M.A. JACH & L. JI (eds.): Water Beetles of China | Vol. I | 389 - 408 | Wien, November 1995

CURCULIONIDAE: Aquatic weevils of China (Coleoptera)

R. CALDARA & C.W. O'BRIEN

Abstract

Seventy-one aquatic or semiaquatic species of Curculionidae belonging to 18 genera are considered: 28 are known from China, whereas the others have not been collected yet in China, but their present known distribution and their collection in adjacent territories make their presence in China very probable. Among the described species already collected in China are: 2 *Erirhinus* SCHÖNHERR, 1 *Icaris* TOURNIER, 1 *Grypus* GERMAR, 4 *Echinocnemus* SCHÖNHERR, 2 *Tanysphyrus* SCHÖNHERR, 10 *Bagous* GERMAR, 4 *Neophytobius* WAGNER, 1 *Pelenomus* THOMSON, 1 *Rhinoncomimus* WAGNER, and 2 *Rhinoncus* SCHÖNHERR. We report general information on habits, immatures and collecting techniques of the aquatic weevils, a key to the genera, with photos and line illustrations useful for their recognition, and a list of species with the main references, synonymies, general range and detailed records for China, biology where available and remarks where necessary. A list of host plant genera is included for most of the herein treated weevil genera. Also, after the examination of the types we established that *Hydronomus phytonomoides* VOSS, 1953 must be transferred to the genus *Echinocnemus*, and that *Lissorhoptrus pseudooryzophilus* GUAN, HUANG & LU, 1992 must be synonymized with *Lissorhoptrus oryzophilus* KUSCHEL, 1952.

Key words: Coleoptera, Curculionidae, aquatic weevils, semiaquatic weevils, China

Introduction

The weevil family Curculionidae sensu lato is the largest family of animals in the world with more than 65,000 described species. They are well-represented in China with more than 2,000 described species and many more undescribed species as well. The aquatic weevils represent a small but important part of this large family. Included are completely aquatic species and others that can be termed semiaquatic. All of these species are associated with aquatic or semiaquatic plants which grow floating on, submersed in, or emergent from water, in association with aquatic habitats. Most of the aquatic weevils in China belong to the tribes Bagoini (Molytinae) and Phytobiini (Ceutorhynchinae). Semiaquatic weevils are known from both tribes, as well, and also from the tribe Erirhinini (Erirhininae). Some genera are almost entirely aquatic, with one or a few terrestrial species (e.g. *Bagous* GERMAR), while other genera are primarily terrestrial with one or a few aquatic species (e.g. *Rhinoncus* SCHÖNHERR).

The state of knowledge of Chinese aquatic weevils is very poor. None were included in the outstanding "Economic Insects of China" (CHAO & CHEN 1980) and the various species are treated in numerous isolated descriptions with almost no host data and little more distribution than the type locality. Recently in his treatment of aquatic Chinese Coleoptera, YANG (1994) stated briefly that according to his data 9 or 10 aquatic weevil genera, with 25 species in all, were cited from China and reported a key to these genera. Presently we know 29 species described from China or collected in this large territory after their description, but also several other not yet described Chinese species. The latter mostly belong to the genera *Bagous* and *Echinocnemus* SCHÖNHERR and will be objects of our future studies. Many other already described aquatic species of weevils,

either largely widespread in the Palearctic region or known from areas adjacent to the Chinese borders, probably will be collected in China in future. These species also are reported in our list but signaled by square brackets.

Habits

In general these weevils are restricted to standing water or at most to water with very slow current. They develop on plants in ponds, lakes, swamps, floodplains, irrigation canals, roadside ditches, temporary standing water and rarely in eddies of slow moving rivers. The adults hide on their hosts, commonly under water during the day, and come to the surface on their hosts, or on other floating or emergent plants at night. At such times they often feed, oviposit, seek mates, and renew their oxygen supply.

Both aquatic and semiaquatic weevils have evolved morphologically and behaviorally for living near or in the water. Many species secrete waterproof coatings or have specialized hydrofuge (water repellent) pubescence, which allow them to walk on the water or swim on or under water. Specialized setae often form a plastron, which functions as a physical gill, allowing long submersion underwater. *Lissorhoptrus* LECONTE, the rice water weevils, can remain submersed up to 96 hours using the plastron to breathe under water.

Several methods have evolved among these weevils for swimming on or under water. For example, *Rhinoncus* and *Echinocnemus* swim on the water surface with a modified breast stroke with all three pairs of legs stroking at the same time. Most *Bagous* and many other aquatic weevils swim with a dogpaddle-like stroke of the forelegs which pulls the weevil through the water while the middle and hind legs move to effect the direction taken by the weevil. Some *Bagous* and *Phytobius* SCHÖNHERR swim with rapid alternating strokes of all legs in a slightly modified, faster than normal walking pattern. *Lissorhoptrus* swim extremely well using the modified blade-like, long haired, middle tibiae for propulsion. They move these legs in a rapid oar-like rowing movement while changing direction with movements of the other legs.

Immatures

The immatures of all weevils are relatively poorly known and this is true of aquatic weevils as well. There are no reviews of Chinese weevil immatures, so they can be studied best by using SCHERF's (1964) key to middle European immatures, in which most genera of Chinese aquatic weevils
are included. Immature studies are difficult and require extensive knowledge and specialized slide mounting techniques. A useful paper for understanding terminology of larval morphology is the well-illustrated BÖVING & CRAIGHEAD (1930). Another study that will greatly benefit beginners is MAY (1994) which also is well-illustrated and includes an excellent discussion on terminology and techniques for preparation of specimens for identification. In addition, ANDERSON (1991) presents a series of illustrated descriptions of many weevil genera. Host associations and association with adult weevils from the same habitat may assist greatly in immature identifications.

Larvae. The larvae of aquatic weevils are typical curculionid types, and the following description should aid in recognizing larvae of the family Curculionidae.

Body. Legless, curved to straight, with short setae; usually white, cream colored, yellow or green.

Head. Head capsule yellowish to black, well-sclerotized, and hypognathous; possessing distinct Y-shaped sclerite formed from epicranial and frontal sutures. Frontal suture not extending to mandibular membrane, antennae contiguous with frontal suture. Postoccipital condyles usually

present. Mandibles short and stout, and usually denticulate apically and internally. Maxilla with mala, and with reduced galea and 2-segmented palpus. Antennae usually 1-segmented, often with conical accessory sensory appendage and several minute setae.

Thorax. Divided into three regions. Pronotum undivided, usually with pair of dorsal sclerotized plates, and pair of ventrolateral spiracles. Meso- and metathorax divided by dorsal and ventral folds, and usually with evident ventral pedal lobes; all areas usually setiferous.

Abdomen. Segments 1-7 with 2-5 dorsal transverse folds, segment 8 with 2-3 dorsal folds, segment 9 with 1 dorsal fold and segment 10 reduced to anal lobes. Segments 1-8 with pair of spiracles, usually lateral (*Lissorhoptrus* and *Echinocnemus* with dorsal, sharp, spine-like spiracles on segments 2-8). Anal lobes of varying number surround anal opening of various shape.

Aquatic and semiaquatic weevil larvae often are typical of terrestrial weevil larvae, endophytic (living in galleries of their host plants) in leaves, leaf petioles, stems, root collars, rhizomes, roots and turions (tubers on the roots). In addition, some larvae are exophytic (living externally on the host plant), both above and below the water surface, e.g. *Phytobius*. Some species are leaf miners, e.g. *Tanysphyrus* and some *Bagous*, while others burrow through the mud under water feeding on roots, e.g. *Lissorhoptrus* and *Echinocnemus*. *Tanysphyrus* SCHÖNHERR larvae are capable of swimming from one plant to another on the surface of the water (Buckingham 1994, pers. comm.). Although the larvae are legless, they can move freely on the outside of their plant hosts even on slick, vertical, waxy surfaces.

Pupae. The pupae of the aquatic weevils do not possess distinctive features from those of other Curculionidae and may be distinguished easily from other insects as follows.

Exarate (with free appendages), body soft, usually creamy white or yellowish in color. Head with visible rostrum; relatively sparse, long and short setae on dorsum of rostrum, head, thorax and abdomen and on venter of abdomen; abdomen lacking urogomphi, but with obvious apical pair of pseudocerci.

Aquatic and semiaquatic weevils pupate both within and attached to their host plants, and some species in sand and earthen cells, or in mud cells, both away from water and underwater. In most cases, the larvae line their pupal cells with a waterproof coating, and some tap the aerenchyma tissue of their host plants for oxygen.

Collecting techniques

Because these weevils are mainly nocturnal in habits, collecting at night usually is more productive. Collecting with light traps or at light sheets, both can be very effective, especially with ultra violet light. Sweeping emergent vegetation above or near water and searching the surface of floating aquatic plants such as *Nymphaea* or *Nymphoides* especially at night is often very successful. Using a head lamp to keep both hands free is best. Sweeping submersed and/or floating plants can be helpful to collect many of the less common species. Using an uneven, jerky, sweeping motion and re-sweeping the same plants or area several times is helpful. The sudden disturbance of the plants often dislodges the adult weevils and they can be swept up as they float or swim to the surface. It is best to use a modified insect net for this collecting. A standard net of coarse mesh on the sides with a flat fine mesh bottom works better than the usual, acutely cone-shaped net.

The weevils tend to be small to medium sized (1.5 - 7.5 mm long), cryptic and slow moving, and when mixed in swept up aquatic vegetation they can be very difficult to see. Patience and careful searching of this swept up vegetation is required. Many of the weevils can be found clinging to the sides and bottom of the net but others will hide in the collected vegetation. Sweeping is less effective if excess algae are present in the water. It is worthwhile to gently turn the leaves of large

floating plants e.g. *Nymphaea* or *Nymphoides* and search carefully, particularly along the side margins and along leaf veins on the underside of the leaf, where many species can be found. Also numerous *Bagous* hide during the day in open or closed flowers of the larger *Nymphaea*.

Pulling up aquatic plants, submerged or floating, or treating swept up plants or debris by placing them on a sheet of opaque plastic in the sunlight often will work well. Many of the weevils will crawl out of the plants and by periodically lifting the plants gently and searching under them (turning them over), you will find the specimens that burrow down towards the plastic to hide. If this is done every five to ten minutes, frequently it is possible to collect larger numbers of specimens. Also, swept plants or shorewashed debris can be placed in a bucket or a large container of water and submerged and, if they are held underwater by something like a large 1 cm or 2 cm diameter screen mesh, it will be possible to capture the floaters that drift or swim up to the surface for oxygen. It is also possible to collect shorewashed debris, flood debris, swept debris or hand-collected aquatic plants and treat these in a large Berlese funnel which will capture not only adults but often large numbers of immatures, which sometimes then can be associated with the adults.

Roughly treading floating and submersed aquatic plants into the mud or sandy bottom will dislodge many weevils which float or swim to the surface, where they can be seen easily and collected, by hand or with a small dip net.

A new technique that has been worked out in recent years is to press large sheets of foam plastic onto the submersed mat of aquatic plants. Weevils will drift up to the surface to cling to the undersurface of this plastic sheet which, when turned over, will often produce large numbers of specimens in habitats that are frequently very difficult to collect in, because it is not easy to sweep through the dense mat of some aquatic vegetation. Sweeping such plants collects large volumes of plant material making it difficult to find the weevils.

Many *Bagous* overwinter in the soil near their habitats. By searching close to plants such as bunchgrass and other types of semiaquatic and emergent plants near the water's edge in autumn, it is possible to capture large numbers of weevils which burrow into the soil to a depth of approximately one to two centimeters. Placing the soil in a layer (ca. 4 - 6 mm in depth) on a plastic sheet or clean surface in the sun often will make it possible to capture the weevils as they crawl out of the soil in the warmth of the sun.

Also many aquatic and semiaquatic weevils hide under debris of various types and can be taken under stones, under logs, and under pieces of wood and other material around the margins of ponds, lakes, etc. It does require a careful search to see them because they are the same color as the soil and blend in very well and frequently will not move for some time even under the direct light of the sun. However, careful search often will produce them. When collecting in the daytime it is best to collect on an overcast or cloudy day because the weevils are then more likely to be active on the plants. Although some of these weevils are active in the daytime, a majority of them primarily are out at night.

In periods of drought or in areas with prolonged dry seasons, where aquatic habitats dry up, it is beneficial to search under mats of dead dried up plants, where many weevils hide awaiting return of water and fresh host plants.

Key to the genera

1. Mesothoracic epimeron not visible in dorsal view; inner apex of tibia with distinct uncus 2
- Mesothoracic epimeron visible in dorsal view (figs. 11 - 13); inner apex of tibia lacking uncus (fig. 4) 12
2. Tarsomere 3 subcordate to linear, at most emarginate, never bilobed (figs. 5 - 7) 3
- Tarsomere 3 distinctly bilobed (figs. 8, 9) 5

3. Scrobe entirely visible in lateral view; prosternum usually sulcate; body usually densely covered with granulate, pitted scales ..... *Bagous* GERMAR, 1817 (figs. 24 - 25)

- Only anterior half of scrobe visible in lateral view, there curved to ventral side; prosternum lacking sulcus; body covered with flat, unpitted scales 4

4. Antennal funicle 6-segmented; scutellum not visible; tibiae with uncus apically inserted; midtibiae usually strongly modified, blade-like, always with very long flowing natatorial hairs along both inner and outer margin (fig. 2) ..... *Lissorhoptrus* LECONTE, 1876 (fig. 22)

- Antennal funicle 7-segmented; scutellum large; tibiae with uncus apicomedially inserted; midtibiae of same shape as other tibiae, with long hairs only along inner margin (fig. 3) ..... *Picia* TOURNIER, 1889 (fig. 21)

5. Tarsomere 5 elongate, distinctly longer than tarsomere 3 (fig. 8) 6

- Tarsomere 5 very short, nearly as long as tarsomere 3 (fig. 9) ..... *Tanysphyrus* SCHÖNHERR, 1826 (fig. 23)

6. Scrobe entirely visible in lateral view, reaching anterior margin of eye 7

- Only anterior half of scrobe visible in lateral view, there curved to ventral side ..... *Echinocnemus* SCHÖNHERR, 1843 (fig. 20)

7. Sides of pronotum densely covered with rounded to oval scales 8

- Sides of pronotum glabrous or covered with sparse setae 10

8. Rostrum and legs covered with scales and setae; inner margin of tibia with small denticles (as in *Echinocnemus*, fig. 3) ..... *Icaris* TOURNIER, 1874 (fig. 17)

- Rostrum and legs covered only with setae; inner margin of tibia lacking denticles 9

9. Pronotum in lateral view strongly convex on disc and with ocular lobes; elytral interstriae 3, 5 and 7 unevenly more convex than even-numbered interstriae; body robust, elytra short-rectangular; anterior margin of foretibia nearly straight; apical spurs absent on all tibiae ..... *Grypus* GERMAR, 1817 (fig. 18)

- Pronotum in lateral view flat on disc and lacking ocular lobes; all elytral interstriae nearly flat; body slender, elytra elongate-rectangular; anterior margin of foretibia distinctly arcuate in apical third; apical spurs present on all tibiae (as in *Erirhinus*, fig. 1) ..... *Thryogenes* BEDEL, 1884 (fig. 16)

10. Rostrum opaque, densely punctured, intervals between punctures very narrow, with numerous setae regularly arranged ..... *Procas* STEPHENS, 1831 (fig. 19)

- Rostrum shining, not densely punctured, intervals between punctures at least as wide as punctures, at most with sparse setae in basal third 11

11. Apical spurs present on all tibiae (fig. 1). ..... *Erirhinus* SCHÖNHERR, 1825 (fig. 15)

- Apical spurs absent from all tibiae ..... *Notaris* GERMAR, 1817 (fig. 14)

12. Rostrum short and robust, at most 3 times longer than wide at apex 13

- Rostrum longer and thinner, at least 4 times longer than wide at apex ..... *Tapinotus* SCHÖNHERR, 1826 (fig. 31)

13. Antennal funicle 6-segmented 14

- Antennal funicle 7-segmented 17

14. First club segment very long, much longer than 2-4 together, glabrous and shining (fig. 10); tarsomere 3 nearly as wide as tarsomere 2, tarsi with long fine setae ..... *Eubrychius* THOMSON, 1859 (fig. 26)

- First club segment nearly as long as segment 2-4 together, opaque, finely pubescent; tarsomere 3 distinctly wider than tarsomere 2, tarsi lacking fine setae 15

15. Apical margin of pronotum with a V-shaped incision, not wider than base of rostrum (fig. 11); elytra at least on four lateral interstriae each with row of muricate tubercles (fig. 11) ..... *Neophytobius* WAGNER, 1936 (fig. 27)

- Apical margin of pronotum without incision, or with U-shaped incision, and as wide as frons between eyes, or elytra without muricate tubercles (fig. 12, 13) 16

16. Vestiture entirely concealing integument; apical margin of pronotum not elevated and at most with feeble trace of acute tubercles (fig. 12) ..... *Phytobius* SCHÖNHERR, 1833 (fig. 29)

- Vestiture never entirely concealing integument; apical margin of pronotum at least slightly elevated, usually with two acute tubercles (fig. 13) ..... *Pelenomus* THOMSON, 1859 (fig. 28)

17. Femora unarmed ..... *Rhinoncus* SCHÖNHERR, 1825 (fig. 30)

- Femora toothed ..... *Rhinoncomimus* WAGNER, 1840

List of species

Erirhininae

[*Notaris bimaculatus* (FABRICIUS)]
Curculio bimaculatus FABRICIUS, 1787, Mant., 1: 98.
Notaris bimaculatus (FABRICIUS), ZUMPT, 1929: 224. DIECKMANN, 1986: 152.
Erirrhinus bimaculatus (FABRICIUS), HOFFMANN, 1958: 1433.

Range - Europe, Central Asia, Mongolia, Siberia, Japan, North America.

Biology - This species lives on the banks of pools and marshes and in moist places. The adult was collected on *Typha latifolia* L., in the stems of which the larva grows and pupates, and on *Phalaris arundinacea* L., which might be another host plant according to HOFFMANN (1958).

[*Erirhinus acridulus* (LINNAEUS)]
Curculio acridulus LINNAEUS, 1758, Syst. Nat., 10: 378.
Notaris acridulus (LINNAEUS), URBAN, 1927, Ent. Bl.: 117. ZUMPT, 1929: 929. DIECKMANN, 1986: 153.
Erirrhinus acridulus (LINNAEUS), HOFFMANN, 1958: 1434.

Range - Europe, Siberia as far as the Pacific coast.

Biology - This species lives in aquatic and moist places, both in plains and in mountains. Its host plant is *Glyceria maxima* HARTM. (= *aquatica* L.), in the roots of which the larva was collected. According to HOFFMANN (1958) the adult also eats lower portions of the stems of *Polygonum amphibium* L.

[*Erirhinus aethiops* (FABRICIUS)]
Curculio aethiops FABRICIUS, 1792, Ent. Syst., 1: 405.
Notaris aethiops (FABRICIUS), ZUMPT, 1929: 234. DIECKMANN, 1986: 154.
Erirrhinus aethiops (FABRICIUS), HOFFMANN, 1958: 1435.

Range - Northern, central and eastern Europe, Siberia, Mongolia, North America.

Biology - This species lives on the banks of cold pools and mountain lakes. The adult was collected on *Iris* spp. and *Carex* spp., but the actual host plant is unknown.

[*Erirhinus discretus* (FAUST)]
Notaris discretus FAUST, 1883, Bull. Soc. Imp. Nat. Moscou, 57: 167. ZUMPT, 1929: 238.

Range - Central Asia, without further details.

***Erirhinus distans* (FAUST)**
Notaris distans FAUST, 1890, Hor. Soc. Ent. Ross., 24: 470. ZUMPT, 1929: 231.

Xizang (Tibet): Amdo mounts.

Range - Only known from the type locality, Amdo mounts.

[*Erirhinus imprudens* (FAUST)]
Notaris imprudens FAUST, 1885, Stett. Ent. Zeit., 46: 170. ZUMPT, 1929: 236.

Range - Kazakhstan (Alaj mountains, Tamga river).

***Erirhinus mandschuricus* (VOSS)**
Notaris mandschuricus VOSS, 1940, Ent. Bl., 36: 51.

Heilongjiang: Harbin.

Range - Northeastern China.

[*Erirhinus oberti* (FAUST)]
Notaris oberti FAUST, 1885, Stett. Ent. Zeit, 46: 171. ZUMPT, 1929: 239.

Range - Tadzhikistan (Pamir).

[*Erirhinus okunii* (KÔNO)]
Notaris okunii KÔNO, 1930, Ins. Matsum., 4: 159.

Range - Japan, Korea.

[*Erirhinus scirpi* (FABRICIUS)]
Curculio scirpi FABRICIUS, 1792, Ent. Syst. 1: 405.
Notaris scirpi (FABRICIUS), ZUMPT, 1929: 927. DIECKMANN, 1986: 152.
Erirrhinus scirpi (FABRICIUS), HOFFMANN, 1958: 1433.

Range - Europe, Siberia, Japan.

Biology - This species lives in aquatic and moist places. The adult was collected on plants of the genera *Typha*, *Scirpus* and *Carex*. A. Hoffmann collected larvae in the root collar of *Carex acutiformis* EHRH. (= *paludosa* GOOD.), where the pupation happens.

[*Thryogenes festucae* (HERBST)]
Curculio festucae HERBST, 1795, Natursyst. Ins. Käfer, 6: 327.
Thryogenes festucae (HERBST), ZUMPT, 1930: 63. HOFFMANN, 1958: 1429. DIECKMANN, 1986: 158.

Range- Europe, Siberia.

Biology - This species lives on several species of *Scirpus* (*S. tabernaemontani* GMEL., *S. maritimus* L. and *S. lacustris* L.), in the stems of which larval growth and pupation were observed. HOFFMANN (1958) reported that the larva feeds on species of *Carex* (*C. riparia* CURT., *C. paludosa* GOOD. and *C. resicaria* L.), data not confirmed by DIECKMANN (1986).

[*Thryogenes nereis* (PAYKULL)]
Curculio nereis PAYKULL, 1800, Fauna Suec., 3: 240.
Thryogenes nereis (PAYKULL), URBAN, 1914, Ent. Bl., 10: 90. ZUMPT, 1930: 61. HOFFMANN, 1958: 1430. DIECKMANN, 1986: 158.

Range - Europe, Siberia, Mongolia.

Biology - This species was collected on *Eleocharis palustris* L., on which URBAN (1914) observed the growth of the larva. In addition to this plant, L. Dieckmann collected *T. nereis* on *Scirpus tabernaemontani* GMEL., whereas A. Hoffmann collected it on *Scirpus lacustris* L., of which the adult eats the flowers and the basal portions of the stems. The larva grows in these latter portions, often underwater.

***Icaris sparganii pertinax* GYLLENHAL**
Erirrhinus pertinax GYLLENHAL, 1836, Gen. Spec. Curc., 3: 309.
Icaris pertinax (GYLLENHAL), TOURNIER, 1874, Ann. Soc. Ent. Belg., 17: 94.
Icaris spargani pertinax (GYLLENHAL), ZUMPT, 1930: 142. VOSS, 1952, Mitt. Münch. Ent. Ges., 42: 196.

Heilongjiang: Harbin.

Range - Caucasus, Turkmenistan, Kazakhstan, northeastern China.

Biology - This species lives in moist salty grasses. The nominal form was collected in Hungary on *Eleocharis* sp. by L. Dieckmann and in Austria on *Juncus* sp. and *Sparganium* sp. by H. Franz (DIECKMANN 1986).

[*Grypus equiseti* (FABRICIUS)]
Curculio equiseti FABRICIUS, 1775, Syst. Ent.: 130.

Grypus equiseti (FABRICIUS), ZUMPT, 1930: 68. DIECKMANN, 1986: 160.
Grypidius equiseti (FABRICIUS), HOFFMANN, 1958: 1426.

Range - Europe, Siberia, North America.

Biology - This species lives in aquatic and moist places on species of *Equisetum* (*E. palustre* L. and *E. arvense* L.). The larva grows on the root collar of the basal portion of the stems of these plants, forming long tunnels at the end of which they pupate.

***Grypus rugicollis* VOSS**
Grypus rugicollis VOSS, 1934, Ent. Nachr. Bl., 8: 81.

Sichuan: Kangding Xian.

Range - Central China.

[*Procas biguttatus* FAUST]
Procas biguttatus FAUST, 1882, Deut. Ent. Zeit., 26: 275.

Range - Far eastern Siberia (Amur, Primorye).

[*Procas sibiricus* PIC]
Procas sibiricus PIC, 1904, Echange, 20: 27.

Range - Eastern Siberia.

***Echinocnemus bipunctatus* ROELOFS**
Echinocnemus bipunctatus ROELOFS, 1874, Ann. Soc. Ent. Belg., 17: 123. CHEVROLAT, 1879, Le Natural., 1: 117.
Rhynchaenus squameus BILLBERG, 1820, Enum. Ins.: 42. [nomen nudum]
Echinocnemus squameus (BILLBERG), Voss, 1958: 114.

Fujian: Shaowu. Guangdong: Canton.

Range - Japan, Java, southeastern China.

***Echinocnemus dorsalis* CHEVROLAT**
Echinocnemus dorsalis CHEVROLAT, 1879, Le Natural., 1: 117.

Xizang (Tibet), without further detail.

Range - Southwestern China.

[*Echinocnemus margelanicus* FAUST]
Echinocnemus margelanicus FAUST, 1887, Stett. Ent. Zeit., 48: 190.

Range - Turkmenistan, Afghanistan, Central Asia.

***Echinocnemus phytonomoides* (VOSS) comb.n.**
Hydronomus phytonomoides VOSS, 1953, Ent. Bl., 49: 80.

Fujian: Shaowu.

Range - Southeastern China.

Remarks - The type specimens of this species are typical of *Echinocnemus*, with the body completely covered with hydrofuge scales, and the tarsi deeply bilobed. It is quite similar to *E. squameus* (BILLBERG), but is much smaller.

***Echinocnemus truncatus* CHEVROLAT**
Echinocnemus truncatus CHEVROLAT, 1879, Le Natural., 1: 117.

Northern China, without further detail.

Range - Northern China.

[*Picia sinuatocollis* (FAUST)]
Bagous sinuatocollis FAUST, 1885, Stett. Ent. Zeit., 56: 178.
Echinocnemus sinuatocollis (FAUST), SCHILSKY, 1907, Käfer Eur., 44: 33.
Ephimeropus sinuatocollis (FAUST), ZUMPT, 1929: 213.
Picia sinuatocollis (FAUST), SOLARI, 1930, Boll. Soc. Ent. Ital., 62: 46.
Hydronomus sinuatocollis (FAUST), DIECKMANN, 1983: 373.

Range - Caucasus, Iran, Iraq, Uzbekistan, Kazakhstan, Afghanistan, northern India.

***Lissorhoptrus oryzophilus* KUSCHEL**

Lissorhoptrus oryzophilus KUSCHEL, 1952, Rev. Chil. Entomol., 1: 44. BOWLING, 1972, Ann. Entomol. Soc. Amer., 65: 990. O'BRIEN & WIBMER, 1982, Mem. Amer. Ent. Inst, 34: 94.

Lissorhoptrus pseudooryzophilus GUAN, HUANG & LU, 1992, Proc. XIX Internat. Congr. Entomol., Beijing, abstr.: 617. (syn.n.)

Range - North and Central America (Canada, U.S.A., Mexico, Honduras, Costa Rica), West Indies (Cuba), Asia (Japan, Korea).

Biology - Breeds on cultivated rice, *Oryza sativa* L. Adults deposit eggs in the leaf sheath and larvae crawl down the plant to burrow through the mud to feed on the roots. The larvae breathe by attaching the paired dorsal abdominal spine-like spiracles to the aerenchyma tissue of the roots. The larvae form a mud pupal cell and pupate in the mud underwater (BOWLING 1972).

This weevil is a serious pest of growing rice and its larval feeding can kill the plants. The presence of parthenogenetic populations introduced to Japan and Korea makes it almost certain that it will reach China, probably in the near future, and has the potential to become a primary pest of rice there.

Remarks - Unfortunately the name *Lissorhoptrus pseudooryzophilus* GUAN, HUANG & LU was validated by publication in an abstract in the Proceedings of the XIX International Congress of Entomology (1992) through the use of a binomial for this taxon and an indication for its separation from a valid taxon. The characters included are either extremely variable in this genus or are erroneous. The size of the large elytral maculation is extremely variable, varying from small to large, even within single populations, and at times completely absent in some individuals. The length of the spermathecal duct is highly variable, again even within populations. The shape of the rod-like sternite varies with the relative age of the adults of many weevils. On emergence from the pupa, the apodemes and apophyses often are slender and lightly sclerotized, becoming thicker and more heavily sclerotized as the individual matures. The distribution is cited as a character, but no other member of this group exists outside the New World, and introduction from the New World of a species attacking rice is much more logical than to assume this species has been missed by taxonomists and other scientists over time. Finally, the fact that the Asian populations are parthenogenetic is not unique nor surprising, since both bisexual and parthenogenetic populations have been known in the U.S.A. for a long time, and parthenogenetic populations are suited especially well for invasion of new territory. Considering the above and after studying samples of the Asian and many New World populations it is clear to us that this Asian taxon is a junior synonym of *Lissorhoptrus oryzophilus*.

***Tanysphyrus brevipennis* VOSS**

Tanysphyrus brevipennis VOSS, 1953, Ent. Bl., 49: 79; 1953, Nachr. Bl. Bayr. Ent., 2: 2; 1958: 114.

Fujian: Shaowu.

Range - Southeastern China.

[*Tanysphyrus lemnae* (PAYKULL)]

Curculio lemnae PAYKULL, 1792, Mon. Curc. Suec.: 78.

Tanysphyrus lemnae (PAYKULL), URBAN, 1922, Ent. Bl., 18: 73. HOFFMANN, 1954: 710. DIECKMANN, 1983: 376.

Range - Europe, Siberia, Japan, North America.

Biology - This species lives on plants of the genera *Lemna* and *Spirodela* on the water surface and on *Calla palustris* L. on the banks of pools and moists areas. URBAN (1922) studied its biology on *Lemna minor* L. The adult produces a hole on a leaf of these plants where it deposits the eggs. The larva eats the inner leaf parenchyma and during its growth it damages several leaves easily moving on the water surface by means of a waterproof secretion and covering of hydrofuge scales.

***Tanysphyrus major* ROELOFS**

Tanysphyrus major ROELOFS, 1874, Ann. Soc. Ent. Belg., 17: 125. VOSS, 1953, Nachr. Bl. Bayr. Ent., 2: 2; 1958: 114.

Fujian: Shaowu.

Range - Japan, Java, southeastern China.

Molytinae

***Bagous aequatus* VOSS**
Bagous aequatus VOSS, 1953, Ent. Bl., 49: 79.

Fujian: Shaowu. Guangxi.

Range - Southeastern China.

[*Bagous bipunctatus* (KÔNO)]
Himeniphades bipunctatus KÔNO, 1934: 246.
Bagous bipunctatus (KÔNO), CHÛJÔ & MORIMOTO, KONTYÛ, 27: 150. EGOROV & GRATSHEV, 1990: 33. O'BRIEN et al., 1994: 32.

Range - Japan, Korea, far eastern Siberia (Primorye, southern Khabarovsk).

***Bagous charbinensis* VOSS**
Bagous charbinensis VOSS, 1952, Mitt. Münch. Ent. Ges., 42: 203.

Heilongjiang: Harbin. Nei Mongol: Ha Su Hai (lake).

Range - Northern China.

Biology - Collected at Ha Su Hai in long series feeding on flowers of *Nymphoides peltata* (GMEL.) KUNTZE (Wang Ren & Buckingham, pers. comm.)

***Bagous chinensis* ZUMPT**
Bagous chinensis ZUMPT, 1938, Ent. Bl. 34: 81.

Guangdong: Shantou.

Range - Southeastern China.

***Bagous foersteri* HARTMANN**
Bagous foersteri HARTMANN, 1899, Wien. Ent. Zeit., 18: 49.

Tianjin.

Range - Eastern China.

[*Bagous gracilis* EGOROV & GRATSHEV]
Bagous gracilis EGOROV & GRATSHEV, 1990: 37.

Range - Far eastern Siberia (Primorye).

Biology - This species was collected by A.B. Egorov on *Sagittaria* sp..

***Bagous intermedius* VOSS**
Bagous intermedius VOSS, 1935, Ent. Nachr. Bl., 9: 59.

Sichuan: Yin Xiu Wan; Chungwa.

Range - Central China.

***Bagous interpositus* HARTMANN**
Bagous interpositus HARTMANN, 1899, Wien. Ent. Zeit., 18: 49. EGOROV & GRATSHEV, 1990: 34.

Tianjin.

Range - Eastern China, far eastern Siberia (Amur, Primorye).

[*Bagous kagiashi* CHÛJÔ & MORIMOTO]
Bagous kagiashi CHÛJÔ & MORIMOTO, 1959: 150. EGOROV & GRATSHEV, 1990: 33. O'BRIEN et al., 1994: 21.

Range - Japan, far eastern Siberia (Primorye).

Biology - This species was collected by A.B. Egorov on *Alisma* sp.

[*Bagous lutulentus amurensis* EGOROV & GRATSHEV]
Bagous lutulentus subsp. *amurensis* EGOROV & GRATSHEV, 1990: 33.

Range - Far eastern Siberia (Amur, Primorye).

***Bagous mandshuricus* EGOROV & GRATSHEV**
Bagous mandshuricus EGOROV & GRATSHEV, 1990: 35.

Heilongjiang: Langashi.

Range - Northeastern China.

[*Bagous picturatus* EGOROV & GRATSHEV]
Bagous picturatus EGOROV & GRATSHEV, 1990: 34.

Range - Far eastern Siberia (Primorye).

Biology - This species was collected by A.B. Egorov on *Sagittaria* sp.

***Bagous poophagoides* EGOROV & GRATSHEV**
Bagous poophagoides EGOROV & GRATSHEV, 1990: 36.

Heilongjiang : Langashi. Nei Mongol: Ha Su Hai (lake).

Range - Eastern Siberia (Tshita, Primorye), northeastern China.

Biology - This species was collected by A.B. Egorov at Langashi on *Nymphaea tetragona* and by G.R. Buckingham (pers. comm.) at Ha Su Hai on *Nymphoides peltata* (GMEL.) KUNTZE.

[*Bagous rufipennis* EGOROV & GRATSHEV]
Bagous rufipennis EGOROV & GRATSHEV, 1990: 38

Range - Eastern Siberia (Amur, Yakutia), Mongolia.

***Bagous shaowuanus* VOSS**
Bagous shaowuanus VOSS, 1953, Ent. Bl., 49: 80; 1958: 115.

Fujian: Shaowu.

Range - Southeastern China.

***Bagous sulcicollis* HARTMANN**
Bagous sulcicollis HARTMANN, 1899, Wien. Ent. Zeit., 18: 50. VOSS, 1958: 115.

Tianjin. Fujian: Shaowu.

Range - Eastern China.

[*Bagous tersus* EGOROV & GRATSHEV]
Bagous tersus EGOROV & GRATSHEV, 1990. 35.

Range - Far eastern Siberia (Primorye).

Ceutorhynchinae

[*Eubrychius velutus* (BECK)]
Rynchaenus velutus BECK, 1817: 20.
Eubrychius velutus (BECK), URBAN, 1929, Ent. Bl., 25: 72 (*velatus* err.). WAGNER, 1939: 38 (*velatus* err.). HOFFMANN, 1954: 808 (*velatus* err.). DIECKMANN, 1972: 17. KOROTYAEV, 1980, Nasek. Mongol., 7: 109. COLONNELLI, 1986: 163. EGOROV, 1988, Fauna Syst. Biol. Vladiv.: 62.

Range - Europe, Central Asia, Mongolia, eastern Siberia, North America.

Biology - The adult lives on *Myriophyllum* spp. (*M. verticillatum* L., *M. spicatum* and the imported Australian species, *M. elatinoides* GAUD.) underwater and eats their leaves. It can move from one plant to another by a clumsy swimming. Also larvae and pupae live on the underwater portions of the above mentioned plants. The larva eats the more tender part of the buds and, when mature, builds a cocoon fixed to the plant, where it pupates.

[*Neophytobius egorovi* (KOROTYAEV)]
Phytobius egorovi KOROTYAEV, 1980, Nasek. Mongol., 7: 111.
Neophytobius egorovi (KOROTYAEV), COLONNELLI, 1986: 163.

Range - Eastern Siberia.

***Neophytobius facialis* (VOSS)**
Phytobius facialis VOSS, 1952, Mitt. Münch. Ent. Ges., 42: 201. COLONNELLI, 1986: 164.
Neophytobius facialis (VOSS), Colonnelli 1995 (pers. comm.).

Heilongjiang: Harbin.

Range - Siberia, Mongolia, northeastern China.

[*Neophytobius granatus* (GYLLENHAL)]
Phytobius granatus GYLLENHAL, 1836, Gen. Spec. Curc., 3(1): 460. HOFFMANN, 1954: 820. DIECKMANN, 1972: 23.
Heterophytobius granatus (GYLLENHAL), WAGNER, 1939: 190.
Neophytobius granatus (GYLLENHAL), COLONNELLI, 1986: 163.
Phytobius taschkenticus FAUST, 1885, Stett. Ent. Zeit., 46: 194. WAGNER, 1937: 308.

Range - Europe, Algeria, Siberia, Turkmenistan, Kashmir.

Biology - The adult of this mainly mountain species was collected on *Polygonum lapathifolium* L. by A. Hoffmann.

***Neophytobius hartmanni* (SCHULTZE)**
Phytobius hartmanni SCHULTZE, 1901, Deut. Ent. Zeit.: 97.
Heterophytobius hartmanni (SCHULTZE), WAGNER, 1939: 197.
Neophytobius hartmanni (SCHULTZE), COLONNELLI, 1986: 163.
Phytobius chaffanjoni HUSTACHE, 1916, Bull. Soc. Ent. Fr.: 70. WAGNER, 1937: 308; 1939: 198.

Tianjin. Nei Mongol: Urgen. Heilongjiang: Tsitsikar.

Range - Northeastern China.

***Neophytobius kozlovi* (KOROTYAEV)**
Phytobius kozlovi KOROTYAEV, 1990, Nasek. Mongol., 11: 225.
Neophytobius kozlovi (KOROTYAEV), Colonnelli, 1995 (pers. comm.)

Qinghai: Ngoring Hu.

Range - Central China.

***Neophytobius quadrinodosus* (GYLLENHAL)**
Rhynchaenus quadrinodosus GYLLENHAL, 1813, Ins. Suec., 1 (3): 155.
Heterophytobius quadrinodosus (GYLLENHAL), WAGNER, 1939: 193.
Phytobius quadrinodosus (GYLLENHAL), HOFFMANN, 1954: 821. DIECKMANN, 1972: 24.
Neophytobius quadrinodosus (GYLLENHAL), COLONNELLI, 1986: 163.

Xizang (Tibet): Amdo mounts.

Range - Europe, Central and Western Asia, western China.

Biology - This species lives both in moist and dry habitats. A. Hoffmann collected the adult on *Polygonum amphibium* L.

[*Pelenomus canaliculatus* (FAHRAEUS)]
Phytobius canaliculatus FAHRAEUS, 1843, Gen. Spec. Curc., 7: 347. WAGNER, 1939: 78. HOFFMANN, 1954: 814. DIECKMANN, 1972: 21.
Pelenomus canaliculatus (FAHRAEUS), COLONNELLI, 1986: 164.

Range - Europe, Mongolia, Japan.

Biology - The adult lives on *Myriophyllum verticillatum* L. and *M. spicatum* L. The larva eats the leaves of these plants and pupates in a cocoon fixed to the plant.

***Pelenomus friebi* WAGNER**
Phytobius friebi WAGNER, 1939: 51, 71. VOSS, 1958: 64.
Pelenomus friebi (WAGNER), COLONNELLI, 1986: 164.

Fujian: Shaowu.

Range - Eastern Siberia, Mongolia, southeastern China, Japan.

[*Pelenomus quadricorniger* (COLONNELLI)]

Rhynchaenus quadricornis GYLLENHAL, 1813, Ins. Suec., 1(3): 154 (not PAYKULL, 1792).
Phytobius quadricornis (GYLLENHAL), WAGNER, 1939: 87. HOFFMANN, 1954: 818. DIECKMANN, 1972: 23.
Phytobius quadricorniger COLONNELLI, 1986, Fragm. Ent., 18: 420.
Pelenomus quadricorniger (COLONNELLI), 1986: 164.

Range - Europe, Siberia.

Biology - The adult was collected on *Polygonum* spp. (*P. amphibium terrestre* L., *P. mite* SCHRK., *P. lapathifolium* L.) in moist places and near aquatic habitats. The larva eats the leaves of these plants on which it fixes a cocoon built before pupation.

[*Pelenomus quadrituberculatus* (FABRICIUS)]

Curculio quadrituberculatus FABRICIUS, 1787, Mant. Ins., 1: 100.
Phytobius quadrituberculatus (FABRICIUS), WAGNER, 1939: 76. HOFFMANN, 1954: 816. DIECKMANN, 1972: 22.
Pelenomus quadrituberculatus (FABRICIUS), COLONNELLI, 1986: 164.

Range - Palearctic region, from England to Japan.

Biology - The adult was collected on *Polygonum* spp. (*P. persicaria* L., *P. hydropiper* L., *P. lapathifolium* L., *P. aviculare* L.). The immatures are unknown.

[*Pelenomus roelofsi* (HUSTACHE)]

Phytobius quadricornis subsp. *roelofsi* HUSTACHE, 1916: Ann. Soc. Ent. Fr., 85: 113 . WAGNER, 1939: 87. VOSS, 1967: 310.
Pelenomus roelofsi (HUSTACHE), COLONNELLI, 1986: 164.

Range - Japan, far eastern Siberia, Afghanistan.

[*Pelenomus waltoni* (BOHEMAN)]

Phytobius waltoni BOHEMAN, 1843, Gen. Spec. Curc., 7(2): 345. WAGNER, 1939: 56. HOFFMANN, 1954: 815. DIECKMANN, 1972: 21.
Pelenomus waltoni (BOHEMAN), COLONNELLI, 1986: 164.

Range - Europe, Siberia, Mongolia, Japan.

Biology - The adult was collected in moist places and near water pools on *Polygonum hydropiper* L. and *P. mite* SCHRK., the leaves of which are eaten by the larvae.

[*Phytobius leucogaster* (MARSHAM)]

Curculio leucogaster MARSHAM, 1802, Ent. Brit., 1: 253.
Litodactylus leucogaster (MARSHAM), WAGNER, 1939: 48. HOFFMANN, 1954: 811. ROUDIER, 1957, Entomol., 13: 33. DIECKMANN, 1972: 18. BUCKINGHAM & BENNETT, Ann. Ent. Soc. Amer., 74: 451.
Phytobius leucogaster (MARSHAM), COLONNELLI, 1986: 165.

Range - Europe, Central Asia, Siberia, North America.

Biology - The adult lives on *Myriophyllum verticillatum* L. and *M. spicatum* L. and eats their leaves swimming from one plant to another. Also the larva lives on the underwater portions of the plants, eating the more tender parts of the buds; for pupation, it builds a cocoon which it fixes to the plant.

***Rhinoncomimus klapperichi* WAGNER**

Rhinoncomimus klapperichi WAGNER, 1940: 79. VOSS, 1958: 66. COLONNELLI, 1986: 157, 165.
Rhinoncomimus robustus VOSS, 1958: 66. COLONNELLI, 1986: 157, 165.

Fujian: Shaowu. Guangdong. Guangxi.

Range - Southeastern China.

[*Rhinoncus autumnalis* KOROTYAEV]

Rhinoncus autumnalis KOROTYAEV, 1980, Nasek. Mongol., 7: 115. COLONNELLI, 1986: 165.

Range - Mongolia.

[*Rhinoncus bosnicus* SCHULTZE]

Rhinoncus bosnicus SCHULTZE, 1900, Deut. Ent. Zeit.: 20. WAGNER, 1940: 70. DIECKMANN, 1972: 28. COLONNELLI, 1986: 165.

Range - Central and eastern Europe, far eastern Siberia, Mongolia.

Biology - This species lives both in moist and dry habitats. The adult was collected on *Polygonum mite* SCHRK. and *Rumex* spp. (*R. obtusifolius* L., *R. maritimus* L.). The immatures are unknown.

***Rhinoncus bruchoides* (HERBST)**

Curculio bruchoides HERBST, 1784, in Fuess Arch. Insektengesch., 5: 85.
Rhinoncus bruchoides (HERBST), WAGNER, 1940: 65. HOFFMANN, 1954: 825. DIECKMANN, 1972: 28. COLONNELLI, 1986: 165.
Rhinoncus bruchoides var. *chinensis* SCHULTZE, 1901, Deut. Ent. Zeit.: 94. WAGNER, 1940: 65.

Northern China, type locality of *R. b.* var. *chinensis*: "Bei Caufang in Nord-China gesammelt und mir von Hrn. Collegen Hartmann gütigst mitgeteilt" (WAGNER 1901).

Range - Europe, Siberia, Mongolia, northern China, Japan, Australia, New Zealand, North America.

Biology - This species lives on *Polygonum* spp. (*P. lapathifolium* L., *P. persicaria* L., *P. hydropiper* L.) in both moist and dry habitats. The larva pierces the stems of these plants at a node from which it can reach the root. The adult can make short jumps.

***Rhinoncus fukiensis* WAGNER**

Rhinoncus perpendicularis subsp. *fukiensis* WAGNER, 1940: 103. VOSS, 1958: 66.
Rhinoncus fukiensis WAGNER, KOROTYAEV, 1980, Nasek. Mongol., 7: 113. COLONNELLI, 1986: 166.

Guangxi. Guangdong. Fujian: Shaowu.

Range - Southeastern China, Vietnam.

[*Rhinoncus incospectus* (HERBST)]

Curculio incospectus HERBST, 1795, Natursyst. Ins. Käfer, 6: 405.
Curculio gramineus FABRICIUS, 1792, Ent. Syst., 1(2): 465 (not GMELIN, 1790).
Rhinoncus gramineus (FABRICIUS), WAGNER, 1939: 274. HOFFMANN, 1954: 827. DIECKMANN, 1972: 27.
Rhinoncus incospectus (HERBST), COLONNELLI, 1986: 166.

Range - Europe, Siberia, Kazakhstan.

Biology - This species lives mainly on *Polygonum amphibium terrestre* L., but was also collected on *P. lapathifolium* L.. Both adult and larva eat the leaves of these plants forming long holes.

[*Rhinoncus jakovlevi* FAUST]

Rhinoncus jakovlevi FAUST, 1893, Deut. Ent. Zeit.: 205. WAGNER, 1939: 281. COLONNELLI, 1986: 166.

Range - Eastern Siberia, Mongolia, Japan.

[*Rhinoncus minutus* KOROTYAEV]

Rhinoncus minutus KOROTYAEV, 1980: 117. COLONNELLI, 1986: 166.

Range - Mongolia.

[*Rhinoncus nigrotibialis* WAGNER]

Rhinoncus perpendicularis var. *nigrotibialis* WAGNER, 1939: 207, 246.
Rhinoncus nigrotibialis WAGNER, KOROTYAEV, 1980, Nasek. Mongol., 7: 114. COLONNELLI, 1986: 166.

Range - Far eastern Siberia (Amur, Primorye).

[*Rhinoncus perpendicularis* (REICH)]

Curculio perpendicularis REICH, 1797, Mant. Ins.: 10.
Rhinoncus perpendicularis (REICH), WAGNER, 1939: 245. HOFFMANN, 1954: 829. DIECKMANN, 1972: 26. COLONNELLI, 1986. 166.

Range - Europe, Siberia, Mongolia.

Biology - This species lives on *Polygonum* spp. (*P. amphibium terrestre* L., *P. hydropiper* L., *P. mite* SCHRK., *P. persicaria* L., *P. lapathifolium* L., *P. aviculare* L., *P. bistorta* L.). The larva

pierces the plant stems eating the parenchyma and pupates in the stems.

[*Rhinoncus sibiricus* FAUST]

Rhinoncus sibiricus FAUST, 1893, Deut. Ent. Zeit.: 206. WAGNER, 1937: 310; 1939: 283. COLONNELLI, 1986: 166.
Rhinoncus sulcipennis SCHULTZE, 1898, Deut. Ent. Zeit.: 233. WAGNER, 1937: 310; 1939: 286. CHÛJÔ & MORIMOTO, 1960, Ent. Rev. Jap., 11: 4.

Range - Eastern Siberia, Mongolia, Japan.

[*Rhinoncus sulcicollis* BOHEMAN]

Rhinoncus sulcicollis BOHEMAN, 1845, Gen. Spec. Curc., 8: 173. WAGNER, 1940: 76. COLONNELLI, 1986: 166.
Rhinoncus mongolicus REITTER, 1895, Wien. Ent. Zeit., 14: 211. WAGNER, 1937: 311.

Range - Eastern Siberia, Mongolia.

Biology - The adult was collected in Siberia on *Polygonum amphibium terrestre* L.

[*Tapinotus sellatus* (FABRICIUS)]

Curculio sellatus FABRICIUS, 1794, Ent. Syst., 4: 454.
Tapinotus sellatus (FABRICIUS), HOFFMANN, 1954: 835. DIECKMANN, 1972: 35.

Range - Europe, Central Asia, far eastern Siberia (Amur).

Biology - This species can be collected in moist and aquatic habitats, and lives on *Lysimachia* spp. (*L. vulgaris* L., *L. thyrsiflora* L.). The larva pierces the plant stems and eats its parenchyma, making a tunnel and pupating at its extremity.

Reported host plant genera for aquatic weevil genera of China and adjacent territories

Notaris	*Phalaris, Typha*
Erirhinus	*Carex, Glyceria, Peltandra, Scirpus, Typha*
Thryogenes	*Carex, Eleocharis, Scirpus, Sparganium*
Icaris	*Eleocharis, Juncus, Sparganium*
Grypus	*Equisetum*
Procas	Host not known
Echinocnemus	*Marsilea, Oryza*
Picia	Host not known
Lissorhoptrus	*Oryza*
Tanysphyrus	*Calla, Lemna, Spirodela*
Bagous	Breeding hosts: *Alisma, Alopecurus, Azolla, Blyxa, Brasenia, Butomus, Callitriche, Ceratophyllum, Cyperus, Elodea, Equisetum, Glyceria, Hydrilla, Lepidium, Limnobium, Limnophila, Marsilea, Myriophyllum, Najas, Nuphar, Nymphaea, Nymphoides, Ottalia, Phragmites, Potamogeton, Ptilimnium, Ranunculus, Saxifraga, Sesuvium, Stratiotes, Trapa, Utricularia, Vallisneria* Probable hosts: *Camphorosma, Cladium, Dactilis, Damasonium, Frankenia, Helodea, Hydrocharis, Juncus, Maundia, Sagittaria, Sparganium, Suaeda*
Eubrychius	*Myriophyllum*

Neophytobius	*Polygonum*
Pelenomus	*Myriophyllum, Polygonum*
Phytobius	*Myriophyllum*
Rhinoncomimus	Host not known
Rhinoncus	*Polygonum*
Tapinotus	*Lysimachia*

Acknowledgements

We owe Dr. Enzo Colonnelli many thanks for his helpful information on systematics and distribution of the Ceutorhynchinae reported in our manuscript. Also we would like to thank Miss Elena Caldara for her secretarial assistance, and Mr. Valter Fogato and Mr. Adriano Ongaro for the photographs which illustrate our text.

References

ANDERSON, D.M. 1991: Curculionidae (broad sense) (Curculionoidea). - In F.W. Stehr (ed): Immature Insects. - Dubuque, Iowa, 2: 1-975.

BÖVING, A.G. & CRAIGHEAD, F.C. 1930: An illustrated synopsis of the principal larval forms of the order Coleoptera. - J. Entomol. Soc. Amer. 11: 1-351.

CHAO, Y. & CHEN, Y. 1980: Economic insect fauna of China. Coleoptera: Curculionidae. - Chinese Economic Insect Journal, Beijing 20: 1-184 (in Chinese).

COLONNELLI, E. 1986: Checklist of Phytobiini of the world, with a key to the genera and description of a new species from South Africa (Coleoptera, Curculionidae, Ceutorhynchinae). - Fragm. Entomol. 19: 155-168.

DIECKMANN, L. 1972: Beiträge zur Insektenfauna der DDR: Coleoptera-Curculionidae: Ceutorrhynchinae. - Beitr. Ent. Berlin 22: 3-128.

DIECKMANN, L. 1983: Beiträge zur Insektenfauna der DDR: Coleoptera-Curculionidae (Tanymecinae, Leptopiinae, Cioninae, Tanyrhynchinae, Cossoninae, Raymondionyminae, Bagoinae, Tanysphyrinae). - Beitr. Ent. Berlin 33: 257-381.

DIECKMANN, L. 1986: Beiträge zur Insektenfauna der DDR: Coleoptera-Curculionidae (Erirhinae) [sic]. - Beitr. Ent. Berlin 36: 119-181.

EGOROV, A.B. & GRATSHEV, W.G. 1990: Revision of weevils of the genus *Bagous* Germ., 1863 (Coleoptera, Curculionidae) of the Soviet Far East and adjacent territories. - Nov. Syst. Nasek. Dal'nego Vost.: 32-39 (in Russian).

HOFFMANN, A. 1954: Coléoptères Curculionides (deuxième partie). - Faune de France 59: 487-1208.

KLIMA, A. 1934: Curculionidae: Erirrhininae, pars 140. - In S. Schenkling (ed): Coleopterorum Catalogus. - Berlin: W. Junk: 1-167.

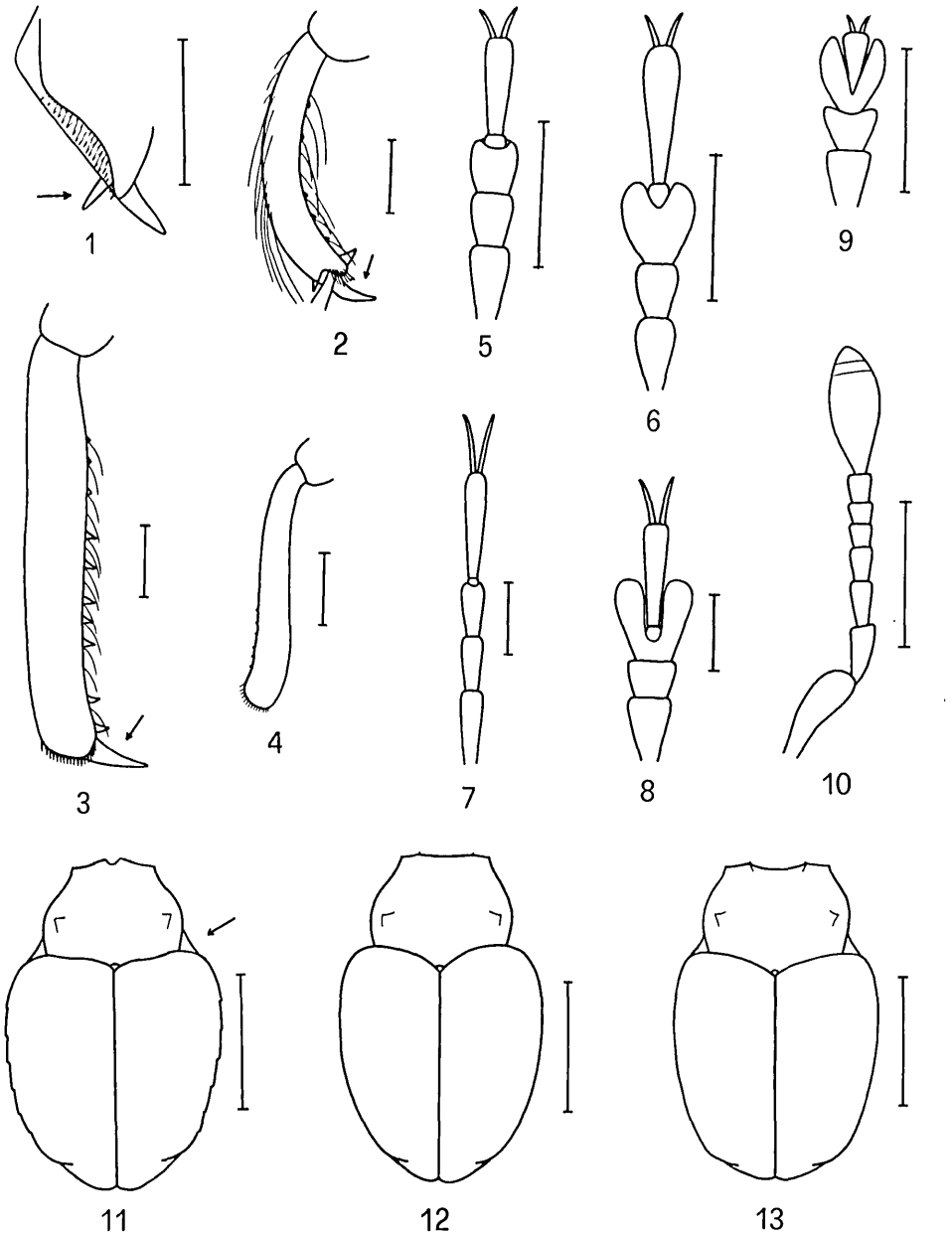
MAY, B. 1994: An introduction to the immature stages of Australian Curculionoidea. - In E.C. Zimmerman (ed): Australian Weevils, Brentidae, Eurhynchidae, Apionidae, and a Chapter on Immature Stages by Brenda May. - East Melbourne, 2: 1-755.

O'BRIEN, C.W., ASKEVOLD, I.S. & MORIMOTO, K. 1994: Systematics and evolution of weevils of the genus *Bagous* Germar (Coleoptera: Curculionidae) II. Taxonomic treatment of the species of Japan. - Esakia 34: 1-74.

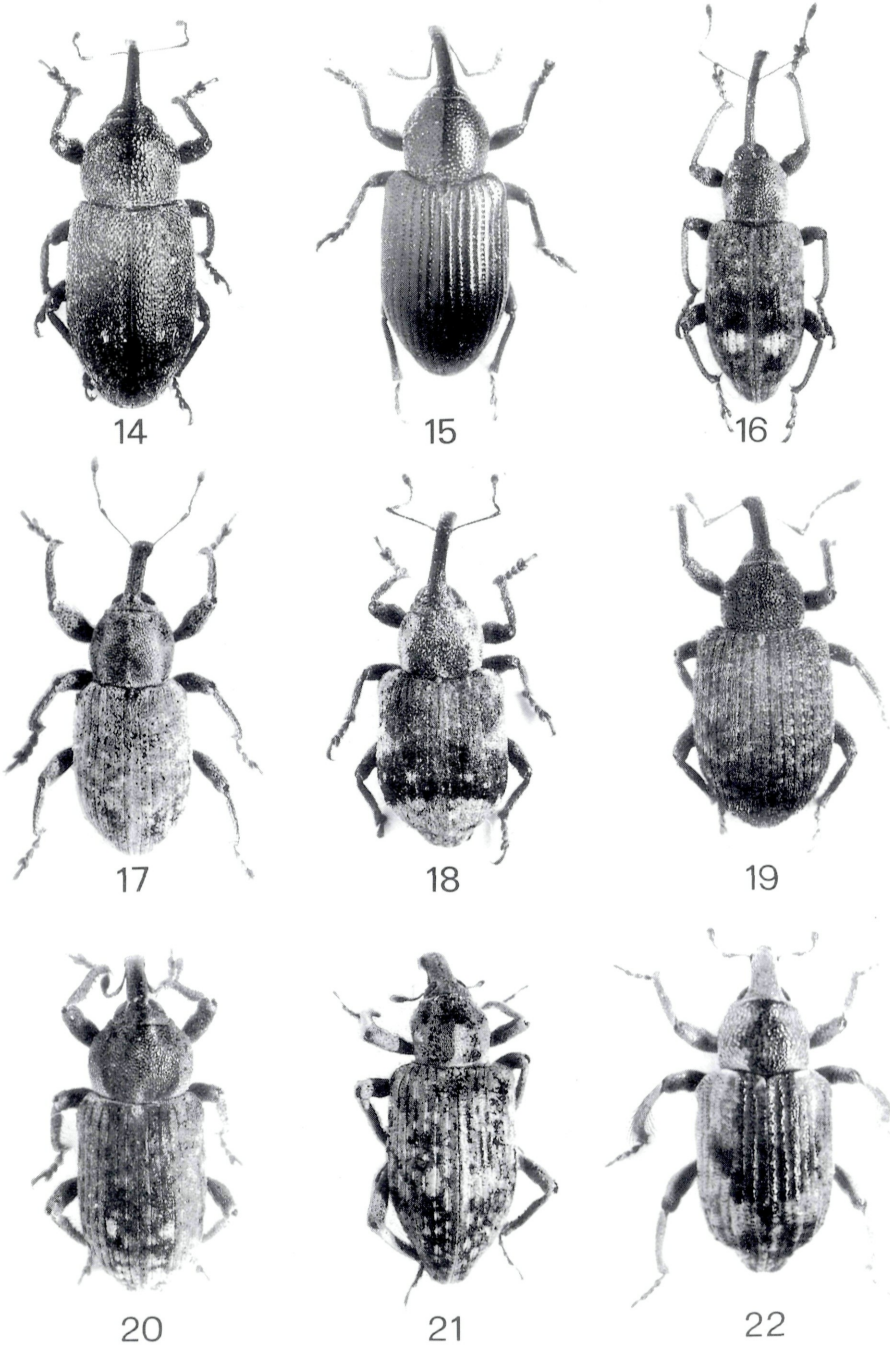
SCHERF, H. 1964: Die Entwicklungsstadien der mitteleuropäischen Curculioniden (Morphologie, Bionomie, Ökologie). - Abh. Senckenb. Naturforsch. Ges. 506: 1-335.

VOSS, E. 1958: Ein Beitrag zur Kenntnis der Curculioniden im Grenzgebiet der Orientalischen zur Paläarktischen Region (Col. Curc.). - Decheniana 5: 1-139.

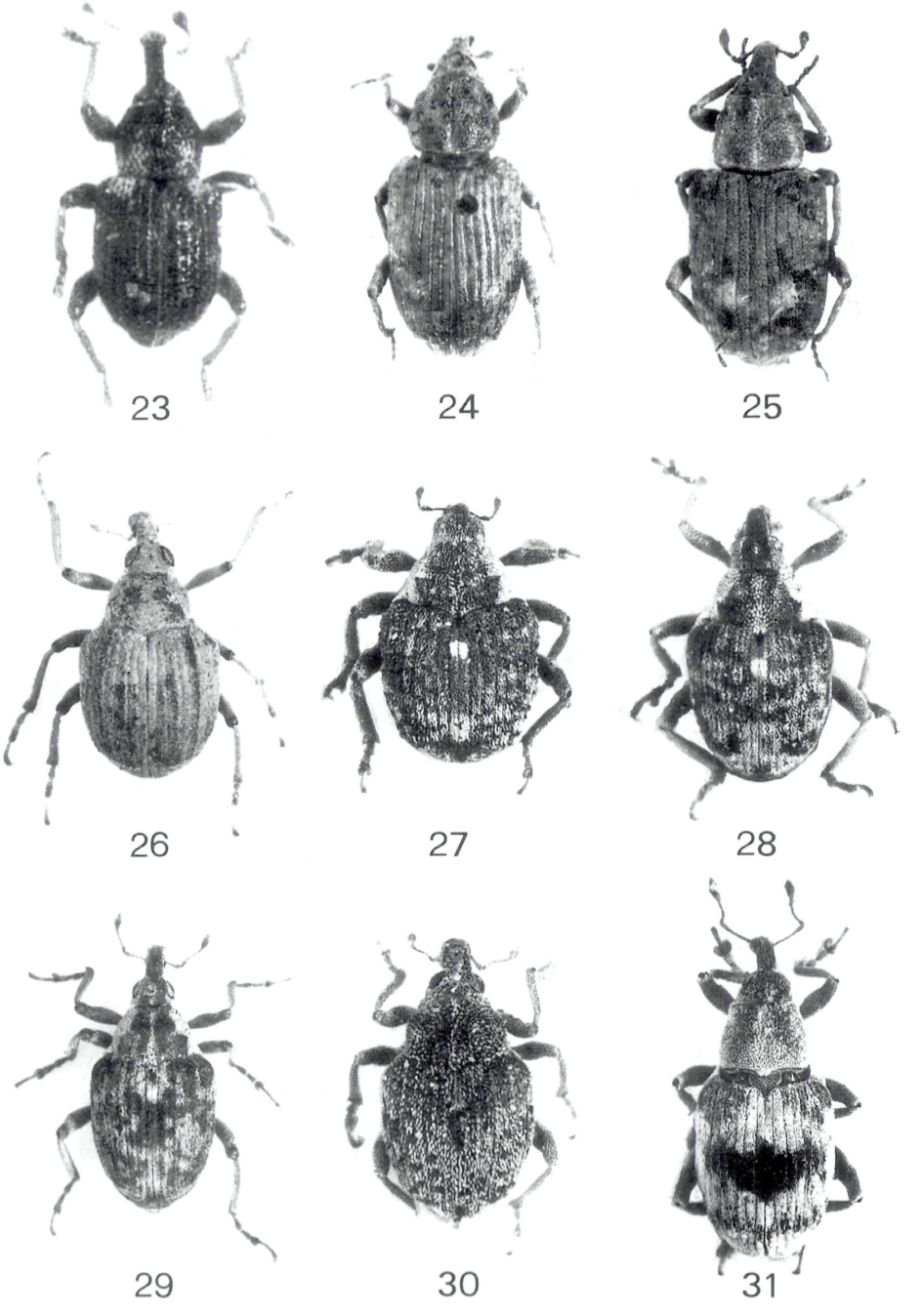
WAGNER, H. 1937: Kritische Vorstudien zu einer monographischen Bearbeitung der paläarktischen Ceuthorrhynchinen (Col. Curcul.). - Ent. Bl. 33: 161-186, 289-315.



Figs. 1 - 13: Apex of tibia of 1) *Erirhinus scirpi* (the arrow indicates the spur). Midtibia of 2) *Lissorhoptrus oryzophilus* (the arrow indicates the mucro), 3) *Picia sinuatocollis* (the arrow indicates the uncus), 4) *Eubrychius velutus*. Tarsus of 5) *Bagous rufipennis*, 6) *B. picturatus*, 7) *Picia sinuatocollis*, 8) *Echinocnemus bipunctatus*, 9) *Tanysphyrus lemnae*. Antenna of 10) *Eubrychius velutus*. Pronotum and elytra of 11) *Neophytobius granatus* (the arrow indicates the mesothoracic epimeron), 12) *Phytobius leucogaster*, 13) *Pelenomus waltoni*. Scales: figs. 1 - 10 (0.25 mm); figs. 11 - 13 (1.00 mm).



Figs. 14 - 22: Habitus of 14) *Notaris bimaculatus*, 15) *Erirhinus aethiops*, 16) *Thryogenes festucae*, 17) *Icaris sparganii*, 18) *Grypus equiseti*, 19) *Procas sp.*, 20) *Echinocnemus bipunctatus*, 21) *Picia sinuatocollis*, 22) *Lissorhoptrus oryzophilus*. Not in scale.



Figs. 23 - 31: Habitus of 23) *Tanysphyrus lemnae*, 24) *Bagous sulcicollis*, 25) *Bagous rufipennis*, 26) *Eubrychius velutus*, 27) *Neophytobius granatus*, 28) *Pelenomus waltoni*, 29) *Phytobius leucogaster*, 30) *Rhinoncus bruchoides*, 31) *Tapinotus sellatus*. Not in scale.

WAGNER, H. 1939: Monographie der paläarktischen Ceuthorrhynchinae (Curcul.). - Ent. Bl. 35: 31-58, 65-90, 185-208, 241-252, 273-291.

WAGNER, H. 1940: Monographie der paläarktischen Ceuthorrhynchinae (Curcul.). - Ent. Bl. 36: 65-81, 97-111.

YANG, C. 1994: Coleoptera 17, pp. 330-391. - In C. Morse, L. Yang, and L. Tian (eds): Aquatic insects of China useful for monitoring water quality. - Nanjing: Hohai University Press.

ZUMPT, F. 1929: Revision der Genera *Notaris* Germ., *Lepidonotaris* m., *Thryogenes* Bed., *Grypus* Germ., *Icaris* Tourn. und *Picianus* m. (Col. Curc.). - Coleopt. Centralbl. 3: 213-239.

ZUMPT, F. 1930: Revision der Genera *Notaris* Germ., *Lepidonotaris* m., *Thryogenes* Bed., *Grypus* Germ., *Icaris* Tourn. und *Picianus* m. (Col. Curc.). - Coleopt. Centralbl. 4: 55-73, 140-147.

Dr. Roberto CALDARA
Piazza Bolivar 7, I - 20146 Milano, Italy

Prof. Charles W. O'BRIEN
Entomology - Biological Control, Florida A & M University, Tallahassee, FL 32307-4100, U.S.A.