AMERICAN MUSEUM

NOVITATES

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CITY OF NEW YORK MAY 4, 1953 NUMBER 1621

RECORDS OF MILLIPEDS (DIPLOPODA) FROM JAPAN AND OTHER ORIENTAL AREAS, WITH DESCRIPTIONS OF NEW GENERA AND SPECIES

By Ralph V. Chamberlin and Yuhsi M. Wang[1]

The material on which the present report is based is largely in the American Museum of Natural History in New York and in the collection of the senior author at the University of Utah. All the types are to be deposited in the American Museum. Much of it was received by the senior author some years ago through the courtesy of Dr. Yiosi Takakuwa and Dr. S. Hozawa and their associates. The names of the several collectors are given in connection with the different species. Unless otherwise stated, the localities given should be understood as being in Japan, from which country the great majority of the specimens came.

ORDER POLYXENIDA

FAMILY **POLYXENIDAE**

Monographis kraepelini Attems

Monographis kraepelini Attems, 1907, Hamburg Jahrb. Wiss. Anst., vol. 24, pt. 2, p. 99.

Locality: Japan: eight specimens were taken at quarantine at Seattle, Washington, November 16, 1949, in cargo from that country.

[1] Professor Emeritus of the Biology Department of the University of Utah, Salt Lake City, Utah, and assistant in the department, respectively.

ORDER GLOMERIDA

FAMILY **SPHAEROTHERIDAE**

Arthrosphaera bicolor Pocock

Arthrosphaera bicolor POCOCK, 1895, Jour. Bombay Nat. Hist. Soc., vol. 12, p. 278.

LOCALITY: India: two males and four females.

FAMILY **GLOMERIDAE**

Hyleoglomeris insularum Verhoeff

Figure 1

Hyleoglomeris insularum VERHOEFF, 1936, Trans. Sapporo Nat. Hist. Soc., vol. 14, p. 166.

LOCALITY: Northern Kii: two females taken in October, 1929, by Takakuwa.

ORDER POLYDESMIDA

FAMILY **POLYDESMIDAE**

Epanerchodus japonicus (Carl)

Polydesmus japonicus CARL, 1902, Rev. Suisse Zool., vol. 10, p. 614.

LOCALITIES: Hot Spring, Tsuta, Aomori Prefecture: one female taken July 8, 1928, by Hozawa. Yokahama: one male and two females, September, 1933, collected by Takakuwa. Kinshin: five females taken in September, 1933, by Takakuwa.

Epanerchodus orientalis orientalis Attems

Epanerchodus orientalis ATTEMS, 1901, Mitt. Mus. Hamburg, vol. 18, p. 105, figs. 30, 31.

LOCALITIES: Kamigomuar, Yamegata: two males, June 25, 1928, collected by Y. Abe. Ajiro, near Tokyo: two males, September, 1933, collected by Takakuwa. Yokahama: one female taken by Takakuwa.

Epanerchodus orientalis takakuwai Verhoeff

Epanerchodus orientalis takakuwaii VERHOEFF, 1931, Trans. Sapporo Nat. Hist. Soc., vol. 14, no. 3, p. 162.

LOCALITIES: Hot Spring, Naruko, Sendai: one male, November 8, 1928, collected by K. Ito. Tatsu-No-Kuchi, Sendai:

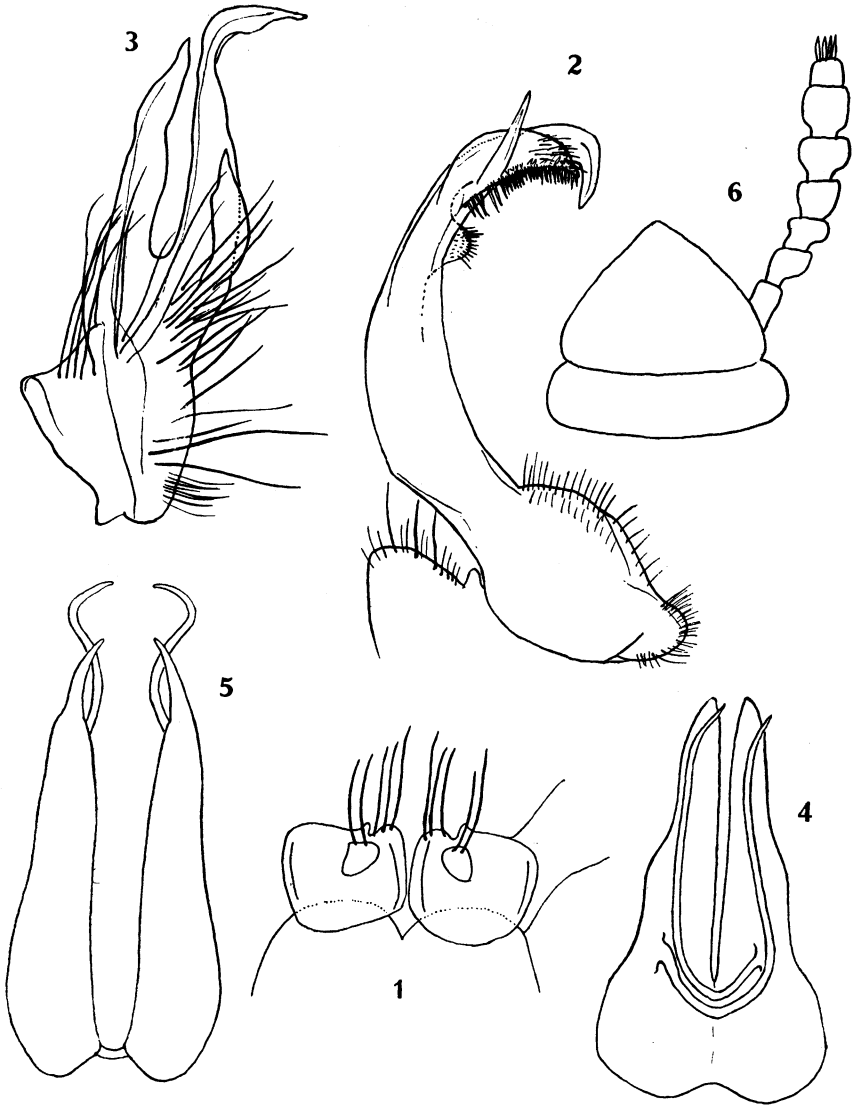

FIG. 1. *Hyleoglomeris insularum* Verhoeff, vulva.
FIG. 2. *Nipponesmus shirinensis*, new species, gonopod of male.
FIG. 3. *Nikkonus nikkoensis*, new species, gonopod of male.
FIG. 4. *Sinostemmiulus simplicior*, new species, anterior gonopod of male.
FIG. 5. *Sinostemmiulus simplicior*, new species, posterior gonopod of male.
FIG. 6. *Zinaceps hozawai*, new species, head and collum, dorsal view.

two females and males, October, 1928, collected by S. Kobayashi. Yoyai, Tokyo: one male, August, 1928, collected by N. Nakayama.

Epanerchodus furciliger Verhoeff

Epanerchodus furciliger VERHOEFF, 1937, Zool. Anz., vol. 117, p. 321, fig. 12.

LOCALITY: Nikko: one male, September, 1933, taken by Takakuwa.

Epanerchodus jägerkiöldi Attems

Epanerchodus jägerkiöldii ATTEMS, 1909, Arkiv Zool., vol. 5, no. 3, p. 31, figs. 16, 17.

LOCALITY: Yokahama: a male and female, September, 1933, taken by Takakuwa.

Epanerchodus tremorum Verhoeff

Epanerchodus tremorum VERHOEFF, 1940, Zool. Anz., vol. 131, p. 109.

LOCALITY: Hot Spring, Hanamaki-Iwate Prefecture: one male, August 28, 1928, taken by K. Oikawa.

NIPPONESMUS, NEW GENUS

In this genus the gonopods have the tarsus fringed with a conspicuous comb of setae or slender teeth much as in *Acanthotarsius* but wholly lacking the triangular tooth present in the latter genus at base of tibiotarsus. Tarsus furcate at distal end with one branch strongly uncate, and bearing a large spine suggesting that of *A. robiniarum*. It differs from *Acanthotarsius* in lacking an endomerite, and in the large size of the seminal bladder and of the pilose cushion in which it is much like the American *Pseudopolydesmus*.

GENEROTYPE: *Nipponesmus shirinensis*, new species.

Nipponesmus shirinensis, new species

Figure 2

Yellowish brown, prozonites and sternites lighter. Antennae brown, the legs a little lighter. Collum a little wider than the head, subquadrate. Dorsum slightly convex, the keels horizontal. Each tergite with three transverse rows of tubercles, of which the first is divided by a median furrow; second row with four and the

third with six tubercles; on each keel a larger swelling and a finger-like tubercle. Posterior corners of all keels excepting those of last four to six segments straight, those of these last produced; keels laterally with three to five serratures. Sternites with a cruciform impression, along which on the eighth sternite are four globose swellings. Gonopods of male as drawn (fig. 2). Length, 20 mm.; width, 2.6 mm.

LOCALITY: Shirin, Formosa: one male taken in August, 1923, by R. Takahashi.

FAMILY **CRYPTOPIDAE**

Onomatoplanus nodulosus (Verhoeff)

Niponiella nodulosa VERHOEFF, 1929, Trans. Sapporo Nat. Hist. Soc., vol. 14, p. 148.

Niponia nodulosa VERHOEFF, 1931, Zool. Jahrb., vol. 61, p. 442.

LOCALITY: Tokyo: a male and a female, September, 1933, taken by Takakuwa.

FAMILY **STRONGYLOSOMIDAE**

Aponedyopus maculatus Takakuwa

Aponedyopus maculatus TAKAKUWA, 1942, Zool. Mag. Tokyo, vol. 54, p. 6.

LOCALITY: Arisan, Formosa: four males, December 1, 1923, taken by Takahashi.

Haplogonosoma implicatum Brolemann

Haplogonosoma implicatum BROLEMANN, 1916, Ann. Soc. Ent. France, vol. 84, p. 592.

LOCALITY: Hot Spring, Tsuta, Aomori Prefecture: three males and one female, July 8, 1928, taken by S. Hozawa.

Kronopolites formosanus (Verhoeff)

Kansupus (Parakansupus) formosanus VERHOEFF, 1939, Zool. Anz., vol. 127, p. 273.

LOCALITY: Baikei, Formosa: two females, May 23, 1924, taken by Takahashi.

Kronopolites swinhoei Pocock

Kronopolites swinhoeii POCOCK, 1895, Mem. Indian Mus., Calcutta, vol. 11, p. 226.

LOCALITIES: Wenchow, Chekiang, China: 13 females, four males, and three immature males, September 6, 1928, taken by Shon Kon Schäe. Chekiang, China: one male and a female, September, 1928, taken by M. J. Jem.

Nedyopus cingulatus (Attems)

Orthomorpha cingulatus ATTEMS, 1898, Denkschr. Akad. Wiss. Wien, vol. 67, p. 329.

LOCALITIES: Kanujo-Mura, Yamagata Prefecture: one female, June 25, 1926, Y. Abe, collector. Tokyo: two males and two females, September, 1933, Takakuwa, collector. Yoggai, Tokyo: two females taken in August, 1928, by K. Nakayama.

Nedyopus tambanus (Attems)

Strongylosoma tambanum ATTEMS, 1901, Mitt. Mus. Hamburg, vol. 18, p. 86.

LOCALITY: Yogogi, Tokyo: one female, August, 1928, taken by K. Nakayama.

Chondromorpha keelarti (Humbert)

Polydesmus Keelarti HUMBERT, 1865, Mém. Soc. Phys. et Hist. Nat., Genève, vol. 18, p. 23.

LOCALITY: India: five males and five females.

Oxidus nordenskiöldi (Attems)

Strongylosoma nordenskiöldi ATTEMS, 1909, Arkiv Zool., vol. 5, no. 3, p. 27.

LOCALITIES: Hot Spring, Tsuta, Aomori Prefecture: one female, July 8, 1928, taken by Hozawa. Northern Kii: five females taken in October, 1929, by Takakuwa.

Oxidus obtusus (Takakuwa)

Orthomorpha obtusa TAKAKUWA, 1942, Trans. Nat. Hist. Soc. Formosa, vol. 32, pp. 362, 367, fig. 7.

LOCALITY: Japan: two females.

Oxidus pekuensis (Karsch)

Polydesmus (*Paradesmus*) *pekuensis* KARSCH, 1881, Arch. Naturgesch., vol. 47, p. 39.

LOCALITIES: Ta-An Shan, Tu Tai, China: a male and females, September 18, 1924, taken by P. A. Doisett.

Oxidus gracilis (Koch)

Fontaria gracilis KOCH, 1847, *in* Koch-Panzer, Kritische Revision der Insektenfaune Deutschlands, vol. 3, p. 142.

Orthomorpha (Kalorthomorpha) gracilis ATTEMS, 1937, Das Tierreich, no. 68, p. 82, fig. 101.

LOCALITIES: Sendai: male and female, August 4, 1928, taken by K. Tomita. Miyato Island: one male, August 23, 1928, taken by Z. Ohizumi. Yamagata City: a male and female, June 21, 1928, taken by Y. Abe. Hot Spring, Tsuta, Aomori Prefecture: one male, July 8, 1928, taken by S. Hozawa. Tokyo: six females and five males, September, 1933, taken by Takakuwa. Sakhalin: three males and five females, September, 1933, taken by Takakuwa. Formosa: four females September, 1933, taken by Takakuwa. Baikei, Formosa: a male and female, taken on May 23, 1924, by Takahashi. Hen Cheng, Shensi, China: two males and two females taken August 2, 1948, by W. L. Brown.

Oxidus circofera (Verhoeff)

Orthomorpha circofera VERHOEFF, 1931, Zool. Jahrb., Syst., vol. 61, p. 448.

LOCALITY: Korea: a male and a female taken September, 1933, by Takakuwa.

FAMILY EURYDESMIDAE

Ezodesmus lunatus Takakuwa

Ezodesmus lunatus TAKAKUWA, 1942, Annotationes Zool. Japonenses, vol. 21, p. 42.

LOCALITY: Sapporo: one male, September, 1933, taken by Takakuwa.

Japonaria acutidens (Attems)

Fontaria coarctata acutidens ATTEMS, 1909, Arkiv Zool., vol. 5, no. 3, p. 30.

LOCALITY: Ikao, Hot Spring, 60 miles from Tokyo: three males, September, 1933, taken by Takakuwa.

Japonaria circula (Attems)

Fontaria coarctata circula ATTEMS, 1901, Mitt. Mus. Hamburg, vol. 18, p. 97.

LOCALITY: Northern Kii: one male, October, 1929, taken by Takakuwa.

Takakuwaia furculigera Verhoeff

Takakuwaia furculigera VERHOEFF, 1936, Trans. Sapporo Nat. Hist. Soc., vol. 14, p. 153.

LOCALITY: Yokahama: a male and a female, September, 1933, taken by Takakuwa.

These specimens, 25 to 30 mm. in length, are gray with a red spot on each segment.

RHYSOLUS, NEW GENUS

The species listed below are obviously different generically from the characteristically Mexican genus *Rhysodesmus* under which Takakuwa placed them. In the gonopods of the male the femoral division is short, subglobose, instead of being conspicuously elongate; the tarsus is elongate, typically curved towards the end and gradually acuminate at the tip, not bidentate as in *Rhysodesmus*; the supplementary branch, instead of being much shorter than the acropodite proper, and subspiniform, is subequal in length to the principal branch and is more or less laminate in form, comparable in size and appearance to the tibiotarsal division.

GENEROTYPE: *Rhysodesmus semicirculatus* Takakuwa.

Rhysolus semicirculatus (Takakuwa)

Rhysodesmus semicirculatus TAKAKUWA, 1941, Trans. Nat. Hist. Soc. Formosa vol. 31, p. 413.

LOCALITIES: Miyajima: one male and two females, September 1933, taken by Takakuwa. Northern Kii: one male taken in October, 1929, by Takakuwa.

Rhysolus bifidus (Takakuwa)

Rhysodesmus bifidus TAKAKUWA, 1942, Trans. Nat. Hist. Soc. Formosa, vol. 32, p. 199.

LOCALITY: Rinkin: one male, taken in September, 1933, by Takakuwa.

Rhysolus species

LOCALITY: Kinsen, Korea: three immature males and four females taken in September, 1933, by Takakuwa.

NIKKONUS, NEW GENUS

Small forms comparable in size to the American *Nannaria*, but in general structure, especially of the gonopods, probably most closely related to *Harpaphe* and allied genera of northwestern America, though not showing the reduction or abortion of the spines of the second segment of the legs evident in these genera. Tergites, particularly the more posterior ones, showing sparse but distinct, though small, seriate granules or reduced tubercles such as also found in some species of the related genera of western America. The gonopods of the male have a laminate tibiotarsus with two branches arising below its base.

GENEROTYPE: *Nikkonus nikkoensis*, new species.

In addition to the generotype, the *Pachydesmus bazanensis* of Takakuwa also belongs in this genus.

Nikkonus nikkoensis, new species

Figure 3

Light yellowish. Head and dorsum glabrous. Collum as wide as the second tergite. Keels horizontal, margins smooth, the intervening dorsum slightly convex. On the fifth sternite of the male a pair of small protuberances. Second joint of legs from the ninth on with a well-developed spine at distal end. Gonopods of male as shown in figure 3. Length, 19 mm.; width, 2 mm.

LOCALITY: Nikko: a male and a female taken in September, 1933, by Takakuwa.

Differs from *N. bazanensis* Takakuwa in the presence of the small protuberances on the fifth sternite of the male, in lacking the red spot on the keels, as well as in the details of the gonopods.

ORDER CHORDEUMIDA

FAMILY **CRASPEDOSOMIDAE**

Craspedosoma species

LOCALITY: China: one female probably pertaining to this genus was taken in a cargo from China while at quarantine at Ontario.

FAMILY **DIPLOMARAGNIDAE**

Syntelopodeuma species

LOCALITY: Sendai: one female taken in November, 1928, by K. Oikawa.

Tokyosoma takakuwai Verhoeff

Tokyosoma takakuwaii VERHOEFF, 1932, Zool. Jahrb., Syst., vol. 62, p. 515.

LOCALITY: Japan: one male taken by Takakuwa in September, 1932.

ORDER STEMMIULIDA

FAMILY STEMMIULIDAE

SINOSTEMMIULUS, NEW GENUS

A genus agreeing with *Stemmiulus* and *Prostemmiulus* in lacking a lateral fissure or suture setting off the lower from the upper part of the tergites. It differs from these genera in lacking lateral lamellae in the sternites.

GENEROTYPE. *Sinostemmiulus simplicior,* new species.

Sinostemmiulus simplicior, new species

Figures 4 and 5

Brown in color, with a darker spot on the side of each somite. Head and dorsum glabrous. Collum triangularly narrowed down each side, equal in width to the other tergites. One ocellus on each side. Anterior gonopods relatively simple blades, each with a long, distally curving flagellum as shown in figure 4. Posterior gonopods with flagellum arising towards distal end as shown in figure 5. Body segments, 36 to 41 in number. Length, 15 mm.

LOCALITY: Chenghsien, Chekiang, China: four males and one female taken by Chang-Nee-Wang.

ORDER JULIDA

FAMILY **NEMASOMIDAE**

Anthrokoreana species

LOCALITY. Nikko: two females with 59 pairs of legs taken in September, 1933, by Takakuwa.

Okeanobates serratus Verhoeff

Okeanobates serratus VERHOEFF, 1939, Zool. Anz., vol. 127, p. 280.

LOCALITY: Izumigo-dake, Miyagi Prefecture, near Sendai: one female with 50 pairs of legs taken in October, 1928, by S. Kobayashi.

FAMILY JULIDAE

Fusiulus simplex Verhoeff

Fusiulus simplex VERHOEFF, 1936, Trans. Sapporo Nat. Hist. Soc., vol. 14, p. 166.

LOCALITY: Tokyo: two males, each with 52 pairs of legs, taken in September, 1933, by Takakuwa.

Fusiulus species

LOCALITIES: Yamagata City: one female, June 21, 1928, taken by Abe Nügata; nine females taken in September, 1933, by Takakuwa. Baikei, Formosa: one female, May 23, 1924, taken by Takahashi.

ORDER CAMBALIDA

FAMILY CAMBALIDAE

Formosoglyphiulus tuberculatus Verhoeff

Formosoglyphiulus tuberculatus VERHOEFF, 1936, Zool. Anz., vol. 113, p. 57.

LOCALITY: Formosa: three females with 53 to 57 pairs of legs taken in September, 1933, by Takakuwa.

ORDER SPIROSTREPTIDA

FAMILY HARPAGOPHORIDAE

Thyropygus descriptus Attems

Thyropygus descriptus ATTEMS, 1936, Mem. Indian Mus., vol. 11, no. 4, p. 263, fig. 61.

LOCALITY: India: one female.

Thyropygus minusculus Attems

Thyropygus minusculus ATTEMS, 1936, Mem. Indian Mus., vol. 11, p. 261, fig. 59.

LOCALITY: India: 10 males and one female.

ORDER SPIROBOLIDA

SINOBOLUS, NEW GENUS

Posterior gonopods lacking the free inner piece present, e.g., in the American *Narceus* Raf. (=*Spirobolus* as restricted by Brolemann). This perhaps represented by a transverse arm projecting mesad from base of gonopod proper. This arm with short angle or process projecting distad from its free end, while from its basal end a spine or curved finger-like process projects, lying against the base of the gonopod proper. Median plate of anterior gonopods absent or abortive.

GENEROTYPE: *Spirobolus joannsi* Brolemann.

Sinobolus joannsi (Brolemann)

Spirobolus joannsii BROLEMANN, 1896, Mem. Soc. Zool. France, vol. 9, p. 359.

LOCALITIES: Chekiang, China: one female taken in September, 1928, by M. T. Jem. Shirin, Formosa: one male taken by R. Takahashi in August, 1923.

Sinobolus species

LOCALITY: Shirin, Formosa: one female, apparently different from the preceding but probably pertaining to the same genus, taken in August, 1923, by Takahashi.

ORDER PLATYDESMIDA

FAMILY **PLATYDESMIDAE**

Trichozonium hirsutum Verhoeff

Trichozonium hirsutum VERHOEFF, 1935, Zool. Anz., vol. 112, p. 67.

LOCALITY: Takao, near Tokyo: one male and five females taken in September, 1933, by Takakuwa.

These specimens, which are reddish in color, were found feeding on mushrooms.

ORDER POLYZONIIDA

FAMILY **SIPHONOPHORIDAE**

ZINACEPS, NEW GENUS

Differs from *Siphonophora* in not having the head at all prolonged into a beak, in this respect resembling the American genus *Illacme*. The extremely elongate and very slender body of the

latter genus, in which the number of segments typically approaches 200, contrasts conspicuously with the shorter and proportionately stouter body of *Zinaceps* in which the number of segments in the known species lies between 45 and 83.

GENEROTYPE: *Zinaceps hozawai,* new species.

In addition to the generotype, *Siphonophora coniceps* and *S. cingulata* described by Attems from India appear to conform to *Zinaceps.*

Zinaceps hozawai, new species

Figure 6

Yellowish brown. Head and collum of form shown in figure 6; densely setose, with very short hairs; collum embracing head laterally. Dorsum moderately convex; with the usual median longitudinal line. Tergites with metazonites bearing two or three rows of small tubercules; densely setose, with fine short hairs. Pleurites also setose. Tergites rectangular, transversely oblong; each with an ovate swelling. Each coxa of legs with a rounded protuberance. Number of segments, 45. Length, 16 mm.; width, 1 mm.

LOCALITY: Hot Springs, Takao: one immature male taken July 8, 1928, by Hozawa.