Lecane luna* has, in this paper, received special attention.

The Systematic List

The usual practice adopted in systematic papers of the Rotatoria of listing species in alphabetical order of genera has been followed; and although the genera *Lecane* and *Monostyla* are now combined in *Lecane* they have been separated to facilitate identification. The temperature and hydrogen ion content of the water has been given for almost all habitats, and these values have been taken from Laird (1956). Where partial or no dimensions have been given of specimens this has been because the condition of the animals has made measurements unreliable; this is always the case with partly contracted animals.

Genus Brachionus

Brachionus dimidiatus (Bryce)

1931. *Brachionus calyciflorus dimidiatus* Bryce. Proc Zool. Soc. London, p 873.

Locality. Semi-permanent ponds, Espiritu Santo, New Hebrides. Temp. 25° C., pH 7·4. Rare. Commensal on mosquito larvae

Brachionus quadridentatus Hermann. 1783. Naturf., Vol. 19, p. 47.

LOCALITY. Permanent pools near Nuku'alofa, Tonga. pH 9·5. Abundant. Also Segond Channel, Espiritu Santo, New Hebrides. Temp. 25° C., pH 7 4. Common. Rock pools near Suva, Fiji. Temp. 31° C., pH 7·6. Not common. Specimens varied in body length from 150–270 microns. In the Tonga habitat animals were found in all stages of cyclomorphic development. Also commensal on mosquito larvae.

Brachionus rubens Ehrenberg. 1838, Die Insuf., p. 547.

LOCALITY. Puddle at Luganville, Espiritu Santo, New Hebrides. Temp. 25° C., pH 7·4. Commensal on mosquito larvae. Typical specimens.

Genus CONOCHILOIDES

Conochiloides natans (Sligo)

1900. *Tubicolaria natans* Sligo. Unters Stuhmer Seen., p. 60

LOCALITY. Brackish pond at Teaoraereke, Tarawa, Gilbert Islands. Temp. 29° C. pH 8 0. Not common. Also permanent pond at Tutuba Island, New Hebrides Temp. 23° C., pH 6·6. Not common. Total length about 300 microns.

Genus CONOCHILUS

Conochilus hippocrepis (Schrank)

1830. *Linza hippocrepis* Schrank. Fauna Boica, Vol 3, pt. 2, p 314

LOCALITY. Pools on banks of Rewa River, Nausori, S.E. Viti Levu, Fiji. Temp. 22° C., pH 7·2. Not common. Total length of specimens about 550 microns.

Conochilus unicornis Rousselet. 1892. Jour. Quekett. Micr. Club, ser. 2, Vol. 4, p. 367.

LOCALITY. Forest pond, Tutuba, New Hebrides. Temp. 23° C., pH 6 6. Broken colonies in poor condition Total length of individuals about 300 microns.

Genus HABROTROCHA

Habrotrocha tridens (Milne)

1886. *Macrotrachela tridens* Milne Proc. Phil. Soc Glasgow, Vol 17, p 137.

LOCALITY. Tree hole, Nandarivatu, Viti Levu, Fiji Temp. 19° C. pH 7·2. Commensal on mosquito larvae. From an examination of partly contracted specimens in other habitats it is considered probable that this species is more widely distributed than indicated.

Habrotrocha appendiculata Murray. 1911. Jour. R. Micr. Soc., p. 14.

LOCALITY. Ponded stream south of Townsville, Queensland, Australia. Temp 20° C. pH 8·0. Not common. Also Toonpan Creek, Queensland, Australia. Temp. 23° C., pH 8 4. Not common. The few extended specimens were in poor condition, but they appeared to agree well with Murray's description.

Genus LECANE

Lecane acronycha Harring and Myers. 1926. Rotifer. Fauna. Wis., pt. 3, Wis. Acad. Sc Art. Lett., Vol. 22, pp. 322-3.

LOCALITY. Brackish pond at Teaoraereke, Gilbert Islands. Temp. 29° C., pH 8·0. Rare Total length from 200–250 microns. This is considered to be an acid water species and the two specimens found may be adventitious in this habitat. They were smaller than usual.

Lecane crepida Harring. 1914. Proc. U.S. Nat. Museum, Vol. 47, p. 533.

LOCALITY. Brackish pond, Teaoraereke, Tarawa, New Hebrides. Temp. 29° C, pH 8 Fairly common. Length of dorsal plate, 76 microns; of ventral plate 84 microns. Width of dorsal plate, 56 microns; of ventral plate, 64 microns. Length

of toes and claw, 32 microns Length of claw, 16 microns. Maximum depth of body, 50 microns. The toes are incurved.

? **Lecane formosa** Harring and Myers. 1926 Rot. Fauna. Wis., pt. 3, Wis. Acad. Sci. Art. Lett., Vol. 22, pp. 366-7.

LOCALITY. Tidal reach, Henderson Field, Guadalcanal, British Solomon Islands. Temp. 31° C., pH 8 2 Rare. Total length of specimens 145 microns. The poor condition of the specimens, and the fact that the water was brackish, makes this identification doubtful.

Lecane luna (Muller). Text-figs. 1-4.

1776. *Cercaria luna* Muller. Zool. Danicae Prodr., p. 280.

LOCALITY. Small pool above Wainivesi Falls, Viti Levu, Fiji. Temp. 28° C., pH 7 4 Common. Measurement of fully contracted specimens: Length of dorsal plate, 106 microns; of ventral plate, 116 microns. Width of dorsal plate, 96 microns; of ventral plate, 86 microns. Width of dorsal sinus, 40 microns. Width of ventral sinus, 54 microns Length of toe and claw, 40 microns Length of claw, 6 microns. The ventral sinus is more broadly rounded than usual.

Owing to the preserving method employed, there was a wide range of specimens having the same morphological characteristics except for the anterior margins, and the anterior lateral sulci. These are shown in Text-figs. 1–4, the ventral view being given. Fig. 1 is the typical fully contracted animal Fig. 2 is similar to a form of *Lecane luna* described by Donner (1954). Fig 3, another partly contracted animal resembles *Lecane luna* var *presumpta* Ahlstrom (1938). Fig 4 is of a specimen having a margin similar to *Lecane papuana* Murray (1913). Other variations of the anterior margin were also found. The lorica of *L. luna* is more flexible than generally thought, and it is considered, from the material examined, that the variations of this species which have been described may be due to the state of contraction of the specimens. It is also considered that *Lecane papuana* (Murray) 1913, which was described from a single specimen is probably a partly contracted individual of the species *Lecane luna.* The few animals found in this habitat and which are described as *L. papuana* showed no differences apart from the anterior margin which would differentiate them from *Lecane luna.* As in the case of the allied genus *Euchlanis,* the anterior margin appears to be an unreliable specific characteristic for the identification of the Lecanes.

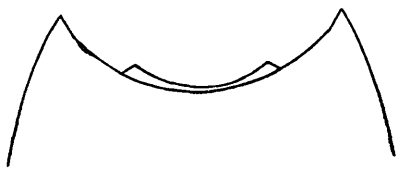

FIG. 1

FIG. 2

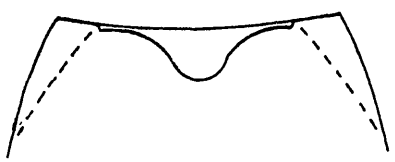

FIG. 3

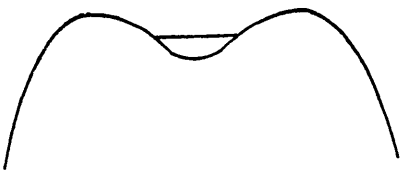

FIG 4

? Lecane papuana (Murray)

1913. *Cathypna papuana* Murray. Jour. R. Micr. Soc., p. 551.

LOCALITY. Pools above Wainivesi Falls, Viti Levu, Fiji. Temp. 28° C., pH 7·4. Not common. In view of the discussion under *Lecane luna* it is thought that this species is a synonym for *Lecane luna,* and the record is made merely for the sake of completeness.

Lecane pusilla Harring, 1914. Proc. U.S. Nat. Museum, Vol. 47, p. 541.

LOCALITY. Pools above Wainivesi Falls, Viti Levu, Fiji. Temp. 28° C., pH 7·4. Abundant. Length of dorsal plate, 54 microns; of ventral plate, 60 microns. Width of dorsal plate, 50 microns; of ventral plate, 46 microns. Length of toe and claw, 20 microns. Length of claw, which is strongly recurved, 4–6 microns. Most of the specimens were fully extended, but a few fully contracted animals were found on the second examination.

Lecane verecunda Harring and Myers. 1926. Rot. Fauna. Wis., pt. 3. Wis. Acad. Sci. Art. Lett., Vol. 22, pp. 358-9.

LOCALITY. Pools above Wainivesi Falls, Viti Levu, Fiji. Temp. 28° C., pH 7 4. Not common. Length of dorsal plate, 58 microns; of ventral plate, 74 microns. Width of dorsal plate, 48 microns; of ventral plate, 42 microns. Length of toe and claw, 29 microns. Length of claw, 4 microns. Specimens differ from the type in being smaller, having a parallel sided first foot joint, and a dorsal plate with no facetting.

Genus MONOSTYLA

Monostyla bulla Gosse. 1851. Ann. Mag. Nat. Hist., ser. 2, Vol. 8, p. 200.

LOCALITY. Ponded stream, South of Townsville, Queensland, Australia. Temp. 23° C., pH 8·4. Not common. Empty loricas were found of typical specimens.

Monostyla hamata Stokes. 1896. Ann. Mag. Nat. Hist., ser. 6, Vol. 18, p. 21.

LOCALITY. Rock pools near Suva, Fiji. Temp. 31° C., pH 7·6. Not common. Length of dorsal plate, 60 microns; of ventral plate, 70 microns. Width of dorsal plate, 50 microns; of ventral plate, 36 microns. Length of toe and claw, 24 microns. Dorsal plate not facetted.

Monostyla lunaris (Ehrenberg)

1832. *Lepadella lunaris* Ehrenberg. Abh Akad. Wiss. Berlin, p. 127.

LOCALITY. Rock pools near Suva, Fiji. Temp. 31° C., pH 7·6. Not common. Typical specimens having a total length of about 160 microns. Empty loricas only were found.

Monostyla punctata Murray. 1913. Jour. R. Micr. Soc., p. 355.

LOCALITY. Brackish pool at Teaoraereke Islet, Gilbert Islands. Temp. 29° C., pH 8·0. Abundant. Also forest pond, Tutuba, New Hebrides. Temp. 23° C., pH 7·0. Rare Dimensions of the Teaoraereke specimens· Length of dorsal plate, 60 microns; of ventral plate, 72 microns. Width of dorsal plate, 48 microns; of ventral plate, 42 microns. Length of toe, 28 microns. This is generally considered a brackish water species, and the few specimens in the Tutuba water may have been adventitious.

Monostyla pyriformis Daday. 1905 Math. Term. Ertes., Vol. 23, p. 330.

LOCALITY. Rock pools near Suva, Fiji. Temp. 31° C., pH 7 6. Rare. Empty loricas only were found. Total length, 80–90 microns.

Monostyla stenroosi Meissner. 1908. Izv. Turk. Otd. Imp. Rusk. Geogr. Obshch, Vol. 4, pt. 8, p. 22.

LOCALITY. Edge of civil airfield, Cairns, Queensland, Australia, swamp. Temp. 21° C., pH 7·4. Fairly common. Total length, 160 microns. Lateral sulci very deep.

Monostyla styrax Harring and Myers. 1926. Rot. Fauna. Wis., pt. 3. Wis. Acad. Sci. Art. Lett., Vol. 22, pp. 389-90.

LOCALITY. Rock pools near Suva, Fiji Temp. 31° C., pH 7 6. Not common. Length of dorsal plate, 120 microns; of ventral plate, 126 microns. Width of dorsal and ventral plates, 90 microns. Length of toe and claw, 46 microns. Length of claw, 26 microns. Heavy transverse fold.

Genus MONOMMATA

Monommata grandis Tessin 1890. Arch. Natur Mecklenburg, Vol. 43, p 151.

LOCALITY. Pools above Wainivesi Falls, Fiji Temp. 28° C., pH 7 4. Rare. Length of body, 150 microns. Length of toes, 274 and 280 microns.

Monommata longiseta (Muller)

1776. *Cercaria longiseta* Muller. Zool. Danr. Orodr , p. 280.

LOCALITY. Ponded stream south of Townsville, Queensland, Australia. Temp. 20° C., pH 8·0. Rare. Length of body, 100 microns. Length of toes, 125 and 150 microns.

Genus MYTILINA

Mytilina trigona (Gosse)

1851. *Diplax trigona* Gosse. Ann Mag. Nat Hist., ser. 2, Vol 8, p 201

LOCALITY. Brackish pool at Teaoraereke, Tarawa, Gilbert Islands. Temp. 29° C., pH 8·0. Rare. Small specimens having a total length of 60 microns, otherwise typical.

Mytilina ventralis (Ehrenberg)

1832. *Salpina ventralis* Ehrenberg. Abh Akad Wiss Berlin, p 133

LOCALITY Pools on banks of Rewa River, Nausori, Fiji. Not common. Total length, 190 microns Length of anterior spines, 20 microns.

Genus POLYARTHRA

Polyarthra remata Skorikov 1896. Nat Univ. Imp. de Kharkow. Tom 30.

LOCALITY. Pools above Wainivesi Falls, Fiji. Temp. 28° C., pH 7 4. Single specimen having a total length of 80 microns; its presence in this water is considered adventitious.

Genus PROALES

Proales gigantea (Glascott)

1893. *Notommata gigantea* Glascott. Proc. Royal Dublin Soc., new ser.. Vol. 8, p. 80.

LOCALITY. Ponded stream near Rollingstone, Queensland, Australia. Temp. 24° C , pH 6 0. Not common. Total length of animal, 200 microns. All specimens were found free swimming, but this species is said to be parisitic on the eggs of the pond snail *Lymnaea.*

Genus SINANTHERINA

? Sinantherina ariprepes Edmondson 1940. Trans. Amer. Micr. Soc , Vol. XIX No. 4, p. 80.

LOCALITY. Permanent pond above Wainivesi Falls, Fiji. Temp. 27° C., pH 6 8. Fairly common. Specimens in poor condition, but all the ascertained characteristics point to this species.

Genus TRICHOCERCA

Trichocerca elongata (Gosse)

1886. *Mastigocerca elongata* Gosse. The Rotifera, Vol 2, p. 62.

LOCALITY. Rock pools in hills near Suva, Fiji. Temp. 31° C., pH 7·6. Rare Length of body, 160 microns. Length of toe, 160 microns. Sub-styles very small.

Notes on the Descriptions

The identification of loricated rotifers from empty loricas is generally easier than from preserved animals, but the temperature and pH given for the habitat may not apply to the animal. The measurements given are the mean values for the animals examined Measurements of Bdelloidal, sessile, and colonial rotifers are seldom of much value when made from preserved material, and those given in this paper must be regarded as approximations.

Acknowledgments

This paper would not have been possible but for the many collections, from a wide range of habitats, which Dr. Marshall Laird sent to me. I have to thank Dr. Laird for the collections supported in a number of cases by photomicrographs and mounted slides of rotifers; the latter proving of great assistance in determining the identity of some specimens.

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