

*E. G. KRUPA, T. S. STUGE*

## **NEW SPECIES OF THE GENUS GIGANTODIAPTOMUS (CRUSTACEA, CALANOIDA) FROM NORTHEASTERN KAZAKHSTAN**

*(Institute of Zoology, Almaty, Kazakhstan)*

*This paper contains the description of the new species of the genus Gigantodiaptomus (Copepoda, Calanoida) from a water body of Northeastern Kazakhstan.*

### **INTRODUCTION**

The world fauna of the genus Hemidiaptomus includes 16 species, most of which inhabits Mediterranean water bodies [1, 2]. According to E.V. Borutsky et al. [2], the genus Hemidiaptomus includes 3 subgenera: Hemidiaptomus Sars, 1903, Gigantodiaptomus Kiefer, 1932 and Occidodiaptomus Borutsky, 1991. L. A. Stepanova [3] shares out these subgenera into separate genera.

Only one species of genus Gigantodiaptomus – *G. amblyodon* (Marezzeller) with subspecies *G. amblyodon* var. *angularis* Rylov is known in Kazakhstan [4, 5]. L. A. Stepanova [6] described *G. amblyodon* var. *angularis* Rylov as separate species *G. angularis* (Rylov) on the base some

characters (locations of the lateral spine of exopod of fifth right leg of male, length of the first segment of exopod of left leg 5 and some other). At the present time the world fauna of the genus Gigantodiaptomus is presented 5 species – *G. amblyodon* (Marezzeller), *G. angularis* (Rylov), *G. simillimus* Stepanova, *G. superbus* Schmeil, *G. hungaricus* Kiefer [6].

A few Calanoida males and females, which were belonged to genus Gigantodiaptomus, were found in one of Northeastern Kazakhstan water bodies (vicinity of Pavlodar Town). This males and females are distinguished from other Gigantodiaptomus species by a number of morphological characters. We suppose that there is a new species of genus Gigantodiaptomus for the world fauna of Calanoida. But at the present time we have only 5 specimens of

this animals therefore we describe it as *Gigantodiaptomus* sp.

The terminology and abbreviations follow those of Ranga Reddy [7]: body length – total length excluding caudal setae, P1-P5 – legs 1-5, Enp – endopodite, Exp – exopodite.

#### MATERIAL AND METHODS

The material was collected in one of Northeastern Kazakhstan water body (Irtysch flood plain) 17 May of 2000 and 4 July of 2002. The zooplankton samples were obtained with 70 mm mesh conical net (Juday net) by O. E. Lopatin (Institute of Zoology), and preserved in 3-4% formaldehyde. Copepods were sorted with stereoscopic binocular “MBS-1”. Dissected specimens were examined and figured using a binocular microscope “Studar-E” and drawing apparatus “RA-10”.

The area of water body is about 0.03 ha, the depth varies from 1.0 to 1.5 m. The water body is not dried up in the summer. The water temperature was 17-21°C during investigations.

Materials for description are one male mounted in glycerol (registration numbers 2000/1-5), one female mounted in glycerol (registration numbers 2000/6-9), one male and two females in formaldehyde (registration number 2002/10-12). Specimens are deposited in the Institute of Zoology, Kazakhstan.

#### RESULTS

The next Crustacea species were found in zooplankton samples: *Daphnia longispina* O. F. Muller, *Ceriodaphnia reticulata* (Jurine), *C. laticaudata* O. F. Muller, *Alona rectangula* Sars, *Alonella excisa* (Fischer), *Chydorus sphaericus* (O. F. Muller), *Macrothrix odiosa* O. F. Muller, *Pleuroxus trigonellus* O. F. Muller, *Pleuroxus truncatus* O. F. Muller, *Graptoleberis testudinaria* (Fischer), *Scapholeberis mucronata* (O. F. Muller), *Bosmina longirostris* (O. F. Muller), *Eucyclops serrulatus* Fischer, *Paracyclops affinis* (Sars), *Megacyclops viridis* (Jurine), *Diacyclops bicuspidatus* (Claus), *Mesocyclops leuckarti* Claus, *Thermocyclops dybowskii* (Lande), *Cyclops strenuus* Fischer, *C. vicinus vicinus* Uljanin, *Acanthocyclops robustus* (Sars), *Microcyclops rubellus* (Lilljeborg), *Eudiaptomus vulgaris* (Schmeil), *Acanthodiaptomus denticornis* (Wierzejski), *Neutrodiaptomus incongruens* (Poppe), *Gigantodiaptomus amblyodon* (Marenzeller) and *Gigantodiaptomus* sp. n., which description is given below.

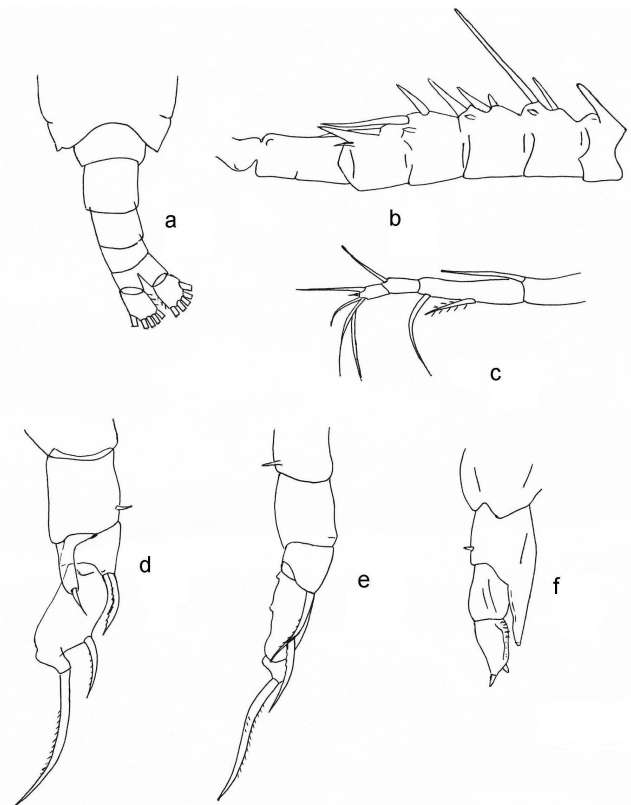


Figure 1. *Gigantodiaptomus* sp. Male (a – urosome with caudal rami, b – the middle part of geniculated antennule, c – distal part of geniculated antennule, d, e – right left 5, f – left leg 5. Scale: a – 0.4 mm, b-f – 0.2 mm

#### Description of *Gigantodiaptomus* sp.

**Male (fig. 1, a-g).** Body length, including furcal rami is 3.375 mm. Urosome consist of 5 somites. Antepenultimate segment of right antennule without both hyaline membrane and process. Spiniform process on the 15<sup>th</sup> and 16<sup>th</sup> segments are relatively short. Spiniform seta of the 7<sup>th</sup> segment is longer than setae of 14<sup>th</sup> segment. Spiniform processes on the 10<sup>th</sup> and 11<sup>th</sup> segments of right first antennule shorter than spiniform process on the 14<sup>th</sup> segment.

Coxas of legs 5 with very short seta. Right P5. Basis of right leg 5 with smooth inner margin. The first segment is short and wide; its external distal angle is slightly stretched, with long seta reaching the location of lateral spine of second exopodite segment. The lateral spine of second exopodite segment is located distal to middle of the segment. Endopodite is one segmented, with seta on the distal margin; the length of seta is a half of endopodite.

Left P5. Left P5 reaches the middle of right Exp2P5. Endopodite is one segmented, poorly separated from basis, fingerformed. Inner side of

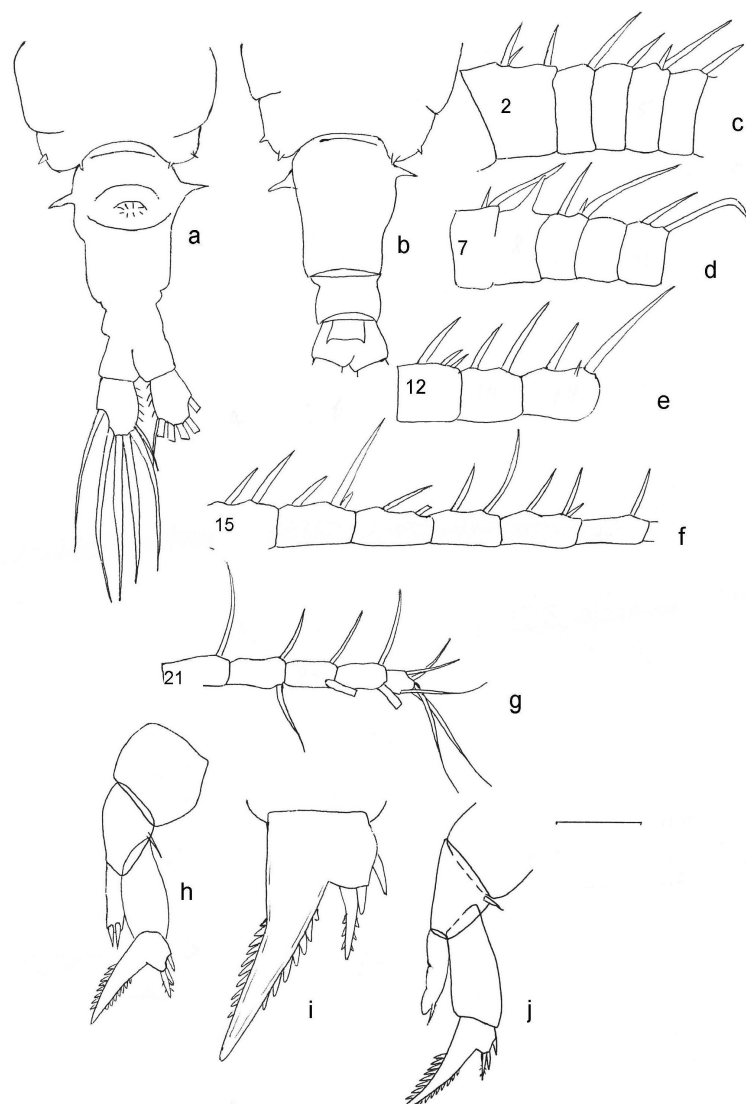


Figure 2. *Gigantodiptomus* sp. Female. a, b – urosome with caudal rami, c-g – antennule, h, j – leg 5, i – second exopodite-segment. Scale: a, b – 0.4 mm, c-h, i – 0.2 mm, j – 0.05 mm

ExpP5 is covered by short setules. Exp2P5 has short terminal spinule; the second spinule is located subterminal.

**Female (figs. 2, 3).** Body length is 3.750 mm, including furcal rami. The pediger 5 is symmetrical with slightly rounded sides. Urosome is 3-segmented. Genital somite is elongated with relatively small sensor spines on the lateral poorly extended surfaces.

Antennules are 25-segmented with two setae on the 11<sup>th</sup>, 13-19<sup>th</sup>, 22-24<sup>th</sup> segments and one seta on the 20-21<sup>st</sup> segments. The setae on the 7<sup>th</sup>, 9<sup>th</sup>, 14<sup>th</sup>, 16<sup>th</sup>, 18<sup>th</sup> and 21<sup>st</sup> segments are long.

Antenna, mandible, maxillula, maxilla and maxilliped are given at figure 3 (e-i).

EnpP2-4 and ExpP1-4 consist of 3 segments.

EnpP1 is 2-segmented. Distal segment of ExpP1 with long terminal spine, which is approximately 3 times longer than distal segment of ExpP1. External sides of terminal spines of ExpP1-ExpP4 are covered by slightly bent spinules, inner sides with setules. External spines of distal segments of ExpP1-4 are located subterminal. Exp1P1 with seta on the distal outer corner. External sides of basipodites and Exp1-3 of P1 with setules.

Legs 5. Basis of P5 is short, thick; its base is wider than distal part. EnpP5 is onesegmented with two hard terminal setae. One female has two segmented endopodite with one hard seta (fig. 2, j). The third segment of ExpP5 is not separated off the second segment of ExpP5. The inner appendix of

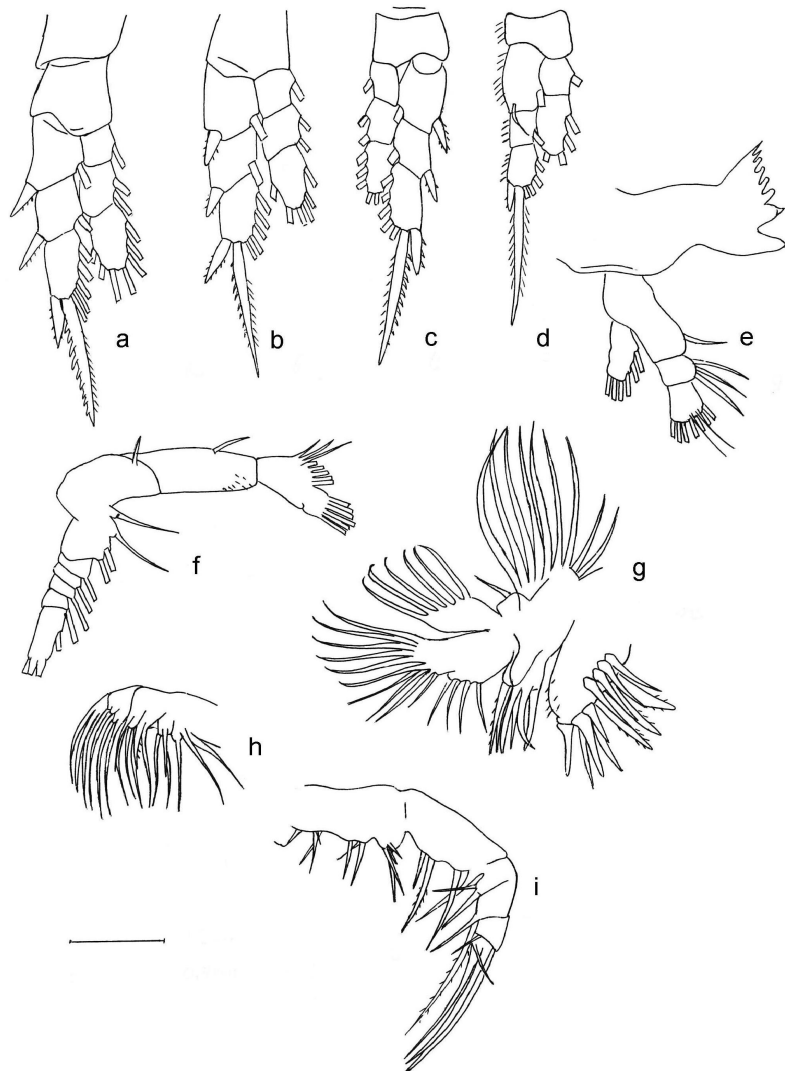


Figure 3. *Gigantodiptomus* sp. Female. a-d – legs 1-4, e – mandible, f – antenna, g – maxillula, h – maxilla, i – maxilliped. Scale: a-e – 0.2 mm, f-i – 0.4 mm

the second segment of ExpP5 is attached from angle of 45°. This appendix and inner terminal spine of Exp3P5 have large spinules.

Remarks. The describing species is more closely to *G. amblyodon* (in particular absence of chitinous peg on the second exopodite-segment of male's leg 5) and *G. simillimus* (morphological characters of male's left leg 5). Males of describing species from Kazakhstan are distinguished from other species of genus *Gigantodiptomus* by presence of massive seta on the distal part of first exopodite-segment of right leg 5, morphological characters of endopodite of right leg 5, number and dimensions of spine of middle part of geniculated antennule (13-16 segments). Females

of describing species from Kazakhstan are distinguished from specimens of *G. amblyodon* and *G. simillimus* by relatively small sensor spines on the lateral poorly extended surfaces of genital somite and shorter endopodite of legs 5, presents of long setae on the 7<sup>th</sup>, 9<sup>th</sup>, 14<sup>th</sup>, 16<sup>th</sup>, 18<sup>th</sup> and 21<sup>st</sup> segments of antennules.

#### ACKNOWLEDGEMENTS

We are grateful to O. E. Lopatin (Institute of Zoology, Almaty) for the collecting material, D. V. Malakhov (Institute of Zoology, Almaty) for the help in translation of this paper, L. A. Stepanova (Institute of Zoology, Sankt-Peterburg) for advice about determination of collecting specimens.