

**SINODINA, A NEW GENUS OF FRESHWATER SHRIMPS
(CRUSTACEA: DECAPODA: ATYIDAE) FROM SOUTHERN
CHINA, WITH DESCRIPTIONS OF
THREE NEW SPECIES**

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ABSTRACT. - *Sinodina*, a new genus, is established for *Caridina gregoriana* Kemp, 1923 and its allied species, *C. yui* Liang & Yan, 1985, *C. acutipoda* Liang, 1989 and *C. bispinosa* Liang & Yan, 1990, which are, so far, known only from southern China. The taxonomic status of the new genus is discussed and three new species, viz. *Sinodina dianica*, *S. wangtai* and *S. lijiang*, from Yunnan are described.

KEY WORDS. - Atyidae, *Sinodina*, new genus, new species, southern China

INTRODUCTION

The atyid shrimps of Yunnan Province (Fig. 1) in China is more diverse than any other part of China. With 21 species described thus far (Kemp, 1923; Yu, 1938; Liang et al., 1984; Liang & Yan, 1985; Liang et al., 1987; Liang, 1989; Liang 1990; Cai, 1996; Cai & Duan, 1998; Cai & Liang, 1999; Cai & Dai, 1999; and Cai & Ng, in press).

While revising the atyid shrimps from Yunnan, the authors found that in addition to the differences been noted by Kemp (1923) and Liang (1990), there are some other key characters which can be used to separate *Caridina gregoriana* Kemp, 1923 and allied species from other congeners. These differences seem to be sufficient to justify a generic separation. *Sinodina*, new genus, is herein established for *Caridina gregoriana* and its allied species. The taxonomic status of the new genus is discussed and three new species are also described. The material used for present study are kept in the Shanghai Fisheries University, Shanghai (SFU), Institute of Zoology, Chinese Academy of Sciences, Beijing (IZAS), P. R. China,

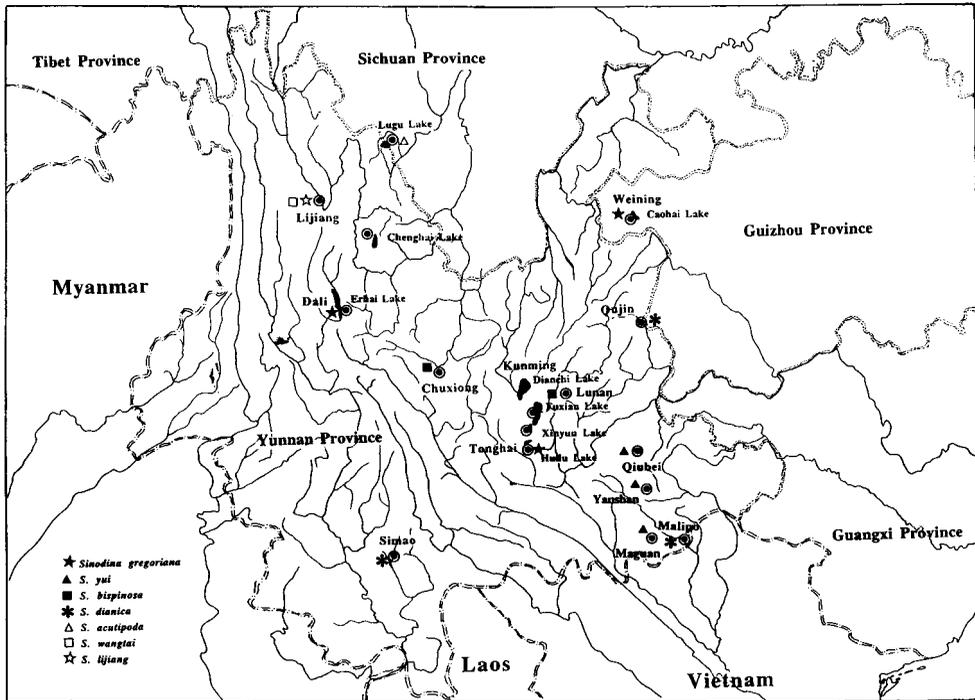


Fig. 1. Distribution of the genus *Sinodina*

Zoological Reference Collection, Department of Biological Sciences, National University of Singapore, Singapore (ZRC) and Natural History Museum, London (BMNH).

The following abbreviations are used: cl. as carapace length (measured from the postorbital margin to the posterior margin of carapace), tl. as total length (measured from the tip of rostrum to the posterior margin of the telson). Notation for rostral formula follows that of Chace & Bruce (1993).

TAXONOMY

FAMILY ATYIDAE

Sinodina, new genus

Type species:- *Caridina gregoriana* Kemp, 1923, by present designation.

Diagnosis. - Eye developed; antennular peduncle slender; antennal spine sharp, situated below inferior orbital angle, pterygostomial margin broadly rounded; telson terminating in a triangular angle, with 6-10 pairs of dorsal spinules along lateral margin; mandible with 4-6 teeth at extremity of incisor process; maxillula with simple palp, lower lacinia broad round, upper lacinia short, inner edge straight, with several rows of setae and teeth; maxilla with slender palp, upper endite subdivided; scaphocerite tapering with numerous long simple setae at its end. Palp of 1st maxilliped ends in a broadly triangular angle; endopod of 2nd maxilliped with fused dactylus and propodus; 3rd maxilliped ending in single terminal claw;

branchial formula as follows, with the podobranch only a simple lamella:

	Maxilliped			Pereiopods				
	1	2	3	1	2	3	4	5
Pleurobranch	-	-	-	+	+	+	+	+
Arthorbranch	-	-	+	+	-	-	-	-
Podobranch	-	r	-	-	-	-	-	-
Epipodite	-	-	+	+	+	+	+	-
Exopodite	+	+	+	-	-	-	-	-

First and 2nd pereiopods with carpus excavated anteriorly, fingers with brushes of setae; 3rd and 4th pereiopods sexually dimorphic, male with propodus dilated distally at flexor margin, armed with numerous small spinules, dactylus long, about half as long as propodus, with 15-30 spines at flexor margin; female with propodus not dilated, dactylus long, flexor margin with 10-21 spines; male 3rd pereiopod distinctively longer than that of female; endopod of male 1st pleopod sub-rectangular, with appendix interna; appendix masculina of male 2nd pleopod sub-cylindrical, spinose over distal margin; uropodal diaeresis with 10-20 spinulus; eggs large, size 0.72-0.87 x 1.13-1.27mm.

Etymology. - The name is derived from the Latin 'Sino' for China, the known range of the new genus in arbitrary combination with the last four letters of the genus *Caridina*. Gender feminine.

Distribution. - Yunnan, Sichuan and Guizhou Provinces of south-western China.

Habitat. - Lakes and mountain streams with an altitude of 2000-3000 metres above sea level.

Remarks. - With respect to the branchial formula, *Sinodina*, new genus, is most similar to *Caridina* H. Milne Edwards, 1837, and *Neocaridina* Kubo, 1938, but can be distinguished by the simple structure of its podobranch; the large number of spines (15-30 in males and 10-21 in females) on the propodi of the third and fourth pereiopods, and the unusual sexual modification of propodus of third and fourth pereiopod, which is distinctively dilated in male.

When he described *Caridina gregoriana*, Kemp (1923: 441) pointed out that it '...appears to be distinguished from all other species of the genus by the large number of spinules on the dactyli of the third and fourth legs and by the peculiar modification which these legs undergo in males'; "...both in the modified legs of the male and in the large number of dactylar spinules on the third and fourth legs, *Caridina gregoriana* resembles the two species of *Paratya* [*P. compressa* (de Haan) and *P. curvirostris* (Heller)]; "...These are striking features, but it would hardly be legitimate to assume without further evidence that the species forms a link between the two genera and was derived directly from *Paratya* by the suppression of the exopods of the legs and of the supra-orbital spines". Taking the sexual dimorphism and the dilated distal part of the third and the fourth pereiopods into account, there are some species of other atyid genera similar to *Sinodina*, viz. *Holocaridinides* Suzuki & Shokita, 1979 (viz. *H. fowlei* (Gordon, 1968)), *Puteonator* Gurney, 1987 (viz. *P. iraqiensis* Gurney, 1987), and *Neocaridina* Kubo, 1938 (viz. *N. euspinosa* Cai, 1996). *Sinodina* differs from *Holocaridinides* by having arthrobranches on third maxilliped and first pereiopod; from

Puteonator by having an arthrobranch on the first pereopod; and *Neocaridina* by having a less developed podobranch on the second maxilliped and a male first pleopod with no dilated endopod.

The adaptive significance of the simple structure of the podobranch remains unknown. The endopod of male first pleopod of the new genus totally differs from that of *Neocaridina*, but is similar to that of *Caridina*. Taking the branchial formula into account, together with the above consideration, *Sinodina*, new genus, should be referred to the subfamily Atyinae.

So far, seven species of the genus *Sinodina* are known, viz. *Sinodina gregoriana* (Kemp, 1923), *S. yui* (Liang & Yan, 1985), *S. acutipoda* (Liang, 1989), *S. bispinosa* (Liang & Yan, 1990), *S. dianica* new species, *S. wantai*, new species and *S. lijiang*, new species. These species may be separated by the following key:

KEY TO SPECIES OF *SINODINA*, NEW GENUS

1. Rostrum with more than 6 ventral teeth *Sinodina yui*.
- Rostrum with less than 6 ventral teeth 2
2. More than 5 post-orbital teeth *S. gregoriana*
- Less than 5 post-orbital teeth 3
3. Rostrum reaching beyond end of antennular peduncle *S. wantai*
- Rostrum not reaching beyond end of antennular peduncle 4
4. Dactylus of male third pereopod with less than 20 spinules 5
- Dactylus of male third pereopod with more than 20 spinules 6
5. Rostrum with 1-2 sub-distal teeth, dactylus of 3rd pereopods with 16-19 spinules in male, 13-15 spinules in female *S. dianica*
- Rostrum without sub-distal teeth, dactylus of 3rd pereopods with 17-19 spinules in male, about 15 spinules in female *S. acutipoda*
6. Dactylus of 3rd pereopods with 22-29 spinules in male, 19-21 spinules in females, endopod of male 1st pleopod sigmoid *S. bispinosa*
- Dactylus of 3rd pereopods with about 27 spinules in male, 18-19 spinules in female, endopod of male 1st pleopod rectangular *S. lijiangensis*

Sinodina gregoriana (Kemp, 1923)

(Fig. 2)

Caridina gregoriana Kemp, 1923:437-442, figs. 1-2. [type locality: Talifu (Erhai) lake, Yunnan, China]

Caridina gregoriana - Liang & Yan, 1985:196; 1986:197; Liang, 1990:218.

not *Caridina gregoriana*- Yu, 1938:286.

Materials examined. - Lectotype (present designation): male, cl. 5.1mm (BMNH.1923.4.23.1-10), Tali-fu (Erhai Lake), near Dali city, Yunnan, 23 Apr.1923. Paralectotypes: 10 males, cl. 3.5-6.4mm, 5 females (3 ovigerous), cl. 6.2-6.8mm, data same as lectotype (BMNH.1923.4.23.1-10). Others: 1 male, 1 female, shachun village near Erhai Lake, 28 Jul.1933 (IZAS); 2 males, 5 females, Xinxinyi village along Erhai Lake, 28 Jul.1933 (IZAS); 2 females, cl. 5.0-5.5mm, Huilu Lake, Tonghai County, Yunnan, 27 Apr.1965 (IZAS); 10 males, 10 females, Caohai Lake, Weining County of Guizhou Province, 18 May.1984 (SFU).

Diagnosis. - Rostrum reaching middle of 3rd segment of antennular peduncle, or beyond end of this segment, rostral formula: 4-7+3-8+1-2/0-4; telson with 6-9 pairs of dorsal spines, ending in triangular apex; dactylus of 3rd pereiopod with 22-27 spinules in males and 18-23 in females; male 1st pleopod endopod sub-rectangular, 2.5 times as long as broad, appendix interna reaching slightly beyond end of endopod; uropod diaeresis with 9-11 spinules; egg size 0.62-0.83x1.0-1.22mm.

Distribution. - Yunnan, Guizhou, south-western China.

Remarks. - In Kemp's (1923) original description, he stated that the types of *Caridina gregoriana* were kept in Zoological Survey of Indian. In the BMNH, there is one lot of Kemp's specimens of *Caridina gregoriana*, all of which are syntypes. The fact that more and more species within the group are being found, and the high degree of variations in *S. gregoriana* makes it necessary to designate a lectotype to stabilise the taxonomic statue of *S. gregoriana* and the new genus. A male specimen of this BMNH lot with carapace length 5.1mm is herein chosen as the lectotype.

Yu (1938) redescribed *C. gregoriana* on the basis of material from some unspecific localities in Yunnan; and provided figures of the two forms of this species. Liang & Yan (1985), however, on the basis of fresh material, redescribed one of Yu's forms as new species, *Caridina yui*. The other form was also redescribed as a new species, *Caridina leptopropoda*. Liang (1990), although no fresh material was found. The former is also being moved to *Sinodina* in the present paper, while the latter remains in *Caridina*. According to the original

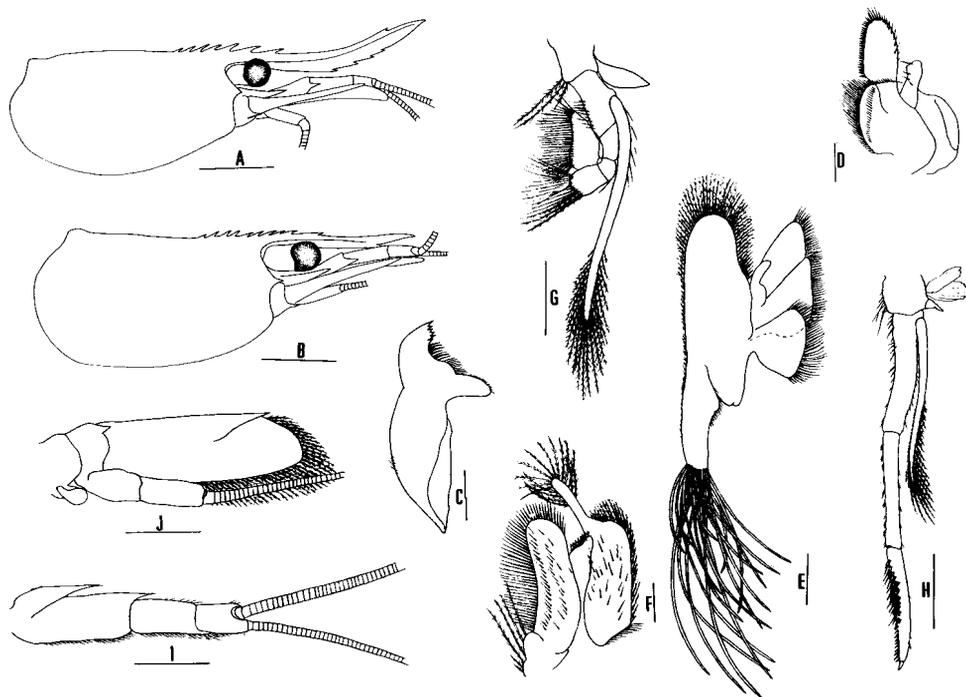


Fig. 2. *Sinodina gregoriana*. A. cephalothorax, female, cl. 5.0mm (IZAS), Huilu lake, Tonghai County; B. cephalothorax, lectotype, male (BMNH), cl. 5.1mm, Erhai lake, Dali County; C. mandible; D. maxillula; E. maxilla; F. first maxilliped; G. second maxilliped; H. third maxilliped; I. antennular peduncle; J. scaphocerite. Scales: A,B=2mm, C,D,E,F=0.5mm, G,H,I,J=1mm.

figures by Yu (1938), the male propodus of the third pereopod of *C. leptopoda* is not dilated. The material described by Yu (1938) is no longer extant (Cai & Ng, 1999). The lack of specimens make the structure of the podobranch unknown, so that the generic status of *Caridina leptopoda* cannot be determined for the time being.

Due to changes in the ecological environment, *Sinodina gregoriana* has disappeared from Erhai Lake some years ago, but is found in Chaohai Lake where ecological conditions remain suitable (Liang, 1990).

Two females specimens from Huilu lake, Tonghai County are doubtfully referred to this species, with both specimens having an extremely long rostrum which is longer than the length of carapace, and reaching distinctively beyond the distal margin of scaphocerite, being upturned along the distal half (Fig. 2a). This form is not among the syntypes examined, although Kemp (1923:437) stated that for the rostrum in some specimens "... occasionally it is longer, sometimes considerably exceeding the length of peduncle". No other significant differences are found between Huilu Lake specimens and the types.

Sinodina yui (Liang & Yan, 1985)

Caridina gregoriana - Yu, 1938:286(part), fig. 6i-n.

Caridina yui Liang & Yan, 1985:200, fig. 4; Liang, 1990:220. (type locality: Shuanglongyin village, Qiubei County, southern Yunnan)

Materials examined. - One male, cl. 6.2mm (holotype, SFU 83-69-1), coll. X. Liang & S. Yan, 18 May, 1983, Shuanglongyin village, Qiubei County of Yunnan; one female, cl. 4.8mm (paratype, SFU 83-69-2), data as holotype.

Diagnosis. - Rostrum slightly overreaching end of antennular peduncle, rostral formula: 2-7+3-6+1-2/6-12; telson with 9-12 pairs of dorsal spines, ending in triangular apex; dactylus of 3rd pereopod with 19-23 spinules in males and 14-17 in females; male 1st pleopod endopod sub-rectangular, 2.5 times as long as broad, concaved in inner margin, appendix interna overreaching end of endopod; uropodal diaeresis with 10-14 spinules; egg size 0.80-0.86x1.14-1.25mm.

Habitat. - Found at lakes or streams connected to lakes.

Distribution. - Qiubei, Yanshan and Maguan Counties in southern Yunnan, China. (Liang & Yan, 1985)

Sinodina acutipoda (Liang, 1989)

Caridina acutipoda Liang, 1989:282; fig. 1-10. [type locality: Lugu Lake, Yunnan and Sichuang, China]-Liang, 1990:221.

Materials examined. - one male, cl. 3.2mm (holotype, SFU 86-11-1), coll. H. He & H. Xian, 4 May, 1986, Lugu Lake, Yunnan; one female, cl. 5.4mm (paratype, SFU 86-11-2), data as holotype.

Diagnosis. - Rostrum reaching middle to end of 3rd segment of antennular peduncle, rostral formula: 3-6+8-9/1-3; telson with 7-8 pairs of dorsal spines, ending in triangular apex; dactylus of 3rd pereopod with about 15 spinules in males and 17-19 in females; male 1st pleopod

endopod sub-rectangular, 2.5 times as long as broad, appendix interna distinctly overreaching end of endopod, curved inwards; uropod diaeresis with 10-11 spinules; egg size unknown.

Habitat. - Living at the edge of lake.

Distribution. - Known only from Lugu Lake, located between Yunnan and Sichuan Provinces, China. (Liang, 1989; 1990)

***Sinodina bispinosa* (Liang & Yan, 1990)**

Caridina bispinosa, Liang & Yan, in Liang, 1990:221, fig. 3. (type locality: Jiulongdian village, Chuxiong, Yunnan, China)

Material examined. - two females, cl. 5.2-6.2mm (IZAS), Jianfeng Pond, Silin (stone forest), Lunan County, Yunnan, 30 Oct.1978.

Diagnosis. - Rostrum reaching middle of 3rd segment of antennular peduncle, rostral formula: 0-2+4-7+1-2/1-3; telson with 6-7 pairs of dorsal spines, ending in triangular apex; dactylus of 3rd pereopod with 22-29 spinules in males and 19-21 in females; male 1st pleopod endopod sub-rectangular, 2.5 times as long as broad, appendix interna overreaching end of endopod; uropodal diaeresis with 10-12 spinules; egg size 0.72-0.78x1.17-1.23mm.

Habitat. - Mountain streams.

Distribution. - Chuxiong and Lunan Counties, central Yunnan, China.

***Sinodina dianica*, new species**

(Figs. 3-4)

Materials examined. - Holotype: male, cl. 6.5mm (IZAS), 27 Aug.1993, elevation: 1300 metres, Malipo village, Wenshan County, south Yunnan. Paratypes: 6 males, CL: 6.0-7.0mm; 2 females, CL: 6.5-7.0mm, data same as holotype (IZAS, ZRC).

Description. - Rostrum short, reaching to middle or end of 2nd segment of antennular peduncle, rostral formula: 2-4+3-5+1-2/2-3; inferior orbital angle of carapace fused with antennal spine; pterygostomial angle rectangular; 6th abdominal somite about twice as long as 5th somite; telson (not including margin spines) slightly longer than 6th abdomen somite, armed at posterior 2/3 with about 6 pairs of spinules and a pair of dorsolateral spines near distal end, ending in a projection, distal margin with 7-8 setae; eyes well developed, Antennular peduncle slender, about 0.6 times as long as carapace, basal segment slightly longer than half of peduncle. Stylocerite reaching 0.8 length of basal segment.

Mouth parts as figured. Mandible with about 5 teeth at extremity of incisor process, maxillula with simple palp, lower lacinia broadly rounded, upper lacinia broadly elongated, inner edge straight, with several rows of setae; maxilla with slender palp, upper endite subdivided, scaphocerite tapering with numerous long simple setae at distal end. Endopod of 1st maxilliped with a triangular end. Endopod of 2nd maxilliped with ultimate and penultimate segment fused. Third maxilliped reaching slightly beyond end of antennular peduncle, ultimate segment as long as penultimate segment.

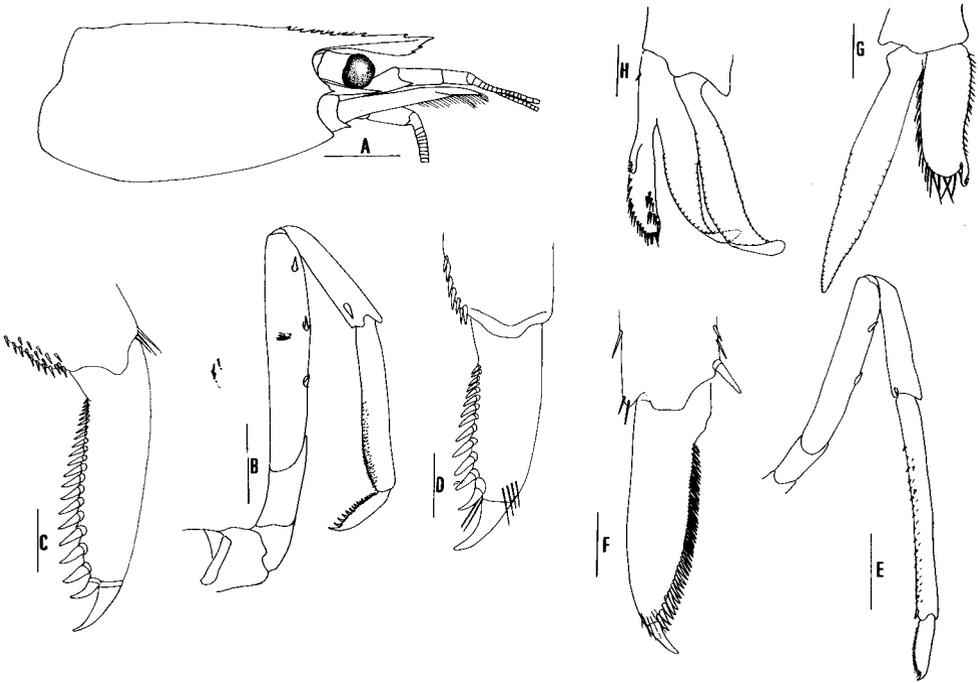


Fig. 3. *Sinodina dianica*, new species. A. cephalothorax. paratype, cl. 6.2mm (IZAS); B. third pereiopod, male. cl. 6.2mm (IZAS); C. dactylus of third pereiopod, same specimen; D. dactylus of third pereiopod, female, cl. 6.7mm (IZAS); E. fifth pereiopod, male, cl. 6.4mm (IZAS); F. dactylus of fifth pereiopod; G. male first pleopod; H. male second pleopod. Scales: A=2mm, B,E=1mm, C,D,F=0.2mm, G,H=0.5mm.

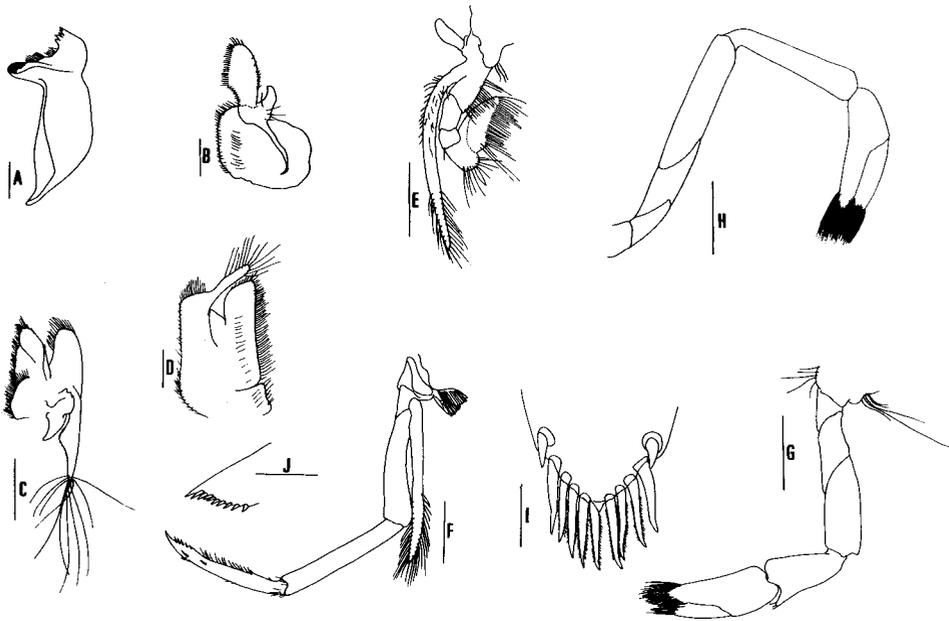


Fig. 4. *Sinodina dianica*, new species, male, cl. 6.4mm (IZAS) A. mandible, B. maxillula, C. maxilla, D. first maxilliped, E. second maxilliped, F. third maxilliped, G. first pereiopod, H. second pereiopod, I. distal portion of telson, J. uropodal diaeresis. Scales: A, B, D, I=0.2mm; C, E, F, J=0.5mm; G, H=1mm.

First pereiopod short, reaching to end of basal segment of antennal peduncle, chela about 1.7 times as long as broad, fingers slightly longer than palm; carpus shorter than chela, 1.7 times as long as high, deeply concave anteriorly, merus slightly shorter than chela but longer than carpus. Second pereiopod slender, reaching to end of second segment of antennular peduncle, chela 3.2 times as long as broad; fingers 1.6 times as long as palm; carpus slightly longer than chela, 4 times as long as high; concave anteriorly; merus as long as carpus. Third pereiopod reaching beyond end of antennular peduncle, sexually dimorphic, male 3rd pereiopod with propodus 5.4 times as long as broad, slightly dilated at anterior part of posterior surface, with numerous small spinules; dactylus terminating in a claw, with 16-19 accessory spines on flexor margin. Female 3rd pereiopod with propodus 6.6 times as long as broad, not dilated and with few spinules, dactylus with 13-15 accessory spines on flexor margin. Fourth pereiopod also sexually dimorphic, similar to 3rd pereiopod in form. Fifth pereiopod reaching beyond end of antennular peduncle, propodus slender, about 10 times as long as broad and 3.2 times as long as dactylus; dactylus with about 50 spinules on flexor margin.

Endopod of male 1st pleopod sub-rectangular, slightly concaved innerly, extending to half of exopod, 3.0 times as long as broad, rounded in terminal margin; appendix interna overreaching terminal margin by half of its length, with spinules longer outerly than innerly. Appendix masculina of male 2nd pleopod reaching to proximal 3/4 length of endopod, slightly concave on inner surface and with numerous spinules, appendix interna 1/3 of length of appendix masculina.

Uropodal diaeresis with 10 spines.

Habitat. - Found in mountain streams and ponds.

Etymology. - *Sinodina dianica*, is named after the province name of the type locality, Yunnan, which is shortened as 'Dian' in China.

Remarks. - *Sinodina dianica*, new species, is similar to *S. gregoriana*, *S. bispinosa* and *S. yui*, but differs from these species by the rostral formula and the number of the spinules on the third pereiopods. It can be distinguished from *S. gregoriana* by having fewer post-orbital teeth on carapace (2-4 vs. 5-7) and fewer spinules on the third pereiopod dactylus (males: 16-18 vs. 22-27; females: 13-15 vs. 18-23); and from *S. bispinosa* by having 1 or 2 sub-distal rostral teeth (vs. without sub-distal rostral teeth), and the number of spinules on the third pereiopod dactylus (males: 16-18 vs 22-29; females: 13-15 vs. 19-21); from *S. yui* by having fewer ventral rostral teeth (2-3 vs. 6-12) and the spinules on dactylus of the male third pereiopod (16-18 vs. 19-23).

Sinodina wangtai, new species

(Figs. 5-6)

Materials examined. - Holotype: male, cl. 7.3mm (IZAS dian 65-132), Wantai village, Lijing County, 14 Apr. 1965. Paratypes: 2 males, cl. 44-73; 2 females, cl. 67-82, date same as holotype (IZAS, ZRC).

Description. - Rostrum long, reaching beyond end of antennular peduncle, rostral formula: 2+8+1/1-3, antennal spine below inferior orbital angle of carapace. Pterygostomial angle rounded.

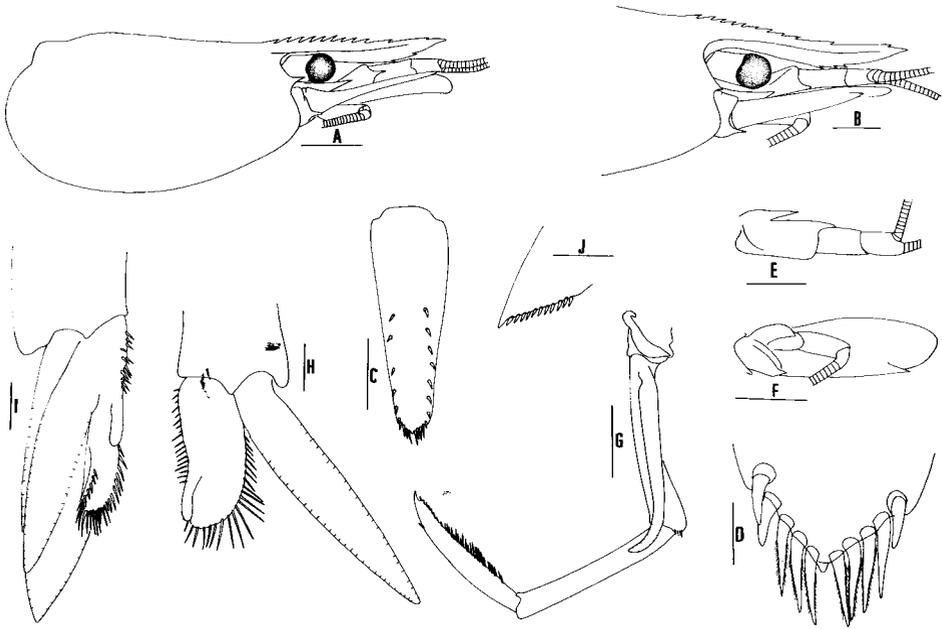


Fig. 5. *Sinodina wantai*, new species. A. cephalothorax, paratype, male, cl. 7.1mm (IZAS); B. anterior portion of cephalothorax, holotype, cl. 7.3mm; C. telson, paratype, cl. 7.1mm; D. distal portion of telson; E. antennular peduncle; F. scaphocerite; G. third maxilliped; H. male first pleopod; I. male second pleopod; J. uropodal diaeresis. Scales: A=2mm, B,C,E,F=1mm, D=0.2mm, H, I, J=0.5mm; G=1mm.

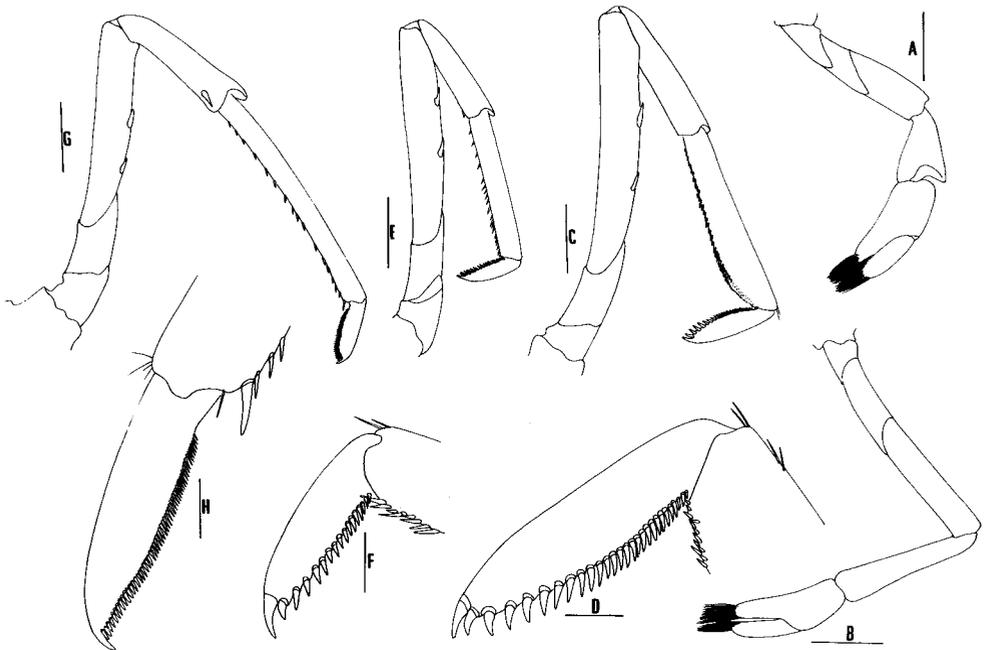


Fig. 6. *Sinodina wantai*, new species, paratype, male, cl. 7.1mm (IZAS). A. first pereiopod; B. second pereiopod; C. third pereiopod; D. dactylus of third pereiopod; E. third pereiopod, female; F. dactylus of third pereiopod, same specimen; G. fifth pereiopod; H. dactylus of third pereiopod. Scales: A, B, C, E, G=1mm. D,F,H=0.2mm.

Sixth abdominal segment 1.4 times as long as fifth segment, 0.7 times as long as telson. Telson armed with 6 pairs of dorsal spinules and a pair of dorsolateral spines near distal end; telson tapering posteriorly, ending in a triangular median angle; dorsal margin with about 8 plumose setae.

Eyes well developed. Second segment of antennular peduncle twice as long as third segment; anterolateral angle reaching 1/3 length of second segment. Scaphocerite with outer margin straight, 3.2 times as long as broad. Branchial formula normal. Third maxilliped reaching end of 2nd segment of antennular peduncle, ultimate segment slightly shorter than penultimate segment.

First pereopod stout, reaching end of 1st segment of antennular peduncle, dactylus 2.4 times as long as broad, fingers slightly longer than palm; carpus shorter than chela, deeply concave anteriorly, 1.6 times as long as high. Second pereopod slender, reaching to end of 2nd segment of antennular peduncle; dactylus 1.3 times as long as broad, carpus slightly longer than chela, 4.0 as long as high. Third pereopod reaching end of antennular peduncle, its form sexually dimorphic; male third pereopod with propodus 5.4 times as long as broad, slightly dilated at anterior part of posterior surface, with numerous small spinules; dactylus terminating in a claw, with 23-25 accessory spines on flexor margin. Female 3rd pereopod with propodus 8.0 times as long as broad, not dilated and with few spinules at the posterior margin, dactylus with 16-18 accessory spines on flexor margin. Fourth pereopod overreaching end of 2nd segment of antennular peduncle, similar to 3rd pereopod in form. Fifth pereopod reaching beyond end of second segment of antennular peduncle, dactylus with about 53 spinules on its flexor margin.

Endopod of male 1st pleopod sub-rectangular, slightly concave innerly, extending to half of exopod, 2.8 times as long as broad, rounded along terminal margin; appendix interna not overreaching terminal margin of endopod, with outer spinules longer than inner ones. Appendix masculina of male 2nd pleopod extending to proximal 3/4 length of endopod, with slightly concave on inner surface, with numerous spinules along edge of this concave margin; appendix interna measuring about 1/3 of length of appendix masculina.

Uropodal diaeresis with about 11 spinules.

Etymology. - The new species is named after its type locality, Wangtai village of Lijiang County, Yunnan province, used as noun in apposition.

Habitat. - Unknown.

Remarks. - Within *Sinodina*, *S. wangtai* is similar to *S. gregoriana* and *S. yui* in having a long rostrum overreaching the end of antennular peduncle, it can be readily separated from *S. gregoriana* by the less post-orbital teeth on the carapace (2 vs. 5-7); from the latter by less ventral teeth on the rostrum (1-3 vs. 6-12).

***Sinodina lijiang*, new species**

(Fig. 7)

Materials examined. - Holotype: male, cl. 6.6mm (SFU 83-78-01), Lijiang County, Yunnan Province, coll. X. Liang & S. Yan, 26 Apr. 1983. Paratypes: 2 ovigerous females, cl. 6.4-7.2mm, data same as holotype.

Description. - Rostrum reaching or slightly beyond end of second segment of antennular peduncle, rostral formula: 2-3+7-8+1/1-2. Pterygostomial angle rounded.

Telson armed with 6-7 pairs of dorsal spinules and a pair of dorsolateral spines near distal end; telson tapering posteriorly, ending in a triangular median angle; distal margin with 8-10 plumose setae.

Mouth parts normal, 3rd maxilliped reaching end of antennular peduncle, ultimate segment as long as or slightly longer than penultimate segment.

First pereiopod short, reaching cornea of eye, chela about 2.2 times as long as broad; fingers as long as or slightly longer than palm; carpus about 1.5 times as long as high. Second pereiopod reaching end of second segment of antennular peduncle, chela 2.8 times as long as broad; fingers 1.4 times as long as palm; carpus 4.3 times as long as high. Third pereiopod reaching or slightly overreaching end of scaphocerite in male, and reaching end of 3rd segment of antennular peduncle, sexually dimorphic; male third pereiopod with propodus 5.3 times as long as broad, 1.9 times as long as dactylus, slightly dilated at anterior part of posterior surface, with numerous small spinules; dactylus terminating in a claw, with 27 accessory spines on flexor margin. Female 3rd pereiopod with propodus 7.5 times as long as broad, 2.5 times as long as dactylus, not dilated and with few spinules, dactylus with 18-19 accessory spines on flexor margin. Fourth pereiopod overreaching end of second segment of antennular peduncle, similar to third pereiopod in form. Fifth pereiopod reaching to or slightly beyond

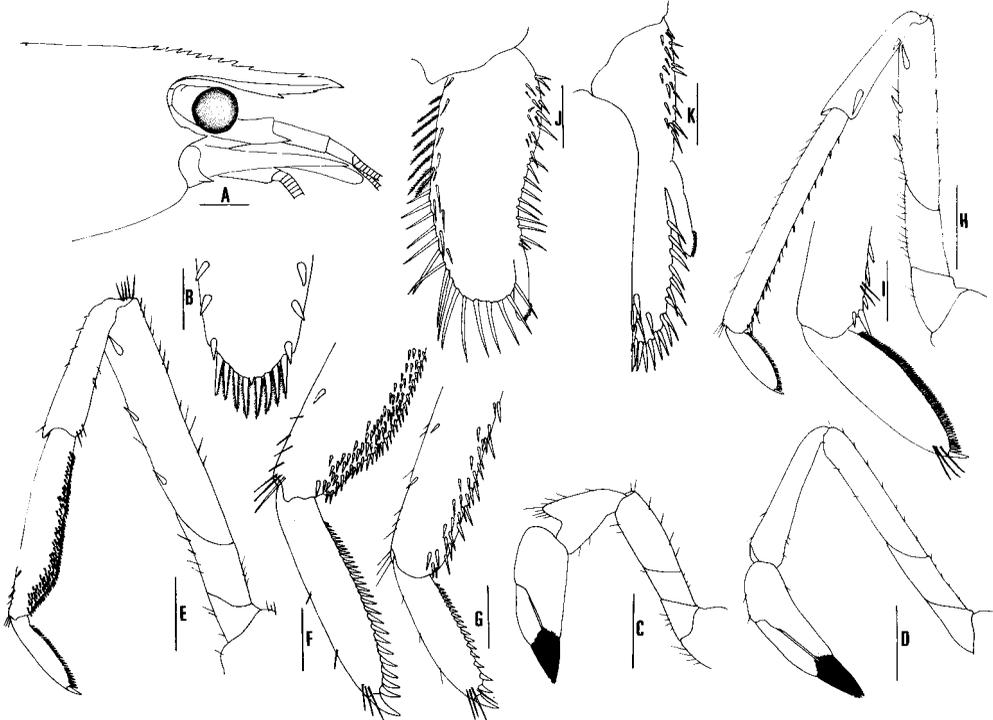


Fig. 7. *Sinodina lijiang*, new species. paratype, female cl. 6.4mm (SFU). A. anterior portion of cephalothorax; B. distal portion of telson; C. first pereiopod; D. second pereiopod; E. third pereiopod, male; F. dactylus, same specimen; G. third pereiopod, female; H. fifth pereiopod; I. dactylus of fifth pereiopod; J. male first pleopod; K. male second pleopod. Scales: A=1mm, B, J, K, F, G, I=0.2mm, C, D, E, H=1mm.

end of second segment of antennular peduncle, propodus 7.3 -9.5 times as long as broad, 2.9 times as long as dactylus; dactylus with about 48-62 spinules on its flexor margin.

Endopod of male 1st pleopod sigmoidal, extending to half of exopod, 2.4 times as long as broad, rounded in terminal margin; appendix interna overreaching terminal margin of endopod by 1/3 of its length, with plumose setae on proximal half of outer margin, rest of margin with spinules increasing distally in length, longer outerly than innerly. Appendix masculina of male 2nd pleopod extending to proximal 0.6 times length of endopod, with two rows of long spines at its distal half and some small irregular spines in proximal region; appendix interna measuring about 2/5 of length of appendix masculina.

Uropodal diaeresis with about 10 spinules.

Eggs 0.81-0.87x1.16-1.27mm in diameter.

Habitat. - Mountain stream.

Etymology. - *Sinodina lijiang* is named after its type locality, Lijiang County of Yunnan Province, used as a noun in apposition.

Remarks. - *Sinodina lijiang*, new species, is most similar to *S. bispinosa*, but differs from the latter by the form of endopod of male first pleopod (sigmoid vs. rectangular) and the number of spines on the appendix masculina of the male second pleopod (with numerous small spinules vs. two rows of long spines). *Sinodina lijiang* also resembles *S. dianica*, but differs from the latter by the more spinules on the male third pereopod (27 vs. 16-19), the more slender endopod of the first pleopod which is 3.0 times as long as broad (vs. 2.4 times in *C. dianica*).

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