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Recent changes and improvements in Aloninae taxonomy (Branchiopoda: Anomopoda: Chydoridae) *

Новые изменения и исправления таксономии алонин (Branchiopoda: Anomopoda: Chydoridae) *

N.N. Smirnov
Н.Н. Смирнов

Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Leninsky prospekt 33, Moscow 117071 Russia.
Институт проблем экологии и эволюции им. А.Н. Северцова, Российская Академия Наук, Ленинский проспект 33, Москва 117071 Россия.

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КЛЮЧЕВЫЕ СЛОВА: таксономия, Aloninae, Chydoridae, Anomopoda.

ABSTRACT: Some necessary changes for the taxonomy of the subfamily Aloninae are suggested. Some previously described Australian chydorids are attributed to new genera, a new species *Alona gurneyi* (Gurney, 1927) is suggested, new synonymy is indicated. A key to the genera of the subfamily Aloninae is composed.

РЕЗЮМЕ: Предложены некоторые необходимые изменения таксономии подсемейства Aloninae. Некоторые описанные ранее виды австралийских хидорид отнесены к новым родам, выделен новый вид *Alona gurneyi* (Gurney, 1927), приведены новые синонимы. Составлена определительная таблица для родов подсемейства Aloninae.

The subfamily Aloninae Dybowski et Grochowski, 1894 emend. Frey, 1967 is one of the largest and still insufficiently known in the family Chydoridae. The published information is controversial and needs improvement. Regional faunas are still incompletely described.

Special remarks should be made on the cladoceran fauna of Australia.

The Australian fauna of cladocera is notably rich, comprising 159 species [Smirnov, 1995b] or 165 species [Shiel & Dickson, 1995], with a few recent additions [Smirnov, 1995a, 1997; Frey, 1991]. It is highly endemic (about 44% according to both sources). Systematic position of some Australian species deserves further reconsideration. Two species described below were initially attributed to the genus *Monospilus* Sars, 1862. Neither of these taxa are referrable to this genus [Shiel & Dickson, 1995] and this situation had become more obvious when the third species was described. Thus it is necessary to introduce two new genera.

The present article suggests some necessary changes for the taxonomy of the Aloninae.

Abbreviations: AI — antennule, AII — antenna, AM — Australian Museum (Sydney), MGU — Zoological Museum of the Moscow State University, ZIN — Zoological Institute (St.-Petersburg, Russia).

Pseudomonospilus **gen.n.**

Type species *Pseudomonosplilus diporus* (Smirnov & Timms, 1983).

Body short. Valve without denticles. Two major head pores with narrow connection between them. Postabdomen short and wide. Its preanal angle clearly expressed. A few short anal teeth on dorso-distal angle of postabdomen. Claw with a large basal spine. AII with setae 0-0-3/1-1-3, spines 1-0-1/0-0-1. Either only an ocellus or both an eye and ocellus present. Intestine with convolutions. Both species retain the molted valves, in contrast to *Monospilus dispar* Sars, 1862. More specimes are necessary to obtain further morphological details.

Key to species of the genus *Pseudomonospilus*

1(2) Only ocellus present ..... *P. diporus* (Smirnov & Timms, 1983)
2(1) Ocellus and eye present ..... *P. biocellatus* (Smirnov, 1995)

Pseudomonospilus diporus (Smirnov & Timms, 1983)

Smirnov & Timms, 1983: 64–65, fig. 77 (*Monospilus*).

Holotype. Female AM P31299.

Paratypes. Females MGU 346, 3108, 3109, 3110; ZIN 3107, 3072.

MATERIAL. Several females from the Murray River.

Female. Shell surface with slightly expressed hexagons. Ventral setae short, but longer than in *Monospilus dispar*. Postabdomen with a few short distal anal teeth, lateral setae short, in groups. AII with setae 0-0-3/1-1-3, spines 1-0-1/0-0-1. Distal spines of AII noticeably exceed the length of distal segments. Only ocellus present. According to Griggs [2001], thoracic limb I with inner distal lobe having two long setae.

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Limb II of generally usual structure. Limb IV with exopodite having 3 setae. Limb V is small, its exopodite has two setae.

Length. 0.49 mm.

Male. Unknown.

ECOLOGY. Collected at pH 7.0–8.3.

TYPE LOCALITY. The Murray River at Mannum.

DISTRIBUTION. The Lower Murray-Darling system.

DIFFERENTIAL DIAGNOSIS. Only ocellus present. Short postabdomen, claw with a large basal spine, similar to *Monospilus dispar*. However, it possesses two interconnected major head pores, not one as in *M. dispar*. *P. diporus* has AII with a seta on one of basal segments (*Monospilus dispar* has no such seta).

Pseudomonospilus biocellatus (Smirnov, 1995)

Smirnov, 1995a: 3–6, figs 1–9 (*Monospilus*).

Holotype. Female AM P42692 (author's number 3609).

MATERIAL. One female from southwest Western Australia.

Female. Ventral setae of valve ca 50, short, but longer than in *Monospilus dispar*. Distal antennal spines just slightly exceed the length of distal segments. Ocellus and eye present. Postabdomen with a few short distal anal teeth followed by small spines up to the preanal angle. Claw with a basal spine. Length. 0.4 mm.

Male. Unknown.

TYPE LOCALITY. Southwest Western Australia.

DIFFERENTIAL DIAGNOSIS. Ocellus and eye present. Postabdomen is short. Claw with a basal spine.

Australospilus **gen.n.**

The type species *Australospilus elongatus* (Smirnov & Timms, 1983).

Body elongated oval in lateral view. Valve without denticles. P elongated. Claw with a small basal spine. AII with setae 0-0-3/0-1-3, spines 1-0-1/0-0-1 [Griggs, 2001]. Spines large. Only ocellus present, no eye. According to Griggs [2001], Thoracic limb I with IDL having two long setae unilaterally setulated along their distal part. While limb II is generally regular in structure, limbs III and IV are small, and limb V could not be found in any dissection. Exopodites of limbs III and IV are very small, in limb III with one long seta and two short setae, in limb IV with one long seta and one short seta.

Only one species from South Australia.

Australospilus elongatus (Smirnov & Timms, 1983)

Smirnov & Timms, 1983: 65–66, fig. 79 (*Monospilus*).

Holotype. Female AM P31300.

Paratypes. Females MGU 3111. 3113, 3114; ZIN 3112.

MATERIAL. Several females from South Australia.

Female. Body depth ca twice in length. Surface of carapace without sculpturing. Ventral setae slightly longer in the posterior part of valve. Rostrum blunt. Head pores not discerned. Labral lamella wide, rounded. Postabdomen elongated and slightly dilated in its posterior part. Preanal angle prominent. Preanal margin long, almost equal to the distance from the tip of preanal angle to claw base. Distal lateral setae solitary, reaching far beyond the dorsal margin of P. Proximal lateral setae much shorter, in groups. Anal teeth very small, hardly noticeable. Dorso-distal angle rounded. AI not reaching the tip of rostrum. Intestine convoluted.

Length. 0.48 mm.

Male. Unknown.

TYPE LOCALITY. The Murray River at Mannum.

DISTRIBUTION. The Murray-Darling system.

Alona Baird, 1843

Alona gurneyi Smirnov **sp.n.**

Gurney, 1927: 75–76, fig. 10 (*macrocopa*); Smirnov, 1989: 139, fig. 3 (*macrocopa*).

MATERIAL. Females from Horseshoe Lagoon, via Charters Towers, Queensland.

Holotype. Female in a slide MGU 3090-1.

Female. Body short in lateral view. According to Gurney [1927], the ventro-posterior angle of valve may have denticles and labral lamella may be notched. AI almost reaches the end of rostrum. AII with setae 0-0-3 (endopodite)/0-1-3(exopodite), spines 1-0-1(endopodite)/1-0-1(exopodite). The spine on the proximal segment of exopodite is twice as long as the length of the subsequent segment. Setae on distal antennal segments are differentiated.On the endopodite there are two long setae, slightly differing in length and one unarmed seta which is twice shorter than the others. One of the longer setae has a denticle at the joint between its proximal and distal segments, accompanied proximally by a few shorter spinules. On the exopodite there are two long setae somewhat differing in length and a short unarmed seta (about 1/3 of longer setae in length). One of longer setae is unilaterally setulated in its distal part, another long seta has a denticle at the joint between its proximal and distal segments, accompanied by shorter spinules along most of its proximal part. Postabdomen short, its dorso-distal angle not prominent. The preanal angle prominent, situated approximately in the middle of P. Thoracic limbs not studied. Ocellus smaller than eye.

Male. According to Gurney [1927], postabdomen is long and tapering, with a slightly concave dorsal side. Its ventral side somewhat protrudes beyond the claw base.

TYPE LOCALITY. Neighbourhood of Longreach (Queensland, Australia).

DISTRIBUTION. Queensland (Australia).

DIFFERENTIAL DIAGNOSIS. *Alona gurneyi* (as described by Gurney [1927] under the name *A. macrocopa*) differs from *A. macrocopa* Sars, 1894 and *A. imitatoria* Smirnov, 1989 in differentiated distal antennal setae. From other species of *Alona* species possessing a short high body and a short P, *A. gurneyi* differs in armament of distal antennal segments. On both antennal branches one of longer setae has a denticle at the joint between the proximal and distal segments; one seta on each antennal ramus is short (on the exopodite it is very short). Such differentiation is unique among chydorids and generally among anomopods. Ocellus is smaller than eye. In contrast to *A. imitatoria*, its ocellus is smaller than eye.

Alona elegans herbsti Herbst, 1964

Herbst, 1964: 40–48, figs 1–12 (*Alona elegans arcuata),* (*arcuata* — nomen preoccupatum).

Non *Alona arcuata* Sars, 1916.

Alona inovata Rey & Vasquez, 1986 **comb.n.**

Rey & Vasquez, 1986: 225–229, pl. III, IV (*Alona ovata* — nomen preoccupatum).

Non *Alona ovata* Baird, 1850.

Incertae sedis

Alona bergi Røen, 1992 syn. *Alona guttata* Sars. Røen noted its similarity to *A. guttata.* The features suggested by Røen are insufficient for separation of a new species, the more so as the description is very incomplete and contains no necessary information of appendages, head pores, etc.

Alona fabricii Røen, 1992 and *Alona muelleri* RÝen, 1992 syn . *Alona rustica* Scott, 1895. Both descriptions, though incomplete, fit rather well to the characters of *Alona rustica. Alona muelleri* is also nomen preoccupatum (*Alona muelleri* Richard, 1897 syn. *Karualona karua* (King, 1853).

Synonyma nova

Alona guttata Hellich, 1877: 92–93, figs 49, 50 (the latter figure showing postabdomen characteristic of *A. rectangula*) syn. *Alona rectangula* Sars, 1862.

Camptocercus vietnamensis Thanh, 1980: 233–234, fig. 144 syn. *Camptocercus uncinatus* Smirnov, 1971.

Indialona jabalpurensis Rane, 1983 syn. *Alona macronyx* Daday, 1898.

Generally, information on the Aloninae is much advanced and 24 genera are now discerned vs 15 genera in 1971 [Smirnov, 1971]. In view of essential changes, the key for the genera of this subfamily is suggested below. Uncertainties in the key obviously reflect the unsettled state of the system of this group.

Key to genera of the Aloninae

1(2) Rostrum very long and incurved backwards. P with two especially large distal anal teeth and a few very small proximal anal teeth ..... 23. *Rhynchotalona* Norman, 1903

2(1) Other combination of characters.

3(8) P very wide and elongated, with widely convex dorsal side.

4(7) P with small anal teeth.

5(6) P with averaged-sized lateral setae. Two interconnected major head pores. Valve with small denticles at ventro-posterior angle ..... 22. *Karualona* Dumont & Silva-Briano, 2000

6(5) P with very long lateral setae and very small (hardly noticeable) anal teeth. Anterior end of head shield blunt. Three interconnected major head pores, closely spaced. Valve without dentocles at ventro-posterior angle ..... 21. *Leydigia* Kurz, 1875

7(4) P with small lateral setae and large anal teeth. There is a long rostrum. Two major head pores with wide connection between them ..... 20. *Leydigiopsis* Sars, 1901

8(3) P not very wide and large.

9(24) P very long and narrow.

10(21) P tapering distally.

11(12) There is a long rostrum ..... 19. *Kurzia* Dybowski & Grochowski, 1894

12(11) No rostrum.

13(20) Postabdominal claw with a long basal spine. Two or three major head pores.

14(15) P and body very elongated. Shell keeled ..... 18. *Camptocercus* Baird, 1843

15(14) P and body less elongated. Shell not keeled.

16(19) Three interconnected major head pores. Anal teeth gradually decreasing in size proximally.

17(18) Postabdomen straight, relatively short, length/width = 2.7 or slightly longer ..... 17. *Parakozhowia* Kotov, 2000
A single species *P. baicalensis* (Vasiljeva & Smirnov, 1969) from Lake Baikal.

18(17) Postabdomen slightly or markedly bent, more elongate, length/width > 3.4 ..... 16. *Kozhowia* Vasiljeva & Smirnov, 1969
Endemic to Lake Baikal.

19(16) Major head pores separate. A 2-3 distal anal teeth especially long ..... 15. *Oxyurella* Dybowski & Grochowski, 1894

20(13) Postabdominal claw with a short basal spine. Shell not keeled. One major head pore ..... 14. *Euryalona* Sars, 1901

21(10) P with parallel dorsal and ventral margins (at least in its distal half).

22(23) There is a tubercle with setae on the dorsal side of the claw base. There are three major head pores with narrow connection between them ..... 13. *Acroperus* Baird, 1843

23(22) No such tubercle at the claw base. Two widely connected major head pores ..... 12. *Tretocephala* Frey, 1965

24(9) P not very long and narrow.

25(30) P cuneiform (rather short and without distal dorsal angle).

26(29) Body lenticular. Basal spine of the claw not very small.

27(28) Distal part of P narrow. One major head pore ..... 11. *Indialona* Petkovski, 1966
One species *Indialona ganapati* Petkovski, 1966, distribution — India.

28(27) Distal part of P wide. Three major head pores ..... 10. *Leberis* Smirnov, 1989
One species *L. aenigmatosa* Smirnov, 1989, distibution: Australia.

29(26) Body flattened dorso-ventrally, its ventral side straight in lateral view. Anterior side of head shield widely rounded. Shell clearly reticulated. Basal spine of the claw very small .... 9. *Graptoleberis* Sars, 1862
One species *G. testudinaria*, distribution — worldwide.

30(25) P not cuneiform.

31(34) P short, with a few anal teeth on its distal dorsal angle.

32(33) One head pore. Only ocellus is present, no eye. Shell retains valves of past instars, so there are concentric circles on it (except in the period of bisexual reproduction) ..... 8. *Monospilus* Sars, 1862
One species *M. dispar* Sars, 1862, distribution: Holarctic and Ethiopian regions.

33(32) Two major head pores with narrow connection between them. Either only ocellus or eye and ocellus present ..... 7. *Pseudomonospilus* gen.n.
Distribution: Australia.

34(31) P different.

35(36) P comparatively elongated, with very small anal teeth. Head pore peculiar, with lateral chitinous swellings. Labral lamella with small indentations ..... 6. *Notoalona* Rajapaksa & Fernando, 1987

36(35) Other characters.

37(38) Only two setae on one of distal antennal segments. Only ocellus present. Basal spine straight, about 1/2 claw length ..... 5. *Bryospilus* Frey, 1980

38(37) Three setae on both distal antennal segments.
39(40) P wide distally, with big single lateral setae. Only ocellus present. Basal spine of the claw very small ... . 4. *Australospilus* gen.n. One species *A. elongatus* (Smirnov & Timms, 1983), distribution: Australia.
40(39) Other characters.
41(42) Exopodite of limb V with 3 setae. Eye and ocellus absent. Basal spine of the claw long. Three interconnected major head pores .... 3. *Spinalona* Ciros-Perez & Elias Gutierrez, 1997 One species *S. anophtalma* Ciros-Perez & Elias-Gutierrez, 1997, Distribution: Mexico.
42(41) Exopodite of limb V with 4 setae.
43(44) Body deep. P of moderate size, its distal dorsal angle rounded. Head shield with widely rounded anterior and posterior sides, with three interconnected major head pores ..... 2. *Celsinotum* Frey, 1991
44(43) Different combination of characters than in the above genera.
45(46) Major head pores three, anterior and posterior pores large, transversely subquadrangular .... 24. *Nicsmirnovius* Chiambeng & Dumont, 1999
46(45) Major head pores three or two, but pores not transversely subquadrangular . 1. *Alona* Baird, 1843 (including *Biapertura* Smirnov, 1971)

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