

Critical Check List of the Japanese Species of Collembola

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During these thirty years of my research in the Kyoto University I have engaged in to introduce a new taxonomy in the study of Collembola. For the first few years before the War II my scope was directed to the identification of Japanese species so that the results may be useful to the ecological research in the pedobiological science. Afterwards, being aware of the fact that the conception of species and genera of Collembola is not yet fully established and, therefore, the pure taxonomic studies of soft-ware are necessarily to be done side by side with the efforts of faunistics, which is the hard-ware in nature, I have turned to the taxonomy itself, influenced chiefly by the series of works of late Prof. J. STACH of Poland. Thereafter I have endeavoured to search for the new characters to be utilized in the taxonomy for which the research of chaetotaxy of the body, ventral tube, labrum etc. is an example. At the same time I have paid special attention to the fauna of Japanese caves, as the troglobious collembola furnish us nice examples with respect to the divergence of species in each group.

The time has elapsed very fast and in April, 1977 my research in the Kyoto University is redeemed to make its end. In this last occasion I would like to brush up all the species of Collembola hitherto published from Japan in form of a check list, so that the succeeding researchers may start easily from my present knowledge of the thesis. All in all the content is still very incomplete and it would cover only one half of what is really existing in Japan for whose completion the full engagemment of one more generation of a collembolist would be necessary. Thus the list is only a mile-stone.

Study of Japanese Collembola was initiated by FOLSOM, 1897, 1898 at first and then succeeded by the more intensive works of BÖRNER 1909 based on materials collected by H. SAUTER. Regretfully C. BÖRNER has made a report only in a provisional style and we have some difficulty in identifying species described by him. Some of the species established by him are still not recognisable. Afterwards the research was continued by Japanese researchers and in his series of works S. KINOSHITA has made nice reports of Japanese Collembola including such remarkable species as *Akabosia matsudoensis*. His description is very accurate and precise, but as he has written them only in Japanese, the results were known only partly by the European researchers. His works were followed by H. UCHIDA and his schools, the species covered by them are faunistically important, but not always so from the taxonomic point of view.

Hearty thanks are directed to my friends and colleagues, who has supported my long way of studies in various ways both in Japan and in abroad, whose further activities in the field of research I expect from all my heart.

Key to Families:

1. Body long. Thorax and abdomen clearly segmented.
.....Subord. Arthropleona BÖRNER, 1901..... 2
Body spherical. Thorax and abdomen obscurely segmented or quite coalescent together. Subord. Symphypleona BÖRNER, 1901.....12
2. Th.I is clearly visible, its tergite with some setae. Integument granulate. Antennae short.....Superfam. 1 Poduromorpha BÖRNER, 1913..... 3
Th.I is regressed and without setae. Integument is practically smooth. Antennae long.....Superfam. 2 Entomobryomorpha BÖRNER, 1913..... 6
3. Furca well developed, surpassing the ventral tube. Dentes arcuate. Head hypognathous.....Fam. Poduridae LUBBOCK, 1870, p. 143
Furca relatively short or reduced. Dentes straight. Head almost prognathous.
..... 4
4. With pseudocelli. Ant. III-organ is complicated.
..... Fam. Onychiuridae BÖRNER, 1913, p. 150
Without pseudocelli. Ant. III-organ normal and simple 5
5. Mandible with molar plate..... Fam. Hypogastruridae BÖRNER, 1913, p. 144
Mandible without molar plate..... Fam. Neanuridae BÖRNER, 1901, p. 145
a: Body without segmental tubercles.
..... Subfam. Pseudachorutinae PALISSA, 1964, p. 145
b: Body with segmental tubercles....Subfam. Neanurinae Caroli, 1910, p. 147
6. Antennal segments 4. 7
Antennal segments 5 or 6. ...Fam. Orchesellidae STACH, 1960 (ut Tribus), p. 161
7. Abd.III and IV subequally long. 8
Abd.III longer than abd.IV.....10
8. Antennal segments not annulate. 9
Antennal segments annulate.....Fam. Tomoceridae SCHÄFFER, 1896, p. 157
9. Body without scales.....Fam. Isotomidae BÖRNER, 1913, p. 152
Body with scales.....Fam. Oncopoduridae BÖRNER, 1906 (ut Subfam.), p. 162
10. Mucro small, with one or two teeth and a basal spine. Antennae normally long
..... Fam. Entomobryidae SCHÄFFER, 1896, p. 159
Mucro with various number of teeth and without a basal spine.....11
11. Antennae enormously long, with eyes.
.....Fam. Paronellidae BÖRNER, 1906 (ut Subfam.), p. 161
Antennae rather short, usually without eyes.
..... Fam. Cyphoderidae BÖRNER, 1913, p. 162
12. Minute species, without eyes. Antennae very short.
.....Fam. Neelidae FOLSOM, 1896, p. 162
Large species. Antennae longer than the head.
..... Fam. Sminthuridae LUBBOCK, 1862, p. 163

I. Suborder: **Arthropleona** BÖRNER, 19011. Family **Poduridae** LUBBOCK, 1870

Only one genus and species.

Podura aquatica LINNE, 1758: KINOSHITA 1916.....UCHIDA 1950

2. Family **Hypogastruridae** BÖRNER, 1913

1. PaO. present. Unguiculus present, rarely absent 3
PaO. absent. Unguiculus absent 2
2. Eyes present.....*Xenylla*
Eyes absent*Acherontides*
3. Furca absent. Eyes absent.....*Willemia*
Furca present. Eyes present or reduced 4
4. PaO. composed of some (ca. 4) elements 7
PaO. composed of one circle..... 5
5. Anal spines absent 6
Anal spines present.....*Schoettella*
6. Eyes 8+8, normally developed.....*Choreutinula*
Eyes reduced, 3+3 in Japanese species.....*Mesogastrura*
7. Eyes not reduced. Dentes usually with 7 dorsal setae.....*Hypogastrura*
Eyes reduced. Dentes with reduced number of dorsal setae.....*Schaefferia*

Genus **Hypogastrura** BOURLET, 1839

For the exact studies of Hypogastruridae the research of the chaetotaxy is inevitable (YOSHII, 1956, 1960, 1962, GAMA 1969 CASSAGNAU 1974). The genus may be divided in three subgenera as:

1. Eversible sac between ant.III and IV..... 2
No eversion of antennae.....*Hypogastrura* (s. str.)
2. Four elements of PaO. subequal and radiating from the center.....*Ceratophysella*
Two posterior elements of PaO. larger and encircling the accessory element
.....*Cyclograna*

Subg. **Ceratophysella** BÖRNER, 1932

Hypogastrura (*Ceratophysella*) *ainu* YOSHII, 1972.....Hokkaido

Hypogastrura (*Ceratophysella*) *communis* (FOLSOM, 1897): YOSHII 1960, 1962

..... cosmopolitan

H. armata (NICOLET): YOSHII, 1940—SCOTT, H. G. 1961

H.(C.) yuasai YOSHII, 1954

C. communis f. principalis YOSHII, 1960

Hypogastrura (*Ceratophysella*) *denisana* YOSHII, 1956, 1960.....Japan

C. denisi YOSHII, 1954 (homonym)

Hypogastrura (*Ceratophysella*) *denticulata* BAGNALL, 1941.....cosmopolitan

C. communis exilis YOSHII, 1954

C. exilis YOSHII, 1956

- Hypogastrura* (*Ceratophysella*) *duplicispinosa* YOSII, 1954.....Japan, Korea, China
Hypogastrura (*Ceratophysella*) *fukugakuchiana* YOSII, 1956.....Cave nr. Itoigawa
Hypogastrura (*Ceratophysella*) *proserpinae* YOSII, 1956.....Cave in Pref. Iwate
Hypogastrura (*Ceratophysella*) *quinqueoculata* YOSII, 1956.....Cave in Pref. Gifu
Hypogastrura (*Ceratophysella*) *trogodytes* YOSII, 1956 nom. nov. for *H. troglodytes* YOSII
..... Japanese Caves
Hypogastrura (*Ceratophysella*) *yakushimana* YOSII, 1965.....Yakushima, South Kyushu

Subg. **Cyclograna** YOSII, 1961

- Hypogastrura* (*Cyclograna*) *horrida* YOSII, 1940.....Japan, Nepal, North America
Hypogastrura (*Cyclograna*) *pilosa* YOSII, 1956.....Japan
Hypogastrura (*Cyclograna*) *wrayia* UCHIDA et TAMURA, 1968.....Hokkaido

Subg. **Hypogastrura** BOURLET, 1839

- Hypogastrura* (*Hypogastrura*) *aterrima* YOSII, 1972.....Hokkaido
Hypogastrura (*Hypogastrura*) *gracilis* (FOLSOM, 1897): YOSII 1960.....Japan
Hypogastrura (*Hypogastrura*) *itaya* KINOSHITA, 1916: YOSII 1960.....Japan
Hypogastrura (*Hypogastrura*) *iwamurai* YOSII, 1960.....Japan
Hypogastrura (*Hypogastrura*) *japonica* SCOTT, 1961.....species dubiosa
Hypogastrura (*Hypogastrura*) *manubrialis* (TULLBERG, 1869); YOSII, 1960, 1964

..... cosmopolitan
Hypogastrura yamagata KINOSHITA, 1916

- Hypogastrura* (*Hypogastrura*) *nemoralis* YOSII, 1960.....Japan, Korea
Hypogastrura (*Hypogastrura*) *paradoxa* YOSII, 1965.....Japan
Hypogastrura (*Hypogastrura*) *reticulata* BÖRNER, 1909: YOSII, 1960.....Japan
Hypogastrura (*Hypogastrura*) *theeli* (TULLBERG, 1876): YOSII, 1972

..... Siberia, Hokkaido, Canada

Genus **Schoettella** SCHÄFFER, 18996

- Schoettella ununguiculata* (TULLBERG, 1869): SCOTT 1961.....dubious record

Genus **Schaefferia** ABSOLON, 1900

- Schaefferia emucronata decemocolata* STACH, 1939: UCHIDA et TAMURA 1968
.....Europe, Japan

Genus **Mesogastrura** BONET, 1930

- Mesogastrura kuzuuensis* YOSII, 1956.....Cave in Pref. Tochigi

Genus **Choreutinula** PACLT, 1944

- Choreutinula inermis* (TULLBERG, 1871).....Europe, Japan
syn. nov. *Beckerella yanoi* KINOSHITA, 1932

Genus **Xenylla** TULLBERG, 1869

- Xenylla arenosa* UCHIDA et TAMURA, 1967.....Sea shore of Hokkaido
Xenylla brevispina KINOSHITA, 1916: GAMA 1971.....Japan
Xenylla humicola (FABRICIUS, 1780): YOSII 1954, UCHIDA 1954
Xenylla longicauda FOLSOM, 1897.....species dubia

Genus **Willemia** BÖRNER, 1901

Willemia japonica YOSHII, 1970.....Honshu

Genus **Acherontides** BONET, 1945

Acherontides vivax YOSHII, 1956.....Caves of Northern Honshu

3. Family **Neanuridae** BÖRNER, 1901

1. Subfamily **Pseudachorutinae** PALISSA, 1964

In this group the buccal apparatus is deforming, the molar plate or the whole mandible is absent. In general this is a degrading tendency and mouth is protruded forming a triangular buccal cone. Together with the characteristic chaetotaxy of the trunk these disjunctive trends of mouth parts must be taken into account. For the small species (*Friesea*, *Micranurida*, *Pseudachorutes* etc.) further researches are necessary.

1. PaO. absent 2
PaO. present or absent 5
2. With anal spines 3
Without anal spines 4
3. With unpaired number of anal spines *Friesea*
With paired number of anal spines *Oudemansia*
4. Furca well developed, marine species *Pseudanurida*
Furca reduced or absent, humicolous species *Paranura*
5. Mandibles absent *Brachystomella*
Mandibles present 6
6. Dentes spoon shaped distally 7
Dentes not spoon-shaped 8
7. Dentes with two lobate lamellae *Odontella*
Dentes without lamellae *Xenyllodes*
8. Segmentes of furca all present 9
Furca absent or reduced 10
9. Body depressed, with broad paratergites *Ceratrimeria*
Body subcylindrical *Pseudachorutes*
10. Maxilla complex at apex *Anurida*
Apex of maxilla styliform 11
11. Body surface verrucose with compound granules *Granaturida*
Body surface normally granulate *Micranurida*

Genus **Friesea** DALLA TORRE, 1895

The genus may be divided in two subgenera. *Friesea* (s. str.) is very small and abundant in the forest litter. *Conotelsa* is halophilous living among pebbles of the shore.

Furca well developed *Conotelsa* DENIS, 1925

Furca reduced *Friesea* (s. str.)

Friesea (*Friesea*) *japonica* YOSHII, 1954: YOSHII, 1956, 1972.....Japan

- Friesea (Conotelsa) oshoro* UCHIDA et TAMURA, 1966.....Sea shore of Hokkaido
Friesea (Conotelsa) pacifica YOSII, 1958: UCHIDA et TAMURA 1966.....Sea shore of Japan

Genus **Oudemansia** SCHÖTT, 1893

Halophilous species of the warm region of the world.

- Oudemansia esakii* (KINOSHITA, 1932): YOSII, 1958.....Japan
Pseudachorutes esakii: KINOSHITA, 1932, UCHIDA 1954
Oudemansia subcoerulea DENIS, 1948: YOSII, 1971.....Japan, Vietnam
Oudem. hirashimai: UCHIDA, 1965

Genus **Pseudanurida** SCHÖTT, 1901

This is also a halophilous genus with only one known species.

- Pseudanurida billitonensis* SCHÖTT, 1901: YOSII 1955
 Indonesia, Australia, Japan (Ryukyu)

Genus **Paranura** AXELSON, 1902

Sluggish species of the forest in the temperate region.

- Paranura formosana* YOSII, 1965: YOSII 1969.....Formosa, Japan
Paranura sexpunctata (AXELSON, 1902): YOSII, 1969, 1972
Europe, Japan, North America
Paranura s-uenoi YOSII, 1955.....Ryukyu

Genus **Odontella** SCHÄFFER, 1897

Body hemispherical, gray in colour. Integument is intensely granular. Two anal spines are not homologous with those of others, but correspond to the well developed granule of the integument. Buccal cone is intensely elongate.

- Odontella cornuta* YOSII, 1965.....Japan
Odontella distincta YOSII, 1954.....Japan
Odontella japonica KINOSHITA, 1932.....species dubia
Odontella similis YOSII, 1954; YOSII 1956.....Japan
Odontella thauma BÖRNER, 1909.....species inquirenda
Odontellodes thauma: STACH, 1949

Genus **Xenyllodes** AXELSON, 1903

Alike to *Odontella* in facies, but distinguished by the furca.

- Xenyllodes armatus* (AXELSON, 1903); UCHIDA et TAMURA, 1968 Europe, Japan

Genus **Brachystomella** AGREN, 1903

The facies is alike to Hypogastruridae, but well defined by the total absence of mandibles.

- Brachystomella hiemalis* YOSII, 1956.....Japan

Genus **Pseudachorutes** TULLBERG, 1871

The genus includes both large and small species, the taxonomy is yet incomplete.

- Pseudachorutes insularis* YOSII, 1965.....Ryukyu
Pseudachorutes japonicus KINOSHITA, 1916; YOSII, 1954.....Honshu
Pseudachorutes longisetis YOSII, 1961.....Japan

Pseudachorutes parvulus BÖRNER, 1901; YOSII, 1954 (f. *infuscata*).....Europe, Japan

Genus **Caratrimeria** BÖRNER, 1906

Large species, flat in appearance by the development of paratergites. Often it is abundant on decaying trunk of the tree. Many species in the oriental region.

Ceratrimeria takaoensis (KINOSHITA, 1916).....Honshu

Pseudachorutes takaoensis KINOSHITA, 1916

Ceratrimeria yasumatsui (UCHIDA, 1950).....Kyushu

Pseudachorutes yasumatsui UCHIDA, 1950

Genus **Micranurida** BÖRNER, 1901

Very small species of the forest floor. More species are to be expected from Japan.

Micranurida papillosoides HAMMER, 1953; YOSII, 1972.....Canada, Japan

Micranurida pygmaea (BÖRNER, 1901); TAMURA et UCHIDA, 1966, YOSII, 1972

..... holarctic

Genus **Granaturida** YOSII, 1954

Only one species. It is yellowish in living and sluggish under fallen leaves.

Granaturida tuberculata YOSII, 1954.....Honshu

Genus **Anurida** LABOULBENE, 1865

Anurida (s. str.) is not well represented in Japan. But *Aphoromma* lives as troglobiont and differentiated to many species in Japanese caves.

Furcal rest absent.....*Anurida* (s. str.)

Furcal rest present.....*Aphoromma* MACGILLIVRAY, 1893

Anurida (*Anurida*) *trioculata* KINOSHITA, 1916: UCHIDA 1951, YOSII 1956.....Japan

Anurida (*Aphoromma*) *assimilis* YOSII, 1956.....Kawachi-no-Kaza-Ana, Pref. Shiga

Anurida (*Aphoromma*) *assimilis persimilis* YOSII, 1956.....Onyu-no-Ana, Pref. Fukui

Anurida (*Aphoromma*) *desnuda* YOSII, 1956.....Oinu Ana, Pref. Gumma

Anurida (*Aphoromma*) *diabolica* YOSII, 1956.....Ryomen Iwaya, Pref. Gifu

Anurida (*Aphoromma*) *iriei* YOSII, 1970.....Rashomon Do, Pref. Okayama

Anurida (*Aphoromma*) *nuda* YOSII, 1956.....Ryusendo, Pref. Iwate

Anurida granaria (NICOLET); UCHIDA 1952

Anurida (*Aphoromma*) *okamotoi* YOSII, 1970.....Yayamadake Do, Pref. Kumamoto

Anurida (*Aphoromma*) *setosa* YOSII, 1956.....Kugo Do, Pref. Gifu

Anurida (*Aphoromma*) *speobia* YOSII, 1954; YOSII 1956.....Shizushi Do, Pref. Kyoto

Anurida (*Aphoromma*) *vicaria* YOSII, 1956.....Hakuba Do, Pref. Fukui

2. Subfamily **Neanurinae** CAROLI, 1910

Phylogenic interpretation of Neanurinae is confusing. It is easy to separate them in *Protanura* and *Neanura* after the structure of mouth parts, but it is the artificial classification, as even in a compact group of *Morulina* both types of mouth parts are present (*M. gigantea* vs. *M. gilvipunctata*). Besides the red-species of Asia have various types of mouth parts although they might be nearly related to each other. Following con-

ception is the effort to make the system more rational and intelligible. One other problem is the interpretation of the genus *Lobella* BÖRNER, 1906 with the type species *L. sauteri* BORNER, which is very poorly described and its identification is the matter of great difficulty. Once I have identified it to one species from Nara (YOSII, 1956), but this species is very rare and, besides, it does not coincide with BÖRNER's description of mouth parts, that the maxillae are alike to *Anurida* with many lamellae, so that it is hardly imaginable to be conspecific with BÖRNER's type specimen if it is still present. As there are many species of *Lobella* with the head of maxilla in form of *Anurida* and with three pairs of segmental tubercles on abd. V, I retain the genus *Lobella* to the group related to *L. similis* YOSII, 1954 and *L. sauteri* BÖRNER as species inquirenda. *Yosialina* SALMON, 1964 becomes the junior synonym of *Lobella*. From many taxa established by me *Metanura* YOSII, 1954 is a synonym of *Neanura* (s. str.), *Lobellina* YOSII, 1956 and *Coecoloba* YOSII, 1956 would be a subgenus of *Lobella*, while *Yuukianura* YOSII, 1955 would be a special group within *Lobella* (s. str.) not to be separated from other groups. Almost all of Neanurinae are humicolous, but some are halophilous or cavernicolous in Japan.

1. PaO present, rosette-form.....*Morulina*
PaO not present..... 2
2. Segmental tubercles with areolar reticulum of the integument. Colour usually grey.....*Neanura*
Segmental tubercles without areolar reticulum, colour red to white..... 3
3. Mandible fringed and flagellate. Maxilla styliform and deeply bifid
..... *Crossodonthina*
Mandible and maxilla not as above 4
4. Mandible tridentate, maxilla styliform 5
Mandible pluridentate, maxilla with lamellae 6
5. Segmental tubercles warty and verrucose.....*Vitronura*
Segmental tubercles granulate evenly.....*Propeanura*
6. Maxilla complicate apically and with some fringed lamellae 7
Maxilla minutely bidentate apically and with trace of thin lamellae
..... *Lobella* (*Lobellina*)
7. Eyes absent, white cave species.....*Labella* (*Coecoloba*)
Eyes present.....*Lobella* (*Lobella*)

Genus **Morulina** BÖRNER, 1906

Morulina gigantea (TULLBERG, 1876): UCHIDA 1950, YOSII 1954, 1958, 1972

.....Siberia, Japan

Neanura gigantea TULLBERG, 1876: UCHIDA 1937

Morulina gilvipunctata (UCHIDA, 1938): YOSII 1958.....Honshu (Tohoku)

Neanura gilvipunctata UCHIDA, 1938

Genus **Neanura** NACGILLIVRAY, 1893

Neanura abietis YOSII, 1969, 1972.....Japan

Neanura ezomontana YOSII, 1972.....Hokkaido

- Neanura fodinarum* YOSII, 1956.....Japanese Caves
Neanura frigida YOSII, 1969.....Japan
Neanura iriomotensis YOSII, 1965.....Ryukyu
Neanura okinawana YOSII, 1965.....Okinawa
Neanura ornata FOLSOM, 1902: H. G. SCOTT, 1961.....dubious record
Neanura piceae YOSII, 1969.....Japan
Neanura sanctisebastiani (YOSII, 1954): YOSII 1965.....Honshu
Metanura sanctisebastiani YOSII, 1954

Genus **Crossodonthina** YOSII, 1954

- Crossodonthina appendiculata* YOSII, 1956.....Japan
Crossodonthina koreana YOSII et LEE, 1963: YOSII 1964.....Korea, Japan
Crossodonthina nipponica YOSII, 1954.....Japan

Genus **Vitronura** YOSII, 1969

- Vitronura mandarina* (YOSII, 1954): YOSII 1956, 1969.....Japan
Neanura mandarina YOSII, 1954
Vitronura parvituberculata (YOSII, 1965): YOSII 1969.....Tanegashima
Bilobella parvituberculata YOSII, 1965
Vitronura pygmaea (YOSII, 1954): YOSII 1969.....Japan, Formosa, Malaya
Matanura pygmaea YOSII, 1954

Genus **Propeanura** YOSII, 1956

- Propeanura ieti* YOSII, 1966.....Japan, Nepal
Lobella (*Propeanura*) *ieti* YOSII, 1969
Propeanura pterothrix (BÖRNER, 1909).....Japan
Achorutes pterothrix BÖRNER, 1909
Neanura pterothrix: YOSII 1956

Genus **Lobella** BÖRNER, 1906

Subg. **Lobellina** YOSII, 1956

- Lobella* (*Lobellina*) *cavicola* (YOSII, 1956).....Cave in Pref. Kochi
Yuukianura cavicola YOSII, 1956
Lobella (*Lobellina*) *decipiens* YOSII, 1965South Kyushu
Lobella (*Lobella*) *decipiens* YOSII, 1965
Lobella (*Lobellina*) *kitazawai* YOSII, 1965Middle Honshu
Lobella (*Lobellina*) *mizunashiana* YOSII, 1956.....Cave in Pref. Fukuoka
Lobella (*Lobella*) *mizunashiana* YOSII, 1956
Lobella (*Lobellina*) *roseola* YOSII, 1954.....Japan
Lobella roseola: YOSII 1954, 1956, 1969
Lobella (*Lobellina*) *stachi* YOSII, 1956.....Japan
Lobella (*Lobella*) *stachi* YOSII, 1956
Lobella (*Lobellina*) sp.Japan
Lobella sauteri nec BÖRNER; YOSII 1956

Subgenus **Coecoloba** YOSII, 1956

- Lobella* (*Coecoloba*) *hidana* (YOSII, 1956).....Cave of Pref. Gifu
Coecoloba hidana YOSII, 1956
- Lobella* (*Coecoloba*) *kurasawana* (YOSII, 1956).....Cave of Pref. Tokyo
Coecoloba kurasawana YOSII, 1956
- Lobella* (*Coecoloba*) *lobella* (YOSII) 1954.....Cave of Pref. Kyoto
Protanura lobella YOSII, 1954
Coecoloba lobella: YOSII, 1956
- Lobella* (*Coecoloba*) *odai* (YOSII, 1956)Cave of Pref. Gifu
Coecoloba odai YOSII, 1956
- Lobella* (*Coecoloba*) *wakasana* (YOSII, 1956).....Cave of Pref. Fukui
Coecoloba wakasana YOSII, 1956

Subgenus **Lobella** (s. str.)

- Lobella* (*Lobella*) *aphoruroides* (YOSII, 1953).....Japan, Malaya
Protanura aphoruroides YOSII, 1953, SCOTT 1961
Yuukianura aphoruroides: YOSII 1955
- Lobella* (*Lobella*) *halophila* (YOSII, 1955).....Shore in Ryukyu
Yuukianura halophila YOSII, 1955
Lobella halophila: YOSII 1971
- Lobella* (*Lobella*) *nomurai* (YOSII, 1956).....Cave in Pref. Oita
Yuukianura nomurai YOSII, 1956
- Lobella* (*Lobella*) *pacifica* YOSII, 1971Sea shore of South Japan
- Lobella* (*Lobella*) *sauteri* BÖRNER, 1906.....species inquirenda
- Lobella* (*Lobella*) *similis* YOSII, 1954.....Japan
YOSII 1954, 1956
- Lobella* (*Lobella*) *uozumii* YOSII, 1956.....Cave in Pref. Kochi

Dubious Neanurid species

- Achorutes japonicus* BÖRNER, 1909
Neanura pseudornata SCOTT, 1961
Achorutes roseus (GERVAIS)
BÖRNER, 1909, UCHIDA 1951, b
Neanura takaoensis KINOSHITA, 1932

4. Family **Onychiuridae** BÖRNER, 1913

The Family is well represented in Japan. For the genus *Onychiurus* and *Tullbergia* of the *Mesaphorura* group further reseaches are to be made.

1. Body coloured, with well developed furca 2
Body white, furca reduced 3
2. With compound type of PaO.....*Lophognathella*
Without PaO, or it is not much different from integumentary granules
..... *Homaloproctus*
3. Body slender, two bulbs of ant.II-organ are bowed to each other..... *Tullbergia*
Body large, two bulbs of ant.III-organ are small and erected..... *Onychiurus*

Genus Lophognathella BÖRNER, 1908*Lophognathella choreutes* BÖRNER, 1908: YOSHII, 1958,.....Japan, North America**Genus Homaloproctus BÖRNER, 1909***Homaloproctus sauteri* BÖRNER, 1909: UCHIDA, 1953, YOSHII 1958, SALMON 1959.....Japan**Genus Tullbergia LUBBOCK, 1876***Tullbergia (Mesaphorura) krausbaueri* BÖRNER, 1901: YOSHII, 1965, UCHIDA et TAMURA 1968CosmopolitanIdentity with *Mesaphorura yoshii* RUSEK, 1967, 1971 must be inspected.**Genus Onychiurus GERVAIS, 1841**Japanese species of *Onychiurus* are not yet sufficiently investigated. As the taxonomy of the genus is in dispute it is provisionally divided in following groups.

1. PaO. very small, composed of a few number of elements...*affinis*-group (*Oligaphorura*)
PaO. large, composed of many elements 2
2. Elements of PaO. simple 3
Elements of PaO. compound 4
3. Elements arranged parallel to the axis of the organ...*sibiricus*-group (*Hymenaphorura*)
Elements arranged radially.....*armatus*-group (*Protaphorura*)
4. Bulbs of ant.III-organ smooth.....*finetarius*-group (*Onychiurus* s. str.)
Bulbs of ant.III-organ granulate.....*ramosus*-group (*Paronychiurus*)

affinis*-groupOnychiurus schoetti* (LIE-PETTERSEN, 1896): UCHIDA et TAMURA 1966.....dubious record*Onychiurus tottabetsuensis* YOSHII, 1972.....Hokkaido***sibiricus*-group***Onychiurus sibiricus* (TULLBERG, 1876): YOSHII 1956.....Europe, Siberia, Japan*Onychiurus watanabei* MATSUMOTO 1929: YOSHII 1954***armatus*-group***Onychiurus granulatus* BÖRNER, 1909: YOSHII 1972.....Japan*Onychiurus ishikawai* YOSHII, 1956.....cave species*Onychiurus longisensillatus* YOSHII, 1969.....Honshu*Onychiurus longisensillatus nutak* YOSHII, 1972.....Hokkaido*Onychiurus matsumotoi* KINOSHITA, 1929.....species inquirenda*Onychiurus octopunctatus* (TULLBERG, 1976): UCHIDA et TAMURA 1967, YOSHII 1972

.....Hokkaido

Onychiurus okafujii YOSHII, 1967.....Honshu*Onychiurus orthacanthus* HANDSCHIN, q920.....dubious record*Onychiurus pseudarmatus teres* YOSHII, 1956.....Honshu*Onychiurus pseudarmatus yagii* KINOSHITA, 1923: YOSHII, 1954.....Honshu*Onychiurus yagii* KINOSHITA, 1923*Onychiurus tomuraushensis* (YOSHII, 1940): YOSHII 1972.....Hokkaido*Tullbergia tomuraushensis* YOSHII, 1940

- Onychiurus uenoi* YOSII, 1954: YOSII 1956.....Japan, Korea
Onychiurus yodai YOSII, 1966: YOSII 1969.....Japan, Nepal

fimetarius-group

- Onychiurus folsomi* (SCHÄFFER, 1900): YOSII 1953, 1956.....Japan, China
Aphorura inermis TULLBERG, 1872: FOLSOM 1899
Onychiurus sinensis STACH, 1954
Onychiurus formosanus DENIS, 1929: YOSII 1956.....Formosa, Japan
Onychiurus izuruensis YOSII, 1956, 1966.....Japan, Korea

ramosus-group

- Onychiurus conjungens* BÖRNER, 1909: SAMLON 1959, UCHIDA et TAMURA 1968
..... species inquirenda
Onychiurus flavescens KINOSHITA, 1916: YOSII 1954, 1956.....Japan, Korea
Onychiurus imadatei YOSII, 1956.....Honshu (Mt. Ibuki)
Onychiurus japonicus YOSII, 1967: YOSII 1972.....Japan
Onychiurus ramosus FOLSOM, 1917: SCOTT 1959dubious record

5. Family **Isotomidae** BÖRNER, 1913

1. Integument granulate or reticulate.....Anurophorinae BÖRNER, 1901
Integument smooth 2
2. Dentes short, dorsally smooth, granulate or with very few annulation. Manubrium
ventrally without or with very few number of setae
.....Proisotominae STACH, 1947
Dentes long, dorsally with many crenulations. Manubrial ventral setae numerous
.....Isotominae SCHÄFFER, 1896

1. Subfamily **Anurophorinae** BÖRNER, 1901

1. With anal spines..... 2
Without anal spines 4
2. With four anal spines, Integument reticulate.....*Tetracanthella*
With two anal spines 3
3. Abd.V and VI ankylosed.....*Uzelia*
Abd.V and VI separated.....*Anurophorouzelia*
4. Furca quite absent..... 5
Furca present.....*Coloburella*
5. Eyes 8+8*Anurophorus*
Eyes reduced*Pseudanurophorus*

Genus **Tetracanthella** SCHÖTT, 1891

- Tetracanthella sylvatica* YOSII, 1939.....Japan

Genus **Uzelia** ABSOLON, 1901

- Uzelia setifera japonica* YOSII, 1961.....Japan

Genus **Anurophorouzelia** STACH, 1947

Anurophorouzelia rara (YOSHII, 1939): STACH 1947.....Species inquirenda
Uzelia rara YOSHII, 1939

Genus **Anurophorus** NICOLET, 1841

Anurophorus laricis NICOLET, 1841: YOSHII 1961, UCHIDA 1969.....Japan, Europe
 (f. *clavipila* STACH included)

Genus **Pseudanurophorus** STACH, 1922

Pseudanurophorus binoculatus KSENNEMAN, 1934: YOSHII 1969.....Europe, Japan

Genus **Coloburella** LATZEL, 1917

Coloburella japonica YOSHII, 1965.....Honshu

2. Subfamily **Proisotominae** STACH, 1947

1. Abd.IV, V and IV ankylosed 2
 Abd.IV is not ankylosed 3
2. Mucro falciform. Eyes and PaO absent *Folsomina*
 Mucro bidentate. PaO. present *Folsomia*
3. Manubrium without ventral setae..... 4
 Manubrium with some ventral setae 6
4. Mouth parts strongly modified. Sea shore species..... *Archisotoma*
 Mouth parts not modified 5
5. Dentes without distal bulb..... *Ballistura*
 Dentes with distal bulb *Appendisotoma*
6. Body very elongate. Furca very short..... *Dagamaea*
 Body normal. Furca elongate 7
7. PaO absent. Ant. IV with ca. 6 blunt sensillae..... *Isotomiella*
 PaO present..... 8
8. PaO is composed of 4 elements in a circle..... *Microisotoma*
 PaO is simple 9
9. Abd.V and VI totally fused..... *Cryptopygus*
 Abd.V and VI independent or incompletely fused..... *Proisotoma*

Genus **Folsomina** DENIS, 1931

Folsomina onychiurina DENIS, 1931: YOSHII 1965.....cosmopolitan

Genus **Folsomia** WILLEM, 1902

Folsomia candida WILLEM, 1902: YOSHII 1953, 1956.....cosmopolitan

Folsomia dubia KINOSHITA, 1917: KINOSHITA, 1932

Folsomia fontis YOSHII, 1953

Folsomia decemculata STACH, 1946: H. G. SCOTT 1959.....dubious record

Folsomia diplophthalma (AXELSON, 1902): YOSHII 1939.....holarctic

Folsomia fimetaria (LINNE, 1758): YOSHII 1939, 1956.....holarctic

Folsomia hasegawai YOSHII, 1959.....Japan

- Folsomia hidakana* UCHIDA et TAMURA, 1968.....Hokkaido
Folsomia inoculata STACH, 1947: YOSII 1972.....palearctic
 Folsomia ezoensis YOSII, 1965
Folsomia nakajimai YOSII, 1959.....Japan, Tonga-Is
Folsomia octoculata HANDSCHIN, 1925: YOSII 1939, 1954, 1956, 1972, H. G. SCOTT 1959
 Java, Nepal, Japan
 Folsomia uenoea UCHIDA, 1943
Folsomia quadrioculata (TULLBERG, 1871): YOSII 1939, 1956, 1972, UCHIDA et SUMA 1973
 holarctic
Folsomia regularis HAMMER, 1953: YOSII 1969.....Japan, Canada
 Folsomia ozeana YOSII, 1954
- Genus **Archisotoma** LINNANIEMI, 1912
Archisotoma tokiokai YOSII, 1971Japanese Coast
Archisotoma utinomii YOSII, 1971Japanese Coast
 Probably identical with *Archisotoma interstitialis* DELAMARE, 1953
- Genus **Appendisotoma** STACH, 1947
Appendisotoma mitra UCHIDA et TAMURA, 1968.....Hokkaido
- Genus **Ballistura** BORNER, 1906
Ballistura lamelligera (BÖRNER, 1909).....species inquirenda
 Proisotoma lamelligera BORNER, 1909
Ballistura stricta (YOSII, 1939).....Japan
 Proisotoma stricta YOSII, 1939
Ballistura takeshitai (KINOSHITA, 1916):Japan
 Proisotoma takeshitai KINOSHITA, 1916: KINOSHITA 1932, YOSII 1939
Ballistura yosii STACH, 1947.....Japan
 Ballistura schoetti (DALLA TORRE): YOSII 1939
- Genus **Dagamaea** YOSII, 1965
Dagamaea japonica YOSII, 1965Japan
 Probably to be renamed as *Dagamaea tenuis* (FOLSOM, 1937)
- Genus **Micrisotoma** BELLINGER, 1952
Micrisotoma achromata BELLINGER, 1952.....USA, Japan
- Genus **Isotomiella** BAGNALL, 1939
Isotomiella minor (SCHÄFFER, 1900): YOSII 1939, 1959, 1972.....cosmopolitan
- Genus **Cryptopygus** WILLEM, 1901
Cryptopygus thermophilus (AXELSON, 1900).....cosmopolitan
 Isotomina thermophila (AXELSON): UCHIDA et TAMURA 1967
- Genus **Proisotoma** BÖRNER, 1901
Proisotoma alba YOSII, 1939.....Japan
Proisotoma minima ABSOLON, 1901: YOSII 1956.....holarctic

3. Subfamily **Isotominae** SCHÄFFER, 1986,

1. PaO at the basis of antennae, far remote from the eye-field (In Japanese species mouth part is modified).....*Cephalotoma*
PaO is placed near the eye-field 2
2. Dentes dorsally granulate throughout 3
Dentes dorsally crenulate 4
3. Dentes with a stout apical spine.....*Agrenia*
Dentes without apical spine.....*Granisotoma*
4. With anal spines.....*Spinisotoma*
Without anal spines 5
5. Ant.III with some 15–20 sensillae. Unguis with filiform appendices anteriorly
..... *Axelsonia*
6. With ciliate setae sensuales. Manubrium and dentes with many sort setae dorsally
.....*Isotomurus*
Without such s.s. Manubrium and dentes dorsally with dewernumber of sterong
setae..... 7
7. Unguis with prominent dorsal teeth in form of wings or prostheca
..... *Pteronychella*
Unguis not as above 8
8. Ventral side of manubrium has a group of strong spiny setae near the distal end
.....*Isotoma*
Ventral side of manubrium not as above 9
9. Middle tibiotarsus with two feathered setae.....*Halisotoma*
Middle tibiotarsus not as above.....*Desoria*

Genus **Cephalotoma** BAGNALL, 1949*Cephalotoma ursi* YOSII, 1972.....HokkaidoGenus **Agrenia** BÖRNER, 1906*Agrenia bidenticulata* (TULLBERG, 1876): YOSII 1938, UCHIDA et SUMA 1973

..... holarctic

Genus **Granisotoma** STACH, 1947*Granisotoma kisoana* (YOSII, 1939): YOSII 1965.....Honshu, Cryophilous*Isotoma kisoana* YOSII, 1965*Granisotoma sadoana* YOSII, 1965.....Honshu, CryophilousGenus **Spinisotoma** STACH, 1296*Spinisotoma pectinata* STACH, 1926: UCHIDA et TAMURA, 1967.....Now believed to be an ecomorphosis of *Desoria* sp.Genus **Axelsonia** BÖRNER, 1906*Axelsonia nitida* (FOLSOM, 1899): YOSII 1966.....Japan, India, halophilous*Axelsonia littoralis* (MONIEZ): YOSII 1955syn. nov.: *Isotoma* (*Isotoma*) *pteromucronata* UCHIDA, 1965

Genus **Isotomurus** BÖRNER, 1903

- Isotomurus balteatus* (REUTER, 1876): BÖRNER, 1909, YOSHII 1939, YOSHII et LEE 1963
 holarctic
- Isotomurus infuscatus* YOSHII, 1963 Japan
- Isotomurus palustris fucicolus* (REUTER): YOSHII 1955
- Isotomurus palustris* (MÜLLER, 1776): UCHIDA 1943.....dubious record
- Isotomurus prasinus* (REUTER, 1891): YOSHII 1954.....holarctic
- Isotomurus palustris* f. *prasina* (REUTER): YOSHII 1954
- Isotomurus punctiferus* YOSHII, 1963.....Japan, Pakistan
- Isotomurus takahashii* (YOSHII, 1940): YOSHII 1963.....Japan, Formosa
- Isotomurus alticolus japonicus* YOSHII, 1956
- Isotoma takahashii* YOSHII, 1940

Genus **Pteronychella** BÖRNER, 1909

- Pteronychella babai* YOSHII, 1939.....Honshu
- Pteronychella ezoensis* YOSHII, 1965Hokkaido
- Pteronychella perpulchra* BÖRNER, 1909: YOSHII 1939.....Honshu, Shikoku
- Pteronychella spathiosa* UCHIDA et TAMURA, 1968.....Hokkaido

Genus **Halisotoma** BAGNALL, 1949

- Halisotoma maritima* (TULLBERG, 1871).....Japan, Europe; halophilous
- syn. nov.: *Isotoma pacifica* YOSHII, 1971
- H. G. SCOTT's record of this species in 1959 is dubious.

Genus **Desoria** NICOLET, 1841

- Desoria albella* (PACKARD, 1873): YOSHII 1954.....holarctic
- Desoria arborea* (LINNE, 1785): UCHIDA, 1969.....holarctic
- Desoria dictaeta* (YOSHII, 1969).....Honshu
- Isotoma dictaeta* YOSHII, 1969
- Desoria gracillisetia* (BÖRNER, 1909):.....Japan
- Isotoma gracillisetia* BÖRNER, 1909: YOSHII 1939
- Desoria hyonosenensis* (YOSHII, 1939).....Japan
- Isotoma hyonosenensis* YOSHII, 1939
- Desoria japonica* (YOSHII, 1939): YOSHII 1954.....species dubia
- Isotoma japonica* YOSHII, 1939
- Desoria negishina* (BÖRNER, 1909).....species inquirenda
- Isotoma negishina* BÖRNER, 1909
- Desoria notabilis* (SCHAEFFER, 1896).....cosmopolitan
- Isotoma notabilis* (SCHAEFFER 1896): YOSHII 1969, 1972
- Desoria occulta* (BÖRNER, 1909).....Japan
- Isotoma occulta* BÖRNER, 1909: YOSHII 1939
- Desoria olivacea* (TULLBERG, 1871).....dubious record
- Isotoma olivacea* TULLBERG: YOSHII 1954
- Desoria sensibilis* (TULLBERG, 1872):cosmopolitan
- Pseudisotoma sensibilis* (TULLBERG): YOSHII 1963, 1965, UCHIDA et SUMA 1973

Desoria trispinata (MACGILLIVRAY, 1896): UCHIDA 1943, 1954, YOSII 1955

..... Holartic

Desoria yukiinomi (YOSII, 1939).....Honshu, cryophilous

Isotoma yukiinomi YOSII, 1939: YOSII 1963

Genus **Isotoma** BÖRNER, 1839

Isotoma carpenteri BÖRNER, 1909: YOSII 1939, 1963.....Japan

Isotoma nishihirai YOSII, 1965.....Okinawa

Isotoma ohtanii YOSII, 1972.....Hokkaido

Isotoma pinnata BÖRNER, 1909: YOSII 1939, 1963.....Japan

Isotoma pinnata v. *alba* H. UCHIDA, 1943.....

Isotoma pinnata v. *coracina* BÖRNER, 1909

Isotoma pinnata v. *fasciata* BÖRNER, 1909: UCHIDA 1943.....

Isotoma pinnata v. *melanocephala* BÖRNER, 1909: UCHIDA 1943.....

Isotoma pinnata v. *v-album* BÖRNER, 1909.....

Isotoma virgata YOSII, 1963..... Yakushima

Isotoma viridis BOURLET, 1839: YOSII 1940, 1954, UCHIDA 1943holartic

5. Family **Tomoceridae** SCHÄFFER, 1896

In Japan the Family is richly represented and relatively well investigated.

1. Dentes without large outer setae.....2

Dentes with large outer setae proximally.....4

2. Trochanteral organ well represented. Eyes absent.....*Lethemurus*

Trochanteral organ reduced.....3

3. Mucro with one dorsal lamella. Dentes proximally with scaly appendix

..... *Pogonognathellus*

Mucro with two dorsal lamellae. Dentes without scaly appendix..... *Tomocerus*

4. Trochanteral organ both on trochanter and femur.....*Plutomurus*

Trochanteral organ developed on femur.....*Aphaenomurus*

Genus **Pogonognathellus** PACLT, 1944

Pogonognathellus beckeri (BÖRNER, 1909): YOSII 1946, 1967.....Honsho

Pog. flavescens (TULLBERG): YOSII 1954, 1956

Pogonognathellus borealis YOSII, 1967.....Hokkaido

Tomocerus flavescens var. *arcticus* SCHÖTT: YOSII 1940

Genus **Tomocerus** NICOLET, 1842

The genus may be split to some subgenera as follows:

1. Outer basal tooth of mucro absent.....*Monodontocerus*

Outer basal tooth of mucro present.....2

2. Outer basal tooth of mucro with a toothlet.....*Tomocerus* (s. str.)

Outer basal tooth of mucro without toothlet.....*Tomocerina*

Tomocerus (*Monodontocerus*) *modificatus* (YOSII, 1955), YOSII 1967.....Japan

Monod. modificatus: YOSII 1955, 1956

Mond. mod. satsumensis YOSII, 1956

- Tomocerus* (*Tomocerina*) *aokii* YOSII, 1972.....Hokkaido
Tomocerus (*Tomocerina*) *lamelliferus* MILLS: UCHIDA et TAMURA 1968.....dubious record
Tomocerus (*Tomocerina*) *liliputanus* YOSII, 1967.....Japan
Tomocerus (*Tomocerina*) *varius* FOLSOM, 1899.....Japan
Tomocerus minutus TULLBERG: YOSII 1954, 1956
Tomocerus (*Tomocerus*) *asahinai* YOSII, 1 1954: YOSII 1967.....Japan, Korea
Tomocerus (*Tomocerus*) *cuspidatus* BÖRNER, 1909: YOSII 1967.....Japan
Tomocerus kumei YOSII, 1954
Tomocerus uenoi YOSII, 1954
Tomocerus (*Tomocerus*) *ishibashii* YOSII, 1954: YOSII 1967.....Japan, Korea
syn. nov. *Tomocerus katoi* UCHIDA, 1969
Tomocerus (*Tomocerus*) *jesonicus* YOSII, 1967.....Hokkaido
syn. ? *Tomocerus jezoensis* MATSUMURA et ISHIDA, 1931
Tomocerus vulgaris jesonius YOSII, 1940, nomen nudum
syn. nov. *Tomocerus vulgaris* var. *kurilensis* UCHIDA, 1965
Tomocerus (*Tomocerus*) *kinoshitai* YOSII, 1954: YOSII 1967.....Japan, Siberia
Tom. kinos. dentiferus YOSII, 1956
Tomocerus (*Tomocerus*) *minor* LUBBOCK: UCHIDA 1954.....dubious record
Tomocerus ocreatus DENIS, 1948: YOSII 1967.....Vietnam, Japan, Formosa
Tomocerus kawamurai YOSII, 1954
Tom. kawamurai f. *depicta* YOSII, 1955
Tom. ochreateus f. *kawamurai* YOSII, 1956
Tomocerus (*Tomocerus*) *punctatus* YOSII, 1967.....Japan
Tomocerus sibiricus AXELSON: UCHIDA 1969.....dubious record
Tomocerus (*Tomocerus*) *violaceus* YOSII, 1956: YOSII, 1963, 1967.....Japan
Tomocerus (*Tomocerus*) *viridis* YOSII, 1967.....Japan
Tomocerus (*Tomocerus*) *vulgaris* (TULLBERG, 1971): UCHIDA,dubious record
- Genus **Aphaenomurus** YOSII, 1956
Aphaenomurus interpositus YOSII, 1954.....Japan, Korea
Aphaenomurus vicinus YOSII, 1966
Aphaenomurus interpositus denticulatus YOSII, 1956.....Japan
- Genus **Plutomurus** YOSII, 1956
Plutomurus edaphicus YOSII, 1967.....Japan
Plutomurus ehimensis YOSII, 1956, 1967.....Cave in Shikoku
Plutom. suzukaensis ehimesis YOSII, 1956
Plutomurus gul (YOSII, 1966).....Cave in Korea and Kyushu
Plutomurus kawasawai YOSII, 1956, 1967.....Cave in Shikoku
Plutom. yamatensis kawasawai YOSII, 1956
Plutomurus kawasawai kyushuensis YOSII, 1956: YOSII 1967.....Cave in Kyushu
Plutom. yamatensis kyushuensis YOSII, 1956
Plutomurus marmorarius YOSII, 1967.....Cave in Pref. Okayama
Plutomurus riugadoensis (YOSII, 1939).....Japan
Tritomurus riugadoensis YOSII, 1939

- Plutomurus riugadoensis*: YOSII 1956, 1967
Tritomurus ishikawai UCHIDA, 1940
Plutomurus suzukaensis (YOSII, 1939): YOSII 1956, 1967.....Cave in Japan
Tritomurus suzukaensis: YOSII, 1939
Plutom. suzukaensis ohminensis YOSII, 1956
Plutom. suzukaensis naikaiensis YOSII, 1956
Plutomurus yamatensis YOSII, 1956: YOSII 1967Caves of Pref. Nara
Genus **Lethemurus** YOSII, 1970
Lethemurus finitimus YOSII, 1970.....Cave in Hokkaido

6. Family **Entomobryidae** SCHÄFFER, 1896

The Family is not yet fully investigated with respect to Japanese species. So the genus *Entomobrya* and *Homidia* must be reviewed with respect to their taxonomic characters. Further the genus *Lepidocyrtus* and *Pseudosinella* are quite uninspected. They must be reviewed after the new scope of GISIN et GAMA (1969, 1970, 1972 etc.).

1. Body without scales 2
 Body with scales 4
2. Eyes reduced, with strong dorsal teeth of unguis.....*Sinella*
 Eyes not reduced, unguis normal 3
3. Dentes with many spines.....*Homidia*
 Dentes without spines*Entomobrya*
4. Body scales coloured and with striae 5
 Body scales hyaline and with faint ciliation 8
5. Scales pointed and fusiform 6
 Scales rounded and oval 7
6. Scales of segmental margins elongate.....*Janetschekbrya*
 Scales uniform all over.....*Willowsia*
7. Mucro falcate.....*Seira*
 Mucro bidentate.....*Lepidosira*
8. Eyes 8+8.....*Lepidocyrtus*
 Eyes reduced, 0+0 to 6+6.....*Pseudosinella*

Genus **Sinella** BROOK, 1882

The genus is to be divided in two subgenera.

Dentes dorsally only with ciliate setae.....*Sinella* (s.str.)

Dentes dorsally with some smooth spiny setae.....*Coecobrya*

- Sinella* (*Sinella*) *curviseta* BROOK, 1882: YOSII, 1942, 1956, UCHIDA 1954holarctic
Sinella (*Sinella*) *stalagmitorum* YOSII, 1954.....Cave in Honshu
Sinella (*Sinella*) *straminea* (FOLSOM, 1899):Japan, China
Sinella (*Sinella*) *umesaoi* YOSII, 1940: YOSII 1954, 1955, 1956, UCHIDA 1954
.....Japan, Korea

Sinella decemoculata UCHIDA, 1940

- Sinella* (*Coecobrya*) *akiyoshiana* YOSII, 1956: YOSII 1965.....Cave in Pref. Yamaguchi
Sinella (*Coecobrya*) *arcuata* YOSII, 1955: YOSII 1971.....Caves in Honshu
Sinella (*Coecobrya*) *cf. coeca* SCHÖTT, 1896: YOSII 1956.....Species non determinata
Sinella (*Coecobrya*) *dubiosa* YOSII, 1956: YOSII 1966Japan, Korea
Sinella (*Coecobrya*) *ishikawai* YOSII, 1956: YOSII 1964.....Caves of Shikoku
Sinella (*Coecobrya*) *spinidentata* YOSII, 1942: YOSII 1956, 1966.....Japan
Sinella hoefti var. *spinidentata* YOSII, 1942
Sinella (*Coecobrya*) *subquadrioculata* YOSII, 1956.....Cave in Honshu
Sinella (*Coecobrya*) *tibiotarsalis* YOSII, 1964.....Caves of Kyushu

Gebus **Entomobrya** RONDANI, 1861

Entomobrya aino (MATSUMURA et ISHIDA, 1931): YOSII 1954, STACH 1964

..... Japan, China
Seira aino MATSUMURA et ISHIDA, 1931

- Entomobrya amethystina* BÖRNER, 1909.....species inquirenda
Entomobrya arborea (TULLBERG, 1871): BÖRNER, 1909.....dubious record
Entomobrya corticalis var. *affinis* BÖRNER, 1909.....dubious record
Entomobrya japonica UCHIDA, 1954.....species inquirenda
Entomobrya multifasciata f. *japonica* UCHIDA, 1954: STACH 1963
Entomobrya nivalis LINNE, 1758: UCHIDA 1954.....dubious record
Entomobrya ozeana YOSII, 1954.....species inquirenda
Entomobrya proxima FOLSOM, 1924: YOSII 1965.....Java, Japan
Entomobrya pulcherrima YOSII, 1942: YOSII 1956, YOSII et LEE 1963Japan, Korea
Entomobrya sapporensis (MATSUMURA et ISHIDA, 1931).....species dubiosa
Entomobrya stenonyx BÖRNER, 1909.....species inquirenda
Entomobrya striatella BÖRNER, 1909: YOSII 1942, YOSII et LEE 1963Japan, Korea
Entomobrya thalassicola YOSII, 1965.....Japan, halophilous
Entomobrya tokunagai YOSII, 1942.....Japan
Entomobrya villosa BÖRNER, 1909.....species inquirenda
Entomobrya villosa var. *leucodesmia* BÖRNER, 1909Japan
Entomobrya villosa var. *nigrita* BÖRNER, 1909Japan

Genus **Homidia** BÖRNER, 1906

- Homidia chrysothrix* YOSII, 1942.....species dubia
Homidia fujiyamai UCHIDA, 1954.....species inquirenda
Homidia munda YOSII, 1956.....Japan
Homidia nigrocephala UCHIDA, 1943.....Japan, Formosa
Homidia nipponica YOSII, 1942.....species dubia
Homidia sauteri (BÖRNER, 1909): YOSII 1942, 1954, 1955.....Japan
Homidia sauteri var. *allopila* BÖRNER, 1909Japan
Homidia sauteri var. *depicta* BÖRNER, 1909: YOSII 1954, 1964Japan
Homidia sauteri f. *sinensis* DENIS, 1928: YOSII 1954.....China, Japan
Homidia socia DENIS, 1928: YOSII 1942, 1955.....China, Japan

Genus **Willowsia** SHOEBOOTHAM, 1917*Willowsia bimaculata* (BÖRNER, 1909): YOSHII 1942, 1954, 1964, UCHIDA 1969 Japan,Identity with *W. nigromaculata* LUBB. must be discussed.*Willowsia formosana* (DENIS, 1929): YOSHII 1942.....Formosa, Japan*Willowsia japonica* (FOLSOM, 1897): YOSHII 1942, 1955.....JapanIdentity with *W. platani* (NIC.) must be discussed.*Willowsia platani* (NICOLET, 1841): UCHIDA 1969.....JapanGenus **Janetschekbrya** YOSHII, 1971*Janetschekbrya yamashitai* (UCHIDA, 1969) comb. nov.....Honshu*Willowsia yamashitai* UCHIDA, 1969Genus **Seira** LUBBOCK, 1869*Seira indra* (IMMS, 1912): YOSHII et ASHRAF, 1965.....India, Japan*Lepidocyrtus taeniatoides* YOSHII, 1955*Seira iricolor* YOSHII et ASHRAF, 1964: YOSHII 1965.....Pakistan, Philippine, JapanGenus **Lepidosira** SCHÖTT, 1925*Lepidosira gigantea* (BÖRNER, 1909)Japan*Lepidosira gibbosa* (DENIS, 1924).....Japan*Lepidosira nilghiri* (DENIS, 1936): YOSHII 1955.....Japan, IndiaGenus **Lepidocyrtus** BOURLET, 1839*Lepidocyrtus curvicolis* BOURLET, 1839: YOSHII 1954, 1956.....dubious record*Lepidocyrtus cyaneus* TULLBERG, 1871: YOSHII 1942.....Europe, Japan*Lepidocyrtus lignorum* (FABRICIUS, 1775): YOSHII 1969.....Europe, Japan*Lepidocyrtus vicarius* BÖRNER, 1906.....species dubiosaGenus **Pseudosinella** SCHÄFFER, 1897*Pseudosinella pseudolanuginosa* (YOSHII, 1942).....species inquirenda*Lepidocyrtus pseudolanuginosus* YOSHII, 1942*Pseudosinella duodecimocellata* HANDSCHIN, 1928: YOSHII 1954*Pseudosinella octopunctata* BÖRNER, 1901: YOSHII 1942.....dubious record*Pseudosinella petterseni* BÖRNER, 1901: YOSHII 1953.....dubious record7. Family **Orchesellidae** STACH, 1960 (ut Subfamily)

In Japan only one species and a dubious form is present.

Orchesellides sinensis (DENIS, 1929): YOSHII 1942.....Japan, China*Cavernobrya shobuensis* YOSHII, 1956

..... species et genera inquirenda from the Cave Shobudo in Pref. Kochi

8. Family **Paronellidae**, BÖRNER, 1906 (ut Subfamily)

1. Dentes with dorsal crenulation *Akabosia*
Dentes without dorsal crenulation..... 2
2. Mucro bidentate, not scaled..... *Salina*
Mucro multidentate, body scaled..... *Callyntrura*

Genus **Akabosia** KINOSHITA, 1919

- Akabosia matsudoensis* KINOSHITA, 1919: YOSII 1954, 1956.....Japan
Salinella kinoshitai UCHIDA, 1943

Genus **Salina** MACGILLIVRAY, 1894

- Salina affinis* (FOLSOM, 1899).....Japan
Salina affinis var. *concolor* BÖRNER, 1909
Salina celebensis SCHÄFFER, 1898: YOSII 1954
Salina pallidus var. *punctatus* UCHIDA, 1943
Salina bicincta (BÖRNER, 1909).....Japan
Cremastocephalus janome MATSUMURA et ISHIDA, 1931
Salina speciosa (KINOSHITA, 1917).....Japan
Cremastocephalus ebiformis MATSUMURA et ISHIDA, 1931

Genus **Callyntrura** BÖRNER, 1906

- Callyntrura japonica* (KINOSHITA, 1917).....Japan
Paronella japonica KINOSHITA, 1917
Handschinphysa japonica (KINOSHITA): YOSII 1954
Handschinphysa lineata (PARONA, 1892): YOSII, 1956
Callyntrura vestita (HANDSCHIN, 1925): UCHIDA 1954.....dubious record

9. Family **Cyphoderidae**, BÖRNER, 1913

- Cyphoderus hozawai* KINOSHITA, 1917: UCHIDA 1940.....Japan, termitophilous
Referable to the genus *Serroderus* DELAMARE, 1948
Cyphoderus javanus BÖRNER, 1906: YOSII 1964.....Japan
Cyphoderus assimilis BÖRNER, 1914: YOSII 1953

10. Family **Oncopoduridae**, BÖRNER, 1906 (ut Subfamily)

- Ant. IV with a falcate seta.....*Harlowmillsia*
Ant. IV without such seta, but with a row of blunt sensillae.....*Oncopodura*

Genus **Harlowmillsia** BONET, 1944

- Harlowmillsia ocellata* (MILLS, 1937): YOSII 1965.....North America, Japan

Genus **Oncopodura** CARL et LEBEDINSKY, 1905

- Oncopodura crassicornis* SHOEBOOTHAM, 1911: YOSII 1970.....holarctic
Oncopodura japonica YOSII 1956Cave in Pref. Tochigi
Oncopodura kuramaensis (YOSII, 1938).....species inquirenda
Cyphoderellopsis kuramaensis YOSII, 1938
Oncopodura kuramotoi YOSII, 1964.....Cave in Okinawa
Oncopodura puncteola YOSII, 1956.....Cave in Pref. Tochigi

II. Suborder **Symphyleona** BÖRNER, 190111. Family **Neelidae** FOLSOM, 1896

All members of the family are very minute, to be found only in Berlese collection

- Ant.III and IV confluent and with thick secondary setae. White.....*Megalothorax*
 Ant.III and IV separated. gray or dark in colour.....*Neelides*

Genus **Megalothorax** WILLEM, 1900

Megalothorax minimus WILLEM, 1900: YOSII 1954.....cosmopolitan

Genus **Neelides** CAROLI, 1912

Neelides minutus (FOLSOM, 1901):holarctic

Neelides folsomi CAROLI, 1912: YOSII 1965

Neelus minutus FOLSOM, 1901: UCHIDA et TAMURA, 1968

12. Family **Sminthuridae** LUBBOCK, 1870

Key to Subfamilies:

1. Female without anal appendix. Antennae of male converted to the clasping organ.
 Distal tube of colophore not elongate. Tibiotarsal organ present.....Sminthuridinae
 Femlae with anal appeidage. Antennae of male not modified. 2
2. Ant.IV very short, much shorter than ant.III.....Dicyrtominae
 Ant.IV subequal or longer than ant.III 3
3. Dentes with spines.....Arrhopalitini of Katianninae
 Dentes without spines..... 4
4. Tenaculum with basal appendage. Distal tube of colophore smooth
Katiannini of Katianninae
 Tenaculum without basal appendage 5
5. Distal tube of colophore smooth. Ant.IV not subdivided. With a pair of
 interocular tuberclesVesicephalinae
 Distal tube of colophore tuberculate. Ant.IV subdivided 6
6. Ant.III without strong setae on its distal half.....Bourletiellinae
 Ant.III with strong setae on its distal half.....Sminthurinae

1. Subfam. **Sminthuridinae** BÖRNER, 1900

Mucro with broad lamellate margins.....*Sminthurides*

Mucro without lamellae.....*Sphaeridia*

Genus **Sminthurides** BÖRNER, 1900

Almost all species are aquatic, living on the water surface. Some exotic forms are on the sea shore.

Sminthurides aquaticus (BOURLET, 1842): UCHIDA 1937, YOSII 1954cosmopolitan

Sminthurides biwae YOSII, 1970.....Honshu

Sminthurides malmgreni (TULLBERG, 1876): YOSII 1970.....holarctic

Sminthurides potamobius YOSII, 1970.....Honshu

Genus **Sphaeridia** LINNANIEMI, 1912

Small brownish species, usually terrestrial. In Japan the genus is not yet well investigated.

Sphaeridia tunicata YOSII, 1954.....Japan

2. Subfam. **Katianninae** BÖRNER, 1913

Dentes with spiny setae.....*Arrhopalites*
Dentes without spiny setae.....*Sminthurinus*

Genus **Arrhopalites** BÖRNER, 1913

In Japan there are many species. The majority of them are terrestrial, but others are troglobionts.

Arrhopalites alticolus YOSII, 1970.....Honshu
Arrhopalites antrobis YOSII, 1954: YOSII, 1956, 1967.....Cave in Pref. Yamaguchi
Arrhopalites habei YOSII, 1956: YOSII 1967.....Honshu
Arrhopalites binoculatus (BÖRNER, 1901): YOSII 1954, 1955
Arrhopalites japonicus YOSII, 1956.....Honshu
Arrhopalites minutus YOSII, 1970.....Honshu
Arrhopalites octacanthus YOSII, 1970.....Honshu
Arrhopalites uenoi YOSII, 1956.....Caves in Pref. Iwate

Genus **Sminthurinus** BÖRNER, 1901

Terrestrial species abundant in forest litter, but not yet well investigated.

Sminthurinus aureus (LUBBOCK, 1862): UCHIDA 1952, 1954, 1957.....Europe, Japan
Sminthurinus igniceps (REUTER, 1881): YOSII 1970.....Japan
Sminthurinus modestus YOSII, 1970.....Japan
Sminthurinus pallelescens YOSII, 1970.....Japan
Sminthurinus speciosus YOSII, 1970.....Japan
Sminthurinus trinotatus (AXELSON, 1905): YOSII 1970.....Japan
Sminthurinus fenestratus BÖRNER, 1909: UCHIDA 1952

3. Subfam. **Bourletiellinae** BÖRNER, 1913

1. Unguiculus of fore leg is different from that of other legs.....*Heterosminthurus*
Unguiculus of all legs subequal..... 2
2. Male dorsally with a crasping organ.....*Bourletiella*
Male without dorsal crasping organ.....*Deuterosminthurus*

Genus **Heterosminthurus** STACH, 1955

Heterosminthurus insignis (REUTER, 1876): YOSII 1954
..... Dubious record, probably *H. undulans* YOSII et LEE, 1963
Heterosminthurus nymphes YOSII, 1970.....Honshu
Heterosminthurus pirika YOSII, 1972.....Hokkaido

Genus **Bourletiella** BANKS, 1899

Bourletiella hortensis (FITCH, 1863): YOSII 1954, UCHIDA 1955.....cosmopolitan
Sminthurus pruinus: MATSUMURA et ISHIDA 1931
Bourletiella pruinosa: FOLSOM 1899: KINOSHITA 1932, UCHIDA 1940, KINOSHITA et UCHIDA, 1950

Genus **Deuterosminthurus** BÖRNER, 1901

- Deuterosminthurus bicinctus* (KOCH, 1840): OKU et UCHIDA 1965.....holarctic
Deuterosminthurus ezoensis YOSHII, 1972.....Hokkaido
Deuterosminthurus okinawanus YOSHII, 1965.....Okinawa

4. Subfam. **Sminthurinae** BÖRNER, 1913

1. Antennae enormously long.....*Temeritas*
 Antennae not very long..... 2
2. Postantennal seta present.....*Sminthurus*
 Postantennal seta absent 3
3. Prothorax with a digitate vesicle.....*Lipothrix*
 Prothorax without digitate vesicle, antennae normally long.....*Sphyrotheca*

Genus **Temeritas** DELAMARE et MASSOUD, 1963

- Temeritas summelongicornis* (UCHIDA, 1965) comb. nov.....Ryukyu
Sminthurus summelongicornis UCHIDA, 1965

Genus **Sphyrotheca** BÖRNER, 1906

- Sphyrotheca multifasciata* (REUTER, 1878): BÖRNER 1909, YOSHII 1954, UCHIDA 1957
 Japan, Europe (introduced)
 v. *ornata* BÖRNER, 1909 and v. *pallidinota* BÖRNER, 1909 are included.

Genus **Lipothrix** BÖRNER, 1906

- Lipothrix mirabilis* YOSHII, 1965.....Japan

Genus **Sminthurus** LATREILLE, 1802-3

- Sminthurus daisetsuzanus* UCHIDA, 1957.....Hokkaido
Sminthurus melanonotus UCHIDA, 1938: YOSHII 1956.....Japan
Sminthurus sensibilis BÖRNER, 1909.....Japan
Sminthurus serrulatus BÖRNER, 1909: YOSHII 1970.....Japan
 var. *trimaculata* BÖRNER, 1909 is included
Sminthurus viridis (LINNE, 1758): UCHIDA, 1954, YOSHII 1972cosmopolitan
 v. *annulata* FOLSOM, 1899 and v. *irrorata* (REUTER, 1900) are included: UCHIDA
 1954, 1957

5. Subfam. **Vesicephalinae** RICHARDS, 1968

Only one genus and species is known from Japan.

Genus **Papirinus** YOSHII, 1954

- Papirinus prodigiosus* YOSHII, 1954: YOSHII 1970.....Japan

6. Subfam. **Dicyrtominae** BÖRNER, 1906

1. Two modified setae of hind tibiotarsus blunt 2
 Two modified setae of hind tibiotarsus are feathered 3
2. Unguis with tunica.....*Dicyrtomina*

- Unguis without tunica.....*Dicyrtoma*
 3. Abdomen with a dorsal organ.....*Papirioides*
 Abdomen without dorsal organ.....*Ptenothrix*

Genus **Dicyrtoma** BOURLET, 1842

- Dicyrtoma chlorops* (TULLBERG) var. *pallens* BÖRNER, 1909.....species inquirenda
Dicyrtoma fusca (LUCAS) in YOSII 1940 is *Ptenothrix* sp.

Genus **Dicyrtomina** BÖRNER, 1903

- Dicyrtomina leptothrix* BÖRNER, 1909: YOSII 1959, 1965.....Japan, cryophilous
Dicyrtomina rufescens (REUTER) f. *nivalis* UCHIDA, 1933
Dicyrtomina tsugarensis (UCHIDA, 1952): YOSII 1970.....Honshu
Gibberathrix tsugarensis UCHIDA, 1952
Dicyrtomina (*Calvatomina*) *yaeyamensis* YOSII, 1965.....Ryukyu

Genus **Ptenothrix** BÖRNER, 1906

- Ptenothrix atra* (LINNE, 1758): YOSII 1949, UCHIDA 1952dubious records
Ptenothrix corynephora BÖRNER, 1909: YOSII 1954, YOSII et LEE 1963Japan
 v. *cincta* BÖRNER, 1909, var. *sellata* BÖRNER, 1909 and f. *shibanaii* YOSII, 1955 are included.
Ptenothrix denticulata (FOLSOM, 1899): UCHIDA 1954, YOSII 1956, 1965Japan
Papirius denticulatus FOLSOM, 1899
 v. *catenata* BÖRNER, 1909 is included.
Ptenothrix higashihirajii YOSII, 1965.....Okinawa
Ptenothrix iriomotensis UCHIDA, 1965.....Ryukyu
Ptenothrix janthina BÖRNER, 1909: YOSII et LEE 1963.....Japan
Pt. setosa (KRAUSE.) var. *janthina* BÖRNER, 1909
Ptenothrix lactea UCHIDA, 1953.....Honshu
Ptenothrix maculosa (SCHÖTT, 1891): MATSUMURA et ISHIDA 1931.....dubious record
Ptenothrix marmorata (PACKARD, 1873): UCHIDA 1954.....dubious record
Ptenothrix ryohiei UCHIDA, 1953.....Honshu
Ptenothrix tateyamana UCHIDA, 1958.....Honshu
Ptenothrix tokarensis YOSII, 1965.....Ryukyu
Ptenothrix tricycla UCHIDA, 1953.....Honshu
Ptenothrix tsutsuii YOSII, 1955: YOSII 1965.....Ryukyu
Ptenothrix vinnula UCHIDA, 1957.....Hokkaido
Ptenothrix vittata (FOLSOM, 1896): YOSII et LEE 1963...Japan (introduced), USA, Australia
Ptenothrix yakushimana YOSII, 1965.....Ryukyu
Pt. setosa f. *principalis*: BÖRNER 1909 and *Pt. s.* var. *picata* BÖRNER 1909 are included in *Pt. janthina* BÖRNER, 1909

Genus **Papirioides** FOLSOM, 1924

- Papirioides jacobsoni* FOLSOM, 1924: YOSII et LEE 1963.....Japan, Java
Papirioides uenoi UCHIDA, 1966.....Honshu

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