

Title	Critical Check List of the Japanese Species of Collembola
Author(s)	YOSHII, Riozo
Citation	Contributions from the Biological Laboratory, Kyoto University (1977), 25(2): 141-170
Issue Date	1977-03-31
URL	http://hdl.handle.net/2433/156007
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

Critical Check List of the Japanese Species of Collembola

Riozo YOSHII

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 engagement 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. An-
 tennae short.....Superfam. 1 Poduromorpha BÖRNER, 1913..... 3
 Th.I is regressed and without setae. Integument is practically smooth. Anten-
 nae 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..... | <i>Xenylla</i> |
| Eyes absent | <i>Acherontides</i> |
| 3. Furca absent. Eyes absent..... | <i>Willemia</i> |
| 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..... | <i>Schoettella</i> |
| 6. Eyes 8+8, normally developed..... | <i>Choreutinula</i> |
| Eyes reduced, 3+3 in Japanese species..... | <i>Mesogastrura</i> |
| 7. Eyes not reduced. Dentes usually with 7 dorsal setae..... | <i>Hypogastrura</i> |
| Eyes reduced. Dentes with reduced number of dorsal setae..... | <i>Schaefferia</i> |

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..... | <i>Hypogastrura</i> (s. str.) |
| 2. Four elements of PaO. subequal and radiating from the center..... | <i>Ceratophysella</i> |
| Two posterior elements of PaO. larger and encircling the accessory element | <i>Cyclograna</i> |

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 (Ceratoophysella) duplicispinosa* YOSII, 1954..... Japan, Korea, China
Hypogastrura (Ceratoophysella) fukugakuchiana YOSII, 1956..... Cave nr. Itoigawa
Hypogastrura (Ceratoophysella) proserpinae YOSII, 1956..... Cave in Pref. Iwate
Hypogastrura (Ceratoophysella) quinqueoculata YOSII, 1956..... Cave in Pref. Gifu
Hypogastrura (Ceratoophysella) troglodytes YOSII, 1956 nom. nov. for *H. troglodites* YOSII
..... Japanese Caves
Hypogastrura (Ceratoophysella) 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 kuzuensis* 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.....HonshuGenus **Acherontides** BONET, 1945*Acherontides vivax* YOSHII, 1956.....Caves of Northern Honshu3. Family **Neanuridae** BÖRNER, 19011. 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 | <i>Friesea</i> |
| With paired number of anal spines | <i>Oudemansia</i> |
| 4. Furca well developed, marine species..... | <i>Pseudanurida</i> |
| Furca reduced or absent, humicolous species..... | <i>Paranura</i> |
| 5. Mandibles absent | <i>Brachystomella</i> |
| Mandibles present | 6 |
| 6. Dentes spoon shaped distally | 7 |
| Dentes not spoon-shaped..... | 8 |
| 7. Dentes with two lobate lamellae..... | <i>Odontella</i> |
| Dentes without lamellae..... | <i>Xenyllodes</i> |
| 8. Segmentes of furca all present | 9 |
| Furca absent or reduced | 10 |
| 9. Body depressed, with broad paratergites..... | <i>Ceratrimeria</i> |
| Body subcylindrical | <i>Pseudachorutes</i> |
| 10. Maxilla complex at apex..... | <i>Anurida</i> |
| Apex of maxilla styliform..... | 11 |
| 11. Body surface verrucose with compound granules..... | <i>Grananurida</i> |
| Body surface normally granulate..... | <i>Micranurida</i> |

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, 1925Furca 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 **Xenylloides** AXELSON, 1903

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

- Xenylloides 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. *infusata*).....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*) *triocolata* 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* BÖRNER, 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, 1906Subg. **Lobellina** YOSII, 1956

- Lobella (Lobellina) cavicola* (YOSII, 1956).....Cave in Pref. Kochi
Yuukianura cavicola YOSII, 1956
Lobella (Lobellina) decipiens YOSII, 1965.....South Kyushu
Lobella (Lobella) decipiens YOSII, 1965
Lobella (Lobellina) kitazawai YOSII, 1965.....Middle 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: YOSII, 1958,.....Japan, North AmericaGenus **Homaloproctus** BÖRNER, 1909*Homaloproctus sauteri* BÖRNER, 1909: UCHIDA, 1953, YOSII 1958, SALMON 1959.....JapanGenus **Tullbergia** LUBBOCK, 1876*Tullbergia (Mesaphorura) krausbaueri* BÖRNER, 1901: YOSII, 1965, UCHIDA et TAMURA 1968Cosmopolitan
Identity with *Mesaphorura yosii* RUSEK, 1967, 1971 must be inspected.Genus **Onychiurus** GERVAIS, 1841Japanese 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.....*fimetarius*-group (*Onychiurus* s. str.)
Bulbs of ant.III-organ granulate.....*ramosus*-group (*Paronychiurus*)

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

.....Hokkaido

Onychiurus okafujii YOSII, 1967.....Honshu*Onychiurus orthacanthus* HANDSCHIN, q920.....dubious record*Onychiurus pseudarmatus teres* YOSII, 1956.....Honshu*Onychiurus pseudarmatus yagii* KINOSHITA, 1923: YOSII, 1954.....Honshu*Onychiurus yagii* KINOSHITA, 1923*Onychiurus tomuraushensis* (YOSII, 1940): YOSII 1972.....Hokkaido*Tullbergia tomuraushensis* YOSII, 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 (YOSII, 1939): STACH 1947.....Species inquirenda
Uzelia rara YOSII, 1939

Genus **Anurophorus** NICOLET, 1841

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

Genus **Pseudanurophorus** STACH, 1922

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

Genus **Coloburella** LATZEL, 1917

Coloburella japonica YOSII, 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: YOSII 1965.....cosmopolitan

Genus **Folsomia** WILLEM, 1902

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

Folsomia dubia KINOSHITA, 1917: KINOSHITA, 1932

Folsomia fontis YOSII, 1953

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

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

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

Folsomia hasegawai YOSII, 1959.....Japan

- Folsomia hidakana* UCHIDA et TAMURA, 1968.....Hokkaido
Folsomia inoculata STACH, 1947: YOSII 1972.....paleartic
 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* YOSHII, 1972.....HokkaidoGenus **Agrenia** BÖRNER, 1906*Agrenia bidenticulata* (TULLBERG, 1876): YOSHII 1938, UCHIDA et SUMA 1973
..... holarcticGenus **Granisotoma** STACH, 1947*Granisotoma kisoana* (YOSHII, 1939): YOSHII 1965.....Honshu, Cryophilous
Isotoma kisoana YOSHII, 1965*Granisotoma sadoana* YOSHII, 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): YOSHII 1966.....Japan, India, halophilous*Axelsonia littoralis* (MONIEZ): YOSHII 1955
syn. nov.: *Isotoma (Isotoma) pteromucronata* UCHIDA, 1965

Genus **Isotomurus** BÖRNER, 1903

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

Genus **Pteronychella** BÖRNER, 1909

- Pteronychella babai* YOSII, 1939.....Honshu
- Pteronychella ezoensis* YOSII, 1965Hokkaido
- Pteronychella perpulchra* BÖRNER, 1909: YOSII 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* YOSII, 1971
 H. G. SCOTT's record of this species in 1959 is dubious.

Genus **Desoria** NICOLET, 1841

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

- Desoria trispinata* (MACGILLIVRAY, 1896): UCHIDA 1943, 1954, YOSII 1955
..... Holarctic
- Desoria yukinomi* (YOSII, 1939).....Honshu, cryophilous
Isotoma yukinomi YOSII, 1939: YOSII 1963
- Genus **Isotoma** BÖURLET, 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 1943holarctic

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, 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 jesonicus 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. *allospila* 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** SHOEBOTHAM, 1917

Willowsia bimaculata (BÖRNER, 1909): YOSII 1942, 1954, 1964, UCHIDA 1969 Japan,
Identity with *W. nigromaculata* LUBB. must be discussed.

Willowsia formosana (DENIS, 1929): YOSII 1942..... Formosa, Japan

Willowsia japonica (FOLSOM, 1897): YOSII 1942, 1955..... Japan
Identity with *W. platani* (NIC.) must be discussed.

Willowsia platani (NICOLET, 1841): UCHIDA 1969..... Japan

Genus **Janetschekbrya** YOSII, 1971

Janetschekbrya yamashitai (UCHIDA, 1969) comb. nov..... Honshu
Willowsia yamashitai UCHIDA, 1969

Genus **Seira** LUBBOCK, 1869

Seira indra (IMMS, 1912): YOSII et ASHRAF, 1965..... India, Japan
Lepidocyrtus taeniatooides YOSII, 1955

Seira iricolor YOSII et ASHRAF, 1964: YOSII 1965..... Pakistan, Philippine, Japan

Genus **Lepidosira** SCHÖTT, 1925

Lepidosira gigantea (BÖRNER, 1909) Japan

Lepidosira gibbosa (DENIS, 1924)..... Japan

Lepidosira nilghiri (DENIS, 1936): YOSII 1955..... Japan, India

Genus **Lepidocyrtus** BOURLET, 1839

Lepidocyrtus curvicollis BOURLET, 1839: YOSII 1954, 1956..... dubious record

Lepidocyrtus cyaneus TULLBERG, 1871: YOSII 1942..... Europe, Japan

Lepidocyrtus lignorum (FABRICIUS, 1775): YOSII 1969..... Europe, Japan

Lepidocyrtus vicarius BÖRNER, 1906..... species dubiosa

Genus **Pseudosinella** SCHÄFFER, 1897

Pseudosinella pseudolanuginosa (YOSII, 1942)..... species inquirenda

Lepidocyrtus pseudolanuginosus YOSII, 1942

Pseudosinella duodecimocellata HANDSCHIN, 1928: YOSII 1954

Pseudosinella octopunctata BÖRNER, 1901: YOSII 1942..... dubious record

Pseudosinella petterseni BÖRNER, 1901: YOSII 1953..... dubious record

7. Family **Orchesellidae** STACH, 1960 (ut Subfamily)

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

Orchesellides sinensis (DENIS, 1929): YOSII 1942..... Japan, China

Cavernobrya shobuensis YOSII, 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 appendage. 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 antrobius YOSII, 1954: YOSII, 1956, 1967.....Cave in Pref. Yamaguchi
Arrhopalites habeii 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 pallescens 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 pruinosus: MATSUMURA et ISHIDA 1931
Bourletiella pruinosus: 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* YOSII, 1972.....Hokkaido*Deuterosminthurus okinawanus* YOSII, 1965.....Okinawa4. Subfam. **Sminthurinae** BÖRNER, 19131. 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, 1965Genus **Sphyrotheca** BÖRNER, 1906*Sphyrotheca multifasciata* (REUTER, 1878): BÖRNER 1909, YOSII 1954, UCHIDA 1957

.....Japan, Europe (introduced)

v. *ornata* BÖRNER, 1909 and v. *pallidinota* BÖRNER, 1909 are included.Genus **Lipothrix** BÖRNER, 1906*Lipothrix mirabilis* YOSII, 1965.....JapanGenus **Sminthurus** LATREILLE, 1802-3*Sminthurus daisetsuzanus* UCHIDA, 1957.....Hokkaido*Sminthurus melanonotus* UCHIDA, 1938: YOSII 1956.....Japan*Sminthurus sensibilis* BÖRNER, 1909.....Japan*Sminthurus serrulatus* BÖRNER, 1909: YOSII 1970.....Japanvar. *trimaculata* BÖRNER, 1909 is included*Sminthurus viridis* (LINNE, 1758): UCHIDA, 1954, YOSII 1972cosmopolitanv. *annulata* FOLSOM, 1899 and v. *irrorata* (REUTER, 1900) are included: UCHIDA
1954, 19575. Subfam. **Vesicephalinae** RICHARDS, 1968

Only one genus and species is known from Japan.

Genus **Papirinus** YOSII, 1954*Papirinus prodigiosus* YOSII, 1954: YOSII 1970.....Japan6. 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 (KRAUSB.) 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

Literatures regarding the Japanese Collembolan Fauna

- BÖRNER, C., 1903. Ueber eine altweltliche Collembolen nebst Beschreibungen zur Systematik der Isotominen usw. *SB. Ges. naturf. Fr.* 1903: 129-182
- 1906. Das System der Collembolen. *Mitt. Naturhist. Mus. Hamburg* 23: 147-188
- 1908. Collembolen aus Südafrika, nebst einer Studie über die Maxille usw. *Jenaische Denkschr. Med. Ges.* 13: 51-68
- 1909. Japans Collembolenfauna. *SB. Ges. naturf. Fr.* 1909: 99-135
- CHIBA, S., 1968. Collembola of the Hakkoda Area I. Family Tomoceridae. *Sci. Rep. Hirosaki Univ.* 15: 24-35
- CHO, P. S., 1954. A List of Collembola from Korea. *Seikin Gakuho (Seoul)*, no. 1, 231-246
- CHRISTIANSEN, K., 1961. Convergence and Parallelism in Cave Entomobryinae. *Evolution* 15: 288-301
- DENIS, J. R., 1924. Sur les Collemboles du Museum de Paris I. *Ann. Soc. ent. Fr.* 93: 211-260
- 1925. Ditto II. *Ann. Soc. ent. Fr.* 94: 260-290
- 1929. Notes sur les Collemboles récoltées dans ses Voyages par le Prof. Silvestri. *Boll. Lab. Zool. Portici* 22: 166-180, 305-320
- 1941. Catalogue de Entomobryens, Siraeformes et Lepidocyrtiformes. *Bull. Sci. Bourgogne* 9: 41-118
- DJANASCHIVILI, R. A., 1971. *Hypogastrura* devoid of Eyes and Postantennal Organ from Caucasian Caves I. *Zool. Jurnal* 50: 666-676
- ELLIS, W. N. et P. F. BELLINGER, 1973. An Annotated List of the generic Names of Collembola and their type Species. *Monogr. Nederlandes Entom. Ver.* no. 7, 74 pp.
- FOLSOM, J. W., 1897. Japanese Collembola I. *Bull. Essex Inst.* 29: 51-57
- 1899. Ditto II. *Proc. Amer. Acad. Arts and Sci.* 34: 261-274
- GAMA, M. M. da, 1971. Nouvelle Contributions a la Connaissance du Genre *Xenylla*. *Khumbu Himal* 4: 152-155
- GOUGH, H. J., 1975. *Sminthurides assimilis* Stach. *Rev. Ecol. biol. Sol* 12: 649-654
- KINOSHITA, S., 1916. Honposan Tobimushika ni tsuite (in Japanese) *Zool. Mag. Tokyo* 28: 451-460.
- 1916. Nipponsan Tobimushi no san Shinshu (in Japanese) *Zool. Mag. Tokyo* 28: 494-498
- 1917. Honposan Tobimushirui no ni Shinshu (in Japanese) *Zool. Mag. Tokyo* 29: 40-46
- 1917. Honposan Tobimushirui no ni Shinshu (in Japanese) *Zool. Mag. Tokyo* 29: 73-76
- 1919. Honposan Tobimushika no ichi Shinzoku (in Japanese) *Zool. Mag. Tokyo* 31: 15-20
- 1923. Yagi-shirotohimushi to Shirotohimushimodoki ni tsuite (in Japanese). *Insect*
- 1932. Collembola (in) *Iconographia Insectorum Japonicorum*, Tokyo, 1932
- MATSUMOTO, R. et T. SAITO, 1929. Mugi no Hatsuga o gaisuru *Onychiurus* (in Japanese). *Okayama Agr. Exp. St. Rep.* no. 35, 34 pp.
- MATSUMURA S. et M. ISHIDA, 1931. Collembola (in) 6,000 illustr. *Insects of Japan Empire* (in Japanese). Tokyo, 1931
- MİYOSHI, K., 1923. Mugirui no Shin Gaichu Yagi-shirotohimushimodoki ni tsuite (in Japanese). *Insect World* 27: 44-47
- NARUMI, R., 1951. Tsugarusan Tobimushi Mokuroku (in Japanese). *Shinka* 3: 8-10
- NIJIMA, K., 1966a. Collembola of the subalpine coniferous Forest of Kita-Yatsugatake Volcano. *Kontyu* 34: 244-247
- 1966b. Diversity and Frequence of Collembola found in three different Vegetations of the alpine Region of Mt. Tateyama. *Kontyu* 34: 339-346
- OKU, T. et H. UCHIDA, 1965. On some Collembola collected in the cultivated Land of the Tohoku National Agr. Exp. St. in 1964. *Tohoku Konchu* 3: 1-2
- RUSEK, J., 1971. Zur Taxonomie der *Tullbergia krausbaueri* and ihre Verwandten. *Acta entom. bohemoslavica* 68: 188-206

- SALMON, J. T., 1974. Notes and Drawings from Type Material of Collembola. Zool. Publ. Victoria Univ. Wellington, no. 66, 41 pp.
- SCHÄFFER, C., 1900. Ueber württembergische Collembola. Jahresh. Ver. Naturk. Württemberg **56**: 245-280
- SCOTT, H. G., 1959a. Collembola from Japan I, Onychiurinae, Ent. News **70**: 161-163
- 1959b. Collembola from Japan II, Isotomidae. Ent. News **70**: 241-243
- 1961. Collembola from Japan III, Hypogastruridae and Neanuridae, Ent. News **72**: 121-126
- STACH, J., 1947. The Apterygotan Fauna of Poland in Relation to the World Fauna of this Group of Insects. Fam. Isotomidae, Polska Akad. Umiej. 1947, 488 pp. 53 pls.
- 1949. Ditto, Fam. Neogastruridae and Pseudachorutidae, Polska Akad. Umiej. 1949, 341 pp. 35 pls.
- 1949b. Ditto, Fam. Bilobidae, Polska Akad. Umiej., 1951, 97 pp., 16 pls.
- 1954. Ditto, Fam. Onychiuridae, Polska Akad. Umiej. 1954, 219 pp. 27 pls.
- 1956. Ditto, Fam. Sminthuridae, Polska Akad. Nauk 1956, 287 pp., 33 pls.
- 1957. Ditto, Fam. Neelidae and Dicyrtomidae, Polska Akad. Nauk 1957: 113 pp. 9 pls.
- 1960. Ditto, Tribe Orchesellini, Polska Akad. Nauk, 1963, 151 pp., 25 pls.
- 1963. Ditto, Tribe Entomobryini, Polska Akad. Nauk, 1963, 126 pp., 43 pls.
- SZEPTICKI, A., 1973. North Korean Collembola I. Acta Zool. Cracoviensia **18**: 23-39
- UCHIDA, H. 1937a. *Sminthurides aquaticus* (BOURL.) unknown to Japan. Zool. Mag. Tokyo **49**: 286-289
- 1937b. *Neanura gigantea* TULLBERG in Japan. Kontyu **11**: 133-136
- 1938. Description of two new Species of Japanese Collembola. Zool. Mag. Tokyo **50**: 132-134
- 1940a. Some Japanese cavenicolous Springtails. Bull. Tokyo Sci. Mus. no. 2, 5 pp., 1 pls.
- 1940b. A new Species of Collembola: *Pseudachorutes yasumatsui* sp. n. Mushi **13**: 9-10
- 1943. On some Collembola Arthropleona from Nippon. Bull. Tokyo Sci Mus., no. 8, 18 pp., 6 pls.
- 1951a. On two Species of the genus *Anurida*. Kontyu **19**: 32-34
- 1951b. Collembola (In) Iconographia Insectorum Japonicorum, Ed. 2, Tokyo, 1950: 2-21 pp.
- 1952. A new Genus of Sminthuridae from Japan. Mushi **24**: 1-4
- 1953a. On the Relationship of three Genera, *Tetrodontophora*, *Lophognathella* and *Homaloproctus* of the Family Onychiuridae. Zool. Mag. Tokyo **62**: 55-58
- 1953b. On three new Species and a new Form of Japanese Sminthuridae, with special Reference to the dental Setae. Annot. Zoo. Jap. **26**: 1-13
- 1954a. The Insect Fauna of Mt. Ishizuchi and Omogo Valley, Iyo, Japan, The Collembola. Trans. Shikoku Entom. Soc. **4**: 1-6
- 1954b. Some Collembola newly recorded from Japan. Insecta Matsumurana **18**: 61-65
- 1954c. Apterygota of the Hachijo-Jima and its adjacent Islands. Sci. Rep. Hirosaki Univ. **1**: 1-17
- 1955. Synopsis of the Apterygota of Japan and its Vicinity I. Bull. Biogeogr. Soc. Japan **16-19**: 197-203
- 1955-1958. Ditto II-VII. Sci. Rep. Hirosaki Univ. **2**: 28-34, **3**: 25-29, **4**: 18-25, 38-45, **5**: 13-20, 33-35.
- 1957a. A new Species of *Papirioides*, unrecorded Genus from Japab. Zool. Mag. Tokyo **66**: 457-460
- 1957b. On some Sminthurid Collembola from Hokkaido. Insecta Matsumurana **21**: 22-30
- 1958. A new Species of Sminthuridae. Kontyu **26**: 76-77
- 1962. New Record of *Pseudanurida billitonensis* SCHÖRTT from Kikaigashima, Amami-Oshima Islands. Kontyu **30**: 138-139

- 1965a. On some Collembola from the Southern Kuriles. *Kontyu* **33**: 207–210
- 1965b. Collembola of Rrykyus. *Kontyu* **33**: 85–96
- 1969. Studies on the arboreal Collembola I. Results of faunal Survey of Mt. Hakkoda Area, IBP main Area. *Sci Rep. Hirosaki Univ.* **16**: 12–29
- UCHIDA H. et H. TAMURA, 1966. On three marine Collembola in Hokkaido. *Journ. Fac. Sci. Hokkaido Univ. Ser. VI*, **16**: 23–30
- 1967a. Eine neue littorale Collembolenart von Hokkaido. *Journ. Fac. Sci. Hokkaido Univ. Ser. VI*, **18**: 234–237
- 1967b. Description and Records of Collembola from Hokkaido. *Kontyu* **35**: 1–13
- 1968a. Ditto II. *Kontyu* **36**: 1–13
- 1968b. Ditto III. *Kontyu* **36**: 341–351
- UCHIDA, H. et Y. SUMA, 1973. Descriptions and Records of Collembola from Hokkaido IV. *Kontyu* **41**: 183–188
- WOMERSELY, H., 1931. *Pogonognathus beckeri* BÖRNER from Japan. *Entom. monthl. mag.* **67**: 142
- *YOSH, R., 1938. Studies on Japanese Collembola I. *Zool. Mag. Tokyo* **50**: 488–491
- 1939a. Isotomid Collembola of Japan. *Tenthredo* **2**: 348–392
- 1939b. A new Cyphoderid Collembola from Japan. *Annot. Zool. Jap.* **18**: 95–98
- 1939c. Two new Species of Tomocerid Collembola from Limestone Caves of Japan. *Annot. Zool. Jap.* **18**: 177–181
- 1940a. On some Collembola from Formosa. *Annot. Zool. Jap.* **19**: 114–118
- 1940b. On some Collembola from Hokkaido. *Annot. Zool. Jap.* **19**: 185–190
- 1942. Japanische Entomobryinen. *Arch. f. Naturgesch. NF.*, **10**: 476–495
- 1949. Einige Collembolen aus Aussenmongolei. *Rep. Kansai ent. Soc.* **14**: 33–34
- 1953. Einige japanische Collembolen die von den Quellen und Brunnen Japans erbeutet waren. *Annot. Zool. Jap.* **26**: 67–72
- 1954. Springschwänze des Oze-Naturschutzgebietes. (in) *Scientific Res. Ozegahara Moor*, 777–830, Tokyo, 1954
- 1954. Die Kulturpflanzenschädigenden Collembolen Japans. *Oyo-Kontyu* **10**: 137–141
- 1954. Höhlencollembolen Japans I, *Kontyu* **20**: 14–22
- 1955. Meeresinsekten der Tokara Inseln VI, Collembolen. *Publ. Seto Mar. biol. Lab.* **4**: 379–401
- 1956. Monographie zur Höhlencollembolen Japans. *Contr. biol. Lab. Kyoto Univ.* no. 3, 109 pp., 50 pls.
- 1956b. Höhlencollembolen Japans II, *Jap. Journ. Zool.* **11**: 609–627
- 1957. On some remarkable Collembola from Japan. *Acta Zool. Cracoviensia* **2**: 681–704
- 1959. Studies on the Collembolan Fauna of Malay and Singapore. *Contr. biol. Lab. Kyoto Univ.* no. 10, 65 pp.
- 1959b. Two new Species of *Folsomia* from Japan. *Kontyu* **27**: 116–118
- 1959c. Collembolan Fauna of the Cape Province etc. *Biol. Res. Jap. Antarctic Res. Exp.* no. 6, 24 pp.
- 1960a. On some Collembola of New Caledonia, New Britain and Solomon Islands. *Bull. Osaka Mus. Nat. Hist.* **12**: 9–38
- 1960b. Studies on the Collembolan Genus *Hypogastrura*. *The Amer. Midland Naturalist* **64**: 257–281
- 1961a. Further Remarks on the Collembolan genus *Hypogastrura* etc. *The Amer. Midland Naturalist* **66**: 250–251
- 1961b. Cryophilous Species of the Niigata Prefecture, Studies on Japanese Collembola VII. *Bull. Nagaoka Mun. Sci. Mus.* **2**: 14–19
- 1961c. Cryophilous Insects of the Niigata Prefecture II, Collembola (in Japanese). *Bull. Nagaoka Mun. Sci. Mus.* **2**: 7–13

* All literatures of the author regarding the Collembola listed.

- 1961d. Phylogenetische Bedeutung der Chaetotaxie bei den Collembolen. Contr. biol. Lab. Kyoto Univ. no. 12, 37 pp.
- 1961e. On some Collembola from Thailand. Nature and Life in SE-Asia 1: 171-198, 3 pls.
- 1962. Studies on the Collembolan Genus *Hypogastrura* II. Contr. biol. Lab. Kyoto Univ. no. 13, 25 pp.
- 1963a. On some Collembola of Hindukush, with notes on *Isotoma* and its Allies. Results of the Kyoto Univ. Sci. Exped. to Karakoram and Hindukush 1955, 4: 3-42
- 1963b. Some Collembola of West Pakistan with Taxonomic Notes on the Genus *Onychiurus*. Pakistan Journ. Sci. Res. 15: 70-74
- 1964a. Some Collembola from Okinawa Caves, with Notes on *Sinella-Coecobrya* Complex of Japan. Bull. Akiyoshidai Sci. Mus. 3: 25-34
- 1964b. Some Collembola of the Tonga Islands. Kontyu 32: 9-17
- 1965. On some Collembola of Japan and adjacent Countries. Contr. biol. Lab. Kyoto Univ. no. 19, 71 pp.
- 1966a. On some Collembola of Afghanistan, India and Ceylon, collected by the KUPHE-Expedition 1960. Res. Kyoto Univ. Sci. Exped. Karakoram Hindukush 8: 333-405
- 1966b. Some Collembola of the Siachen Glacier in Karakoram. Res. Kyoto Univ. Sci. Exped. Karakoram Hindukush 8: 407-410
- 1966c. Check List of Collembolan Species reported from Indonesia. Treubia 27: 45-52
- 1966d. Collembola of Himalaya. Journ. Coll. Art Sci. Chiba Univ. 4: 461-531
- 1966e. Results of the Speleological Survey of South Korea 1966, IV, Cave Collembola of South Korea. Bull. Nat. Sci. Mus. Tokyo 9: 451-561
- 1966f. Neanurid Collembola of Australia preserved in the South Australian Museum. Rec. South Australian Mus. 15: 261-274
- 1967a. Three Neanurid Collembola of the Marquesus Islands. Pacific Insects 9: 265-270
- 1967b. Some Cave Collembola of Japan. Bull. Akiyoshidai Sci. Mus. 4: 61-66
- 1967c. Studies on the Collembolan Family Tomoceridae, with special Reference to Japanese Forms. Contr. biol. Lab. Kyoto Univ. no. 20, 54 pp.
- 1969a. Collembola Arthropleona of the IBP-Station in the Shiga Heights, Central Japan I. Bull. Nat. Sci. Mus. Tokyo 12: 531-556
- 1969b. *Dicyrtomina* and *Ptenothrix* of the Solomon Islands. Zool. Journ. Linnean Soc. London 48: 217-236
- 1970. On some Collembola of Japan and adjacent Countries II. Contr. biol. Lab. Kyoto Univ. 23: 1-32
- 1971a. Cave Collembola of New Guinea collected by the Explorer's Club of the Nanzan University. Contr. biol. Lab. Kyoto Univ. 23: 77-80
- 1971b. Collembola of Khumbu Himal. Khumbu Himal 4: 80-130
- 1971c. Halophilous Collembola of Japan. Publ. Seto Mar. biol. Lab. 18: 279-290
- 1972. Collembola from the alpine Region of Mt. Poroshiri in the Hidaka Mountains in Hokkaido. Mem. Nat. Sci. Mus. 5: 77-99
- 1976a. Structure and Chaetotaxy of Labrum as the Taxonomic Character of Collembola. Rev. Ecol. Biol. Sol 13: 233-239
- 1976b. On some Neanurid Collembola of Southeast Asia. Nature and Life in SE-Asia 7: 257-299
- YOSHII, R. et M. ASHRAF 1964. On some Collembola of West Pakistan III. Pakistan Journ. Sci. Res. 16: 52-58
- 1965a. On some Collembola of West Pakistan II. Pakistan Journ. Sci. Res. 17: 24-30
- 1965b. On some Collembola of West Pakistan IV. Pakistan Journ. Sci. Res. 17: 153-160
- YOSHII, R. et C. LEE, 1963. On some Collembola of Korea, with notes on the genus *Ptenothrix*. Contr. biol. Lab. Kyoto Univ. no. 15, 37 pp.