AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Bayly, I. A. E., 1971. A new species of *Kelleria* (Copepoda: Cyclopoida) from brackish water in Victoria. *Records of the Australian Museum* 28(6): 111–116. [27 September 1971].

doi:10.3853/j.0067-1975.28.1971.417

ISSN 0067-1975

Published by the Australian Museum, Sydney

A NEW SPECIES OF *KELLERIA* (COPEPODA: CYCLOPOIDA) FROM BRACKISH WATER IN VICTORIA

By I. A. E. BAYLY

Department of Zoology, Monash University, Clayton, Victoria

Figures 1 and 2

Manuscript received, 20th February, 1969

I. INTRODUCTION

Gurney (1927), while erecting the genus *Kelleria* for the accommodation of two newly discovered species of cyclopoid copepods from the Suez Canal, *K. regalis* Gurney and *K. purpurocincta* Gurney, also suggested the transfer of two previously described species, *Pseudanthessius propinquus* T. Scott (1895) and *P. pectinatus* A. Scott (1909), into this new genus. A similar generic transfer was proposed by Nicholls (1944) for yet another species of *Pseudanthessius—P. fucicolus* T. Scott (1912). In view of the subsequent description of three additional species by Sewell (1949), and that of a fourth by Krishnaswamy (1952), the genus *Kelleria* now contains, in order of description, the following nine species: *K. propinqua* (T. Scott), *K. pectinata* (A. Scott), *K. fucicola* (T. Scott), *K. regalis* Gurney, *K. purpurocincta* Gurney, *K. andamanensis* Sewell, *K. camortensis* Sewell, *K. gurneyi* Sewell, and *K. rubimaculata* Krishnaswamy.

In the course of recent investigations into the brackish water zooplankton of the Gippsland Lakes, Victoria, a species of *Kelleria* has come to hand which corresponds with none of the above species and is here described as new.

II. DESCRIPTION OF SPECIES

Family **LICHOMOLGIDAE** Kossmann

Subfamily **LICHOMOLGINAE** Gurney

Genus **Kelleria** Gurney

It may be noted that neither of the two originally included nominal species were designated or indicated as the type species and so far no subsequent designation has been made. *K. regalis*, being the more fully described and figured of these two, and also having position precedence, would seem to be the logical choice for such a designation. However, since this paper is not of a revisionary nature, formal designation to this effect will be avoided.

Kelleria australiensis sp. nov.

Figs 1A–1P, 2

Specimens Examined. Lake King near Boxes Creek, 30 ♀, 15 ♂ (unlimited material available), coll. C. R. Campbell, 26.i.1968. In addition small numbers were examined from several other collections made at various places within the Gippsland Lake Complex (Lake Victoria and Lake King) by G. H. Arnott.

Type Materials. Holotype ♀, allotype ♂, paratypes 5 ♀, 5 ♂; Australian Museum Reg Nos. P. 16694–6. Holotype, allotype, and some paratypes stained, dissected and mounted on microslides. Type locality: Lake King, Victoria.

Ecological Data. The collection which contained the greatest abundance of the species (Lake King near Boxes Creek) was taken from water with a salinity of 29·6‰, and a temperature of 25.5°C. This was a contaminated collection containing a considerable number of *Parcanassa burchardi* (Gastropoda), several *Zostera* leaves, a fair amount of *Bachelotia* and *Giffordia* (Phaeophyta), and some bottom sediment. The net had obviously brushed through weed and touched the bottom. Consideration of all catches containing it, together with accompanying salinity data, showed that the range of salinity tolerance was at least 27.8–32.1‰.

Description of Female

Size.—Length to end of furcal rami 1.23 mm (mean of ten specimens).

General body proportions (fig. 1A).—Metasome about 1.65 times as long as maximum width (viewed dorsally), and about 1.5 times as long as urosome excluding furcal setae; antennules not reaching posterior margin of first metasomal segment when extended posteriorly; furcal rami about 2.5 times as long as maximum width.

Pre-maxillary appendages.—Antennules 7-segmented, antennae 4-segmented and terminating in two claws and four setae (details of segmentation and armature of these two appendages shown in figures 1B and 1C); mandible (fig. 1D) with about 18 projections along convex margin, ranging in size from long finger-like outgrowths proximally through short rounded teeth to minute serrations distally, terminating in spine-like structure with fine secondary hair-like processes, cluster of about eight spines present on concave or inner margin; maxillule (fig. 1E) small, unsegmented, terminating in three spines (one with secondary processes) with basal thickening and with blunt spur half-way along concave side.

Maxilla (figs. 1F–1H).—Two-segmented, distal segment with total of seven spines and one seta, most proximal spine (that on anterior edge) differentiated from distal row and denticulated along both margins (most proximal and most distal denticles along proximal edge of spine larger than remainder), distal row including four large and two small spines, one or both of latter sometimes obscured depending on orientation so that total of only five or six (fig. 1F) may be apparent (with critical examination, however, total of seven almost invariable).

Maxilliped (fig. 1J).—Three-segmented; middle segment with two large spines on anterior edge, proximal spine about 0.6 times as long as distal spine, with secondary hairs on both sides but row on proximal edge more restricted than that on distal edge, distal spine with secondary hairs along proximal half of proximal edge; distal segment about three times as long as maximum width, with total of four setae, two on anterior edge, one (the longest) terminal, and one on posterior edge.

Legs 1–4.—Structure of legs 1, 2, and 4 shown in figs 1L, 1M, and 1N, respectively; seta and spine formulae as follows:

	Endopodite	Exopodite
P. 1	1.1.420	0.1.422
P. 2	1.2.321	0.1.522
P. 3	1.2.221	0.1.522
P. 4	120 (or 1.020)	0.1.521

Endopodite leg 4 usually 1-segmented, but sometimes with fold or weak line of segmentation coinciding with point of insertion of seta on inner edge giving apparent 2-segmented condition; innermost of two terminal spines of this endopodite sometimes with secondary spine present as anomaly on inner edge.

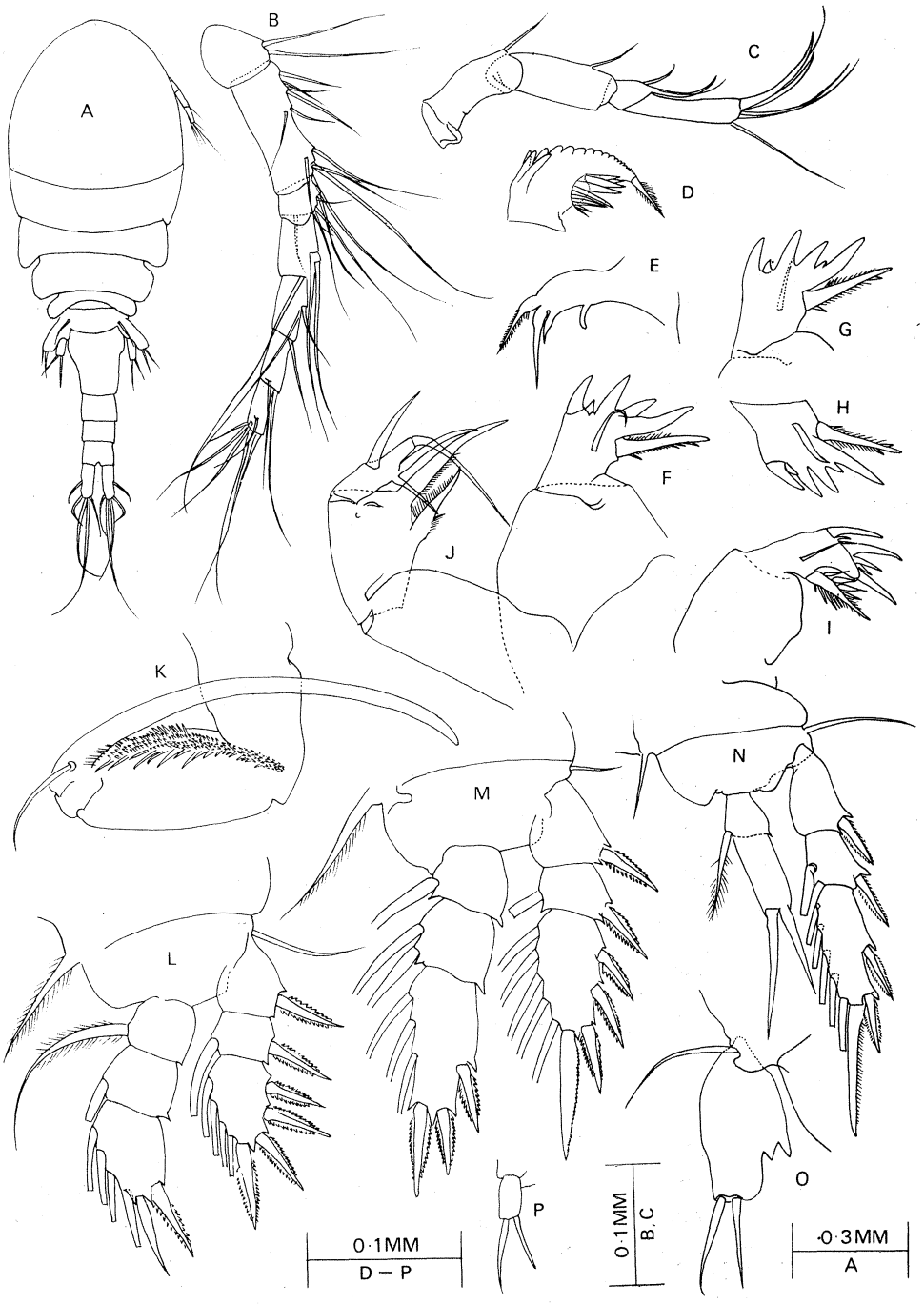

Figure 1.—*Kelleria australiensis* sp. nov. A, dorsal aspect of ♀; B, antennule (♀); C, antenna (♀); D, mandible (♀); E, maxillule (♀); F–H, ♀ maxillae; I, ♂ maxilla; J, ♀ maxilliped (in natural relationship to F); K, ♂ maxilliped; L, leg 1 (♀); M, leg 2 (♀); N, leg 4 (♀); O, ♀ leg 5; P, ♂ leg 5

Legs 5 (fig. 10).—One-segmented, maximum length almost twice maximum width, with two lobes present about two-thirds distance along inner edge from point of attachment, with two sub-equal setae at distal extremity.

Description of Male

General body proportions (fig. 2) very similar to those of female. Pre-maxillary appendages, and legs 1–4 all very similar to those of female, but slightly smaller.

Size.—Length to end of furcal rami 1.01 mm (mean of ten specimens).

Maxilla (fig. 1I).—Essentially like that of female but differing as follows: most proximal spine (that on anterior edge of distal segment) with larger secondary spinules especially along proximal half of distal edge (three or four spinules in this region, each about one-third length of main spine); total of nine spines (cf. seven in female), distal row with four large and four small spines (only three small spines or total of eight shown in fig. 1I).

Maxilliped (fig. 1K).—Three-segmented but grossly different from that in female, prehensile, terminal segment transformed into long curved claw with single seta close to proximal articulation, middle segment elongated and with swathe of spines restricted to elongated area facing claw, claw more than twice as long as middle segment.

Legs 5 (fig. 1P).—Reduced to about one-quarter size of those in female, lacking lobes on inner edge, with two terminal spines less reduced than segment.

Urosome.—Six-segmented (cf. five in female), segment two much enlarged (about twice as wide as segments 3–6, and slightly longer than segments 3 and 4 combined).

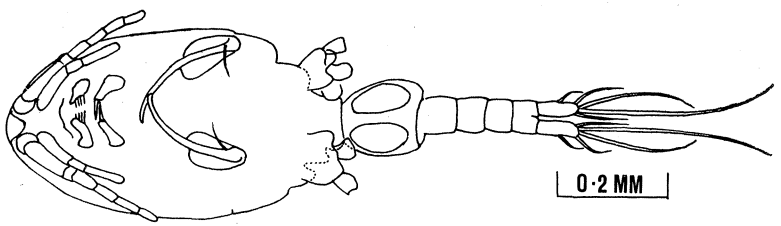

Figure 2.—*Kelleria australiensis* sp. nov., ventral aspect of ♂

III. KEY TO SPECIES

(Based on structure of maxilla and maxilliped of females as given in literature).

1. Two most proximal spines of maxilliped (those of middle segment or its homologue) not more than twice as long as basal width; terminal segment or portion of maxilliped lacking long spines (cluster of four sub-equal spines not more than three times basal width in length) .. .. *K. fucicola* (T. Scott), 1912

   Two most proximal spines of maxilliped (those of middle segment) considerably more than twice basal width in length; terminal segment with at least one long seta or spine and usually more..... 2

2. (1) Most proximal spine of maxilliped bifurcate 3

Most proximal spine of maxilliped not bifurcate 4

3. (2) Distal spine of middle maxilliped segment with stout secondary spur on proximal edge about half-way along length .. *K. regalis* Gurney, 1927

Distal spine middle maxilliped segment possibly with *series* of fine secondary processes along proximal edge but no single stout spur.. ..... *K. rubimaculata* Krishnaswamy, 1952

4. (2) Distal maxilliped segment with 5 setae (or spines and setae)..... ..... *K. propinqua* (T. Scott), 1894

Distal maxilliped segment with not more than 4 setae or spines 5

5. (4) Distal segment of maxilla terminating in one long curved claw, and with smooth proximal spine on anterior edge; distal maxilliped segment with only two setae ..... *K. gurneyi* Sewell, 1949

Distal segment of maxilla with row of several spines along distal edge, and with denticulated proximal spine on anterior edge; distal maxilliped segment with three or usually four setae or spines 6

6. (5) Distal segment of maxilliped with three spines .... *K. purpurocincta* Gurney, 1927

Distal segment of maxilliped with four spines or setae 7

7. (6) Proximal spine of middle maxilliped segment with long hair-like processes (some more than half length of spine itself) along distal edge, proximal edge smooth or with only one secondary hair proximally 8

Proximal spine of middle maxilliped segment with short processes along both edges 9

8. (7) Inner lobe of basal segment of female fifth legs extending half-way along inner side of free (distal) segment .. *K. andamanensis* Sewell, 1949

Inner lobe of basal segment of female fifth legs extending only about quarter way or less along inner side of free segment .... *K. pectinata* (A. Scott), 1909

9. (7) Distal segment of maxilla with about 12 spines along distal edge (excluding proximal denticulated spine) .. *K. camortensis* Sewell, 1949

Distal segment of maxilla with six spines along distal edge (excluding proximal denticulated spine) ..... *K. australiensis* sp. nov.

IV. DISCUSSION

It is clear that the structure of the maxillae and maxillipeds is of major importance in the taxonomy of this genus, and the characterization of these for some of the above species is inadequate. Thus the figure of the maxilla of *K. rubimaculata* (Krishnaswamy 1952, text-fig. 3e) is too small to be of much value, and the maxilla of *K. propinqua* is not figured at all. The structure of the mandible also seems to be important, but this has not been figured for *K. gurneyi.*

As indicated by the above key *K. andamanensis* and *K. pectinata* are closely related on the basis of maxilla and maxilliped structure, and the possibility that they are synonymous is perhaps worthy of investigation. They seem to be distinctly different, however, in the structure of the mandibles and the terminal armature of the antennae.

K. australiensis sp. nov. has no particularly close relationship with any of the previously described species. The fact that it lies adjacent to *K. camortensis* in the above key is not to be taken as implying close relationship with this species.

V. ACKNOWLEDGMENTS

I wish to thank Messrs G. H. Arnott and C. R. Campbell for collecting the material on which the above description is based. I am also indebted to Mrs J. Hope Black for identifying the gastropod and Mr R. J. King for plant identifications.

VI. REFERENCES

Gurney, R. (1927).—Cambridge expedition to the Suez Canal, 1924 XXXIII. Report on the Crustacea:—Copepoda (Littoral and Semi-parasitic). *Trans. Zool. Soc. Lond.* **22**: 451–577.

Humes, A. G. and Ho, J. S. (1969).—Cyclopoid copepods of the genus Kelleria (Lichomolgidae) from intertidal burrows in Madagascar. *Bull. Br. Mus. nat. Hist.* (*Zool.*) **18**: 221–9.

Krishnaswamy, S. (1952).—Some new species of copepods from the Madras coast. *Rec. Indian Mus.* **49**: 321–36.

Nicholls, A. G. (1944).—Littoral Copepoda from South Australia (II) Calanoida, Cyclopoida, Notodelphyoida, Monstrilloida and Caligoida. *Rec. S. Aust. Mus.* **8**: 1–62.

Scott, A. (1909).—The Copepoda of the Siboga Expedition. Part I. Free-swimming, littoral and semi-parasitic Copepoda. *Siboga Exped. Monogr.* **29a**: 1-323.

Scott, T. (1895).—Report on Entomostraca from the Gulf of Guinea, collected by John Rattray, B.Sc. *Trans. Linn. Soc. Lond.* **6** (1): 1–161.

Scott, T. (1912).—The Entomostraca of the Scottish National Antarctic Expedition 1902–1904. *Trans. Roy. Soc. Edin.* **48**: 521–99.

Sewell, R. B. S. (1949).—The littoral and semi-parasitic Cyclopoida, the Monstrilloida and Notodelphyoida. *Scient. Rep. J. Murray Exped.* 1933–34 *Lond.* **9** (2): 17–199.

Postscript

Since this paper was submitted for publication Humes and Ho (1969) have redescribed *K. regalis* and *K. pectinata* and also described the male of the latter species. These redescriptions do not influence the placement of these two species in the above key.