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HALIPLIDAE: Review of the Haliplidae of China (Coleoptera)

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Abstract

The 21 species of Haliplidae known to occur in China are reviewed. *Haliplus sauteri* ZIMMERMANN is established as a junior synonym of *Haliplus regimbarti* ZAITZEV. General information on Haliplidae is given. A key to the Chinese species is presented.

Key words: Haliplidae, China, taxonomy, faunistics

Introduction

The family Haliplidae, belonging to the suborder Adephaga, is represented in all major faunal regions by about 220 described species. The highest number of species is known from the temperate and subtropical zones of the northern hemisphere. In the tropical zones the known number of species is rather low. Most of these species are seldom collected (ZIMMERMANN 1920, 1924; VONDEL 1992, 1993).

The genus *Haliplus* has a worldwide distribution. Of the remaining Palaearctic genera *Peltodytes* occurs in most parts of the world, except in the Neotropical and Australasian regions, and is well represented in North America, while *Brychius* is restricted to the Holarctic region. Two genera, both monotypic, do not occur in the Palaearctic region: *Algophilus* from South Africa and *Apteraliplus* from North America.

The species treated in this volume, all recorded from China, are restricted to the east Palaearctic and the Oriental Realms (VONDEL 1991, 1992).

The species occurring in China, except the species of the subgenus *Haliplus* s.str., were recently revised (VONDEL 1990, 1991, 1992, 1993).

Material and methods

The methods and terms used are according to VONDEL (1991, 1992).

Specimens from China, which have been examined, are specified and their distributions shown on maps. Literature records from China shown on the distribution maps are differently indicated. Information on the distribution outside China is given in a note, but whether it is based on material examined or literature records is not specified and it is not shown on the distribution maps.

The examined material originates from the following collections:

BMNH The Natural History Museum, London, UK.
BPBM B.P. Bishop Museum, Honolulu, Hawaii, USA.
CASS Chinese Academy of Sciences, Institute of Applied Ecology, Shenyang
CNU Collection A. Nilsson, Umeå, Sweden

ISNB Institut royal des Sciences naturelles, Brussels, Belgium.
MCZC Museum of Comparative Zoology, Cambridge, Massachusetts, USA
MNHN Muséum national d'Histoire naturelle, Paris, France
NHRS Naturhistoriska Riksmuseet, Stockholm, Sweden
NMW Naturhistorisches Museum Wien, Vienna, Austria
OLML Oberösterreichisches Landesmuseum, Linz, Austria
RMNH Nationaal Natuurhistorisch Museum, Leiden, Netherlands
SFMB Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany
ZMHB Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
ZMUC Universitetets Zoologiske Museum, Copenhagen, Denmark

The specimens collected by the China Water Beetle Survey (CWBS) are included. They are deposited in the NMW and CASS. Haliplidae were collected at the following CWBS-localities:

CWBS loc. 14: **Yünnan Province**; Dali Autonomous Prefecture; Weishan County; Weibao Shan, 60 km S Xiaguan City and 12 km S Weishan City; pool in a small, shaded, unpolluted stream, 2500 - 3000 m a.s.l.; 1. - 17.VII.1993; leg. Ji

CWBS loc. 15: **Yünnan Province**; Dali Autonomous Prefecture; Weishan County; Weibao Shan, 60 km S Xiaguan City and 12 km S Weishan City; small, ca. 1 m deep, man made rain water pool, unshaded, unpolluted, 2500 - 3000 m a.s.l.; 1. - 17.VII.1993; leg. Ji

CWBS loc. 28. **Hunan Province**; Huaihua Prefecture; Huitong County; Guangping Township; near Paotuan Village, ca. 1 km from Academia Sinica Research Station; small river, flowing through rice terraces, partly dammed up, slightly polluted, ca. 1 m wide, ca. 350 m a.s.l.; 2.XI.1993; leg. Schönmann, Schillhammer & Ji

CWBS loc. 33. **Hunan Province**; Huaihua Prefecture; Huitong County; Guangping Township; ca 10 km S of lower Research Station of Academia Sinica; springfed pools along road ditch and flooded rice fields, ca. 400 m a.s.l.; 6.XI.1993; leg. Schönmann, Schillhammer & Ji

CWBS loc. 34. **Hunan Province**; Huaihua Prefecture; Huitong County; Guangping Township; near Paotuan Village; near lower Research Station of the Academia Sinica; flooded rice fields, ca. 400 m a.s.l.; 6.XI.1993; leg. Schönmann, Schillhammer & Ji

CWBS loc. 40. **Guangxi Autonomous Region**; Liuzhou Prefecture; ca. 10 km NE Liuzhou City; 3 km NW Shanmenjiang Forest Station; small stream, ca. 1.5 - 2.0 m wide, slowly flowing through dense vegetation of small shrubs and some abandoned rice fields, ca. 150 - 200 m a.s.l.; 11.XI.1993; leg. Schönmann, Schillhammer & Ji

CWBS loc. 64. **Liaoning Province**; Shenyang City Region; ca. 3 km S Shenyang City; small, shallow, unshaded, rain water and ground water pools at bank of Hun He (Muddy River); 14.VIII.1994; leg. Jäch, Ji & Wang

CWBS loc. 65. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; Erdao Bai He (= 2nd White River), near bridge, 10 - 15 m wide, fast flowing, 650 m a.s.l.; 15.VIII.1994; leg. Jäch, Ji & Wang

CWBS loc. 67. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; several unshaded pools in the surrounding of Baihe City, near Academia Sinica Changbai Mountain Research Station, ca. 700 m a.s.l.; 15.VIII.1994; leg. Jäch, Ji & Wang

CWBS loc. 77. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; 6 km W Baihe City; near Toudao Bai He; springfed pool, ca. 50 m from loc. 76, unshaded; 17.VIII.1994; leg. Jäch, Ji & Wang

CWBS loc. 79. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; near Hongsi Forest Station, ca. 30 km NE Baihe City; shallow pool with muddy edges; 17.VIII.1994; leg. Jäch, Ji & Wang

CWBS loc. 88. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Changbai Shan Biosphere Reserve; ca. 10 km SE Baihe City; roadside pool, unshaded, ca. 50 cm deep; 18.VIII.1994; leg. Jäch

CWBS loc. 89. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; surroundings of Changbai Mountain Research Station, along the road to Changbai Mountain; unshaded roadside pools, ca. 750 m a.s.l.; 19.VIII.1994; leg. Jäch

CWBS loc. 91. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City; Baohujü District; Erdao Bai He Power Plant Canal, near stns. 80 and 90; ca. 750 m a.s.l.; 19.VIII.1994; leg. Jäch

CWBS loc. 93. **Jilin Province**; Yanbian Korean Autonomous Prefecture; Antu County; Baihe City, Baohujü District; near Power Plant of Baihe City; unshaded, springfed pools, cold water, ca. 750 m a.s.l.; 19.VIII.1994; leg. Jäch

Morphology

ADULTS: Among other water beetles and also among all other beetles the Haliplidae easily are recognizable by the strongly enlarged metacoxal plates, which at least reach to the fifth abdominal sternite. The length ranges from 2 - 5 mm. The colour ranges from completely yellow to red-brown, with or without dark maculation.

Under water, these beetles can be distinguished from representatives of the family Dytiscidae by the way they swim. They move their legs alternately (that's why they are called "crawling water beetles"), while Dytiscidae, with which some species could be confused, move their legs at the same time.

IMMATURE STAGES: Haliplidae have five immature stages: egg, first instar larva, second instar larva, third instar larva and pupa.

The eggs are nearly round to oval, about 0.35 - 0.45 mm long and without clear surface structure. The likelihood of finding the eggs during fieldwork is very low.

The larvae are very slender, the length ranges from about 2 mm (first instars) to 12 mm (third instars)(fig. 1, 2). The colour ranges from almost white to strongly blackened by external growth of micro-organisms. The legs have five segments and each tarsus bears only one claw. The mandibles have a suction channel.

During fieldwork larvae are seldom recognized, because of their slender and small body, their slow movement and their perfect camouflage between the filamentous algae on which they often live and feed.

The pupae are approximately oval, in lateral view contracted ventrally, dorsally provided with long setae. Length ranges from 2 - 4 mm. Colour usually white to yellowish white. During fieldwork pupae may be encountered, when the soil along waterbodies is sieved.

Taxonomy

GENERA and SUBGENERA: In the family Haliplidae 5 genera have been described: *Haliplus* LATREILLE, *Brychius* THOMSON, *Peltodytes* RÉGIMBART, *Algophilus* ZIMMERMANN and *Apteraliplus* CHANDLER.

The genus *Haliplus* is divided into 6 subgenera: *Haliplus* s. str., *Neohaliplus* NETOLITZKY, *Haliplidius* GUIGNOT, *Liaphlus* GUIGNOT, *Paraliaphlus* GUIGNOT and *Phalilus* GUIGNOT. The latter two are not represented in the Palaearctic region. For many years there has been confusion regarding *Haliplidius* (by most authors treated as *Haliplus* s.str.) and *Haliplus* s.str. (by most authors treated as *Haliplinus* GUIGNOT, also known as the "*ruficollis*-group"). In this work the view of GUIGNOT (1928) and HOLMEN (1987) is followed.

The genus *Peltodytes* is divided by SATÔ (1963a) into *Peltodytes* s.str. and *Neopeltodytes* SATÔ (only known from the Nearctic region).

Checklist of Chinese Haliplidae (junior synonyms indented):

1. *Haliplus* (*Haliplus* s.str.) *furcatus* SEIDLITZ, 1887

2. *Haliplus* (*Haliplus* s.str.) *harminae* VONDEL, 1990

3. *Haliplus* (*Haliplus* s.str.) *japonicus* SHARP, 1873
   H. hummeli FALKENSTRÖM, 1932
   H. brevior NAKANE 1963b

4. *Haliplus* (*Haliplus* s.str.) *regimbarti* ZAITZEV, 1907 (replacement name)
   H. brevis WEHNCKE, 1880 (junior homonym)
   H. sauteri ZIMMERMANN, 1924 **syn.n.**

5. *Haliplus* (*Haliplus* s.str.) *simplex* CLARK, 1863
   H. medvedevi GRAMMA, 1980

6. *Haliplus* (*Haliplus* s.str.) *steppensis* GUIGNOT, 1954b

7. *Haliplus* (*Liaphlus*) *basinotatus* ZIMMERMANN, 1924

8. *Haliplus* (*Liaphlus*) *chinensis* FALKENSTRÖM, 1932

9. *Haliplus* (*Liaphlus*) *davidi* VONDEL, 1991

10. *Haliplus* (*Liaphlus*) *diruptus* BALFOUR-BROWNE, 1946

11. *Haliplus* (*Liaphlus*) *excoffieri* VONDEL, 1991

12. *Haliplus* (*Liaphlus*) *eximius* CLARK, 1863
   H. modestus ZIMMERMANN, 1924
   H. hiogoensis KANO & KAMIYA, 1931
   H. emmerichi FALKENSTRÖM, 1936

13. *Haliplus* (*Liaphlus*) *holmeni* VONDEL, 1991

14. *Haliplus* (*Liaphlus*) *kotoshonis* KANO & KAMIYA, 1931

15. *Haliplus* (*Liaphlus*) *pulchellus* CLARK, 1863
   H. oceanicus RÉGIMBART, 1886

16. *Haliplus* (*Liaphlus*) *sharpi* WEHNCKE, 1880
   H. tsukushiensis YOSHIMURA, 1932

17. *Peltodytes* (*Peltodytes* s.str.) *coomani* PESCHET, 1923
   P. wui GSCHWENDTNER, 1935

18. *Peltodytes* (*Peltodytes* s.str.) *dauricus* ZIMMERMANN, 1924

19. *Peltodytes* (*Peltodytes* s.str.) *intermedius* (SHARP, 1873)

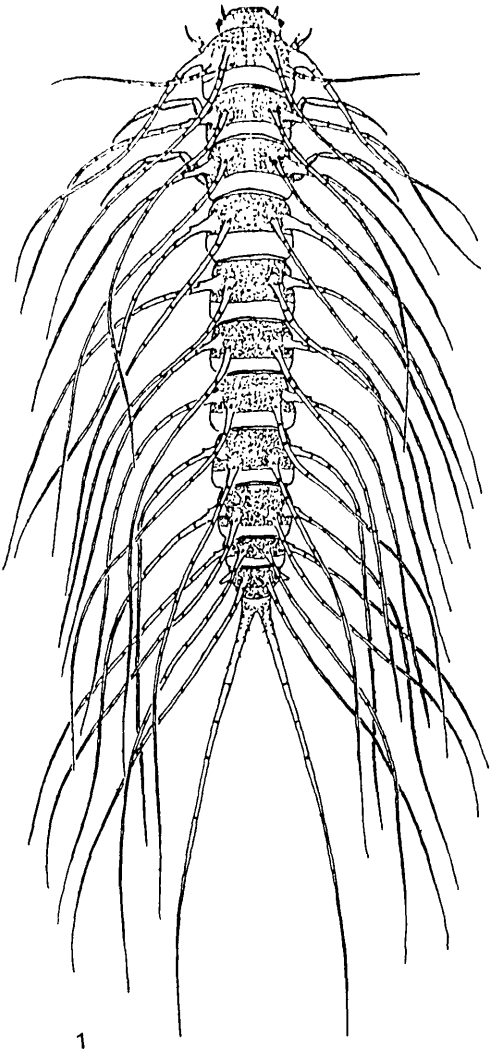
20. *Peltodytes* (*Peltodytes* s.str.) *pekinensis* VONDEL, 1992

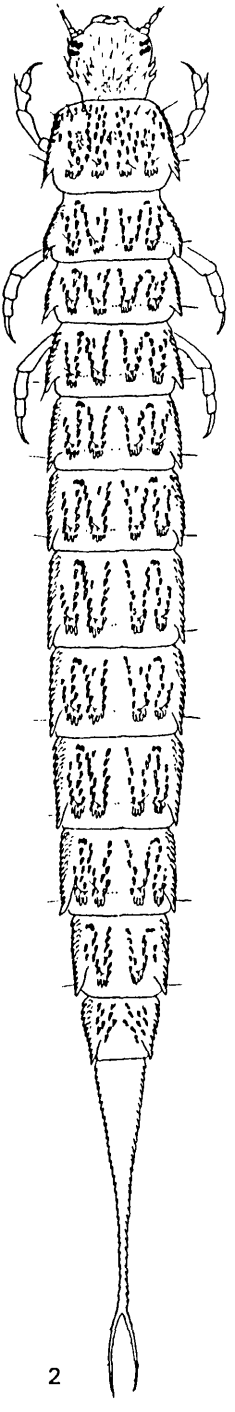
21. *Peltodytes* (*Peltodytes* s.str.) *sinensis* (HOPE, 1845)
   P. variabilis (CLARK, 1863)
   P. koreanus TAKIZAWA, 1931

WU (1932) and GUIGNOT (1947) recorded *Haliplus* (*Liaphlus*) *flavicollis* STURM from China, but this seems to be *Haliplus eximius*.

ZAITZEV (1953) recorded *Haliplus* (*Liaphlus*) *ovalis* SHARP from China, but this most likely is *H. chinensis* FALKENSTRÖM.

BRINCK (1946) recorded *H. lineolatus* subsp. *sahlbergi* FALKENSTRÖM (junior synonym of *H. sibiricus* MOTSCHULSKY) from Manchuria, but the aedaegus he illustrated shows that his specimens belong to *H. simplex*.





Figs. 1 - 2: Third-instar larvae: 1) *Peltodytes caesus*; 2) *Haliplus apicalis*.

Biology

HABITAT: Haliplidae can be found in a large variety of freshwater habitats, some species even in brackish water. Most species live in stagnant or slowly running water of pools, ponds, lakes, marshes, ditches, canals, brooklets, brooks, rivers etc. Some species, such as *Brychius* species (not in China) need clean, oxygen rich, running water. Usually the waterbodies have a permanent character, but also semipermanent or temporary waters are inhabited. As they are poor swimmers they are usually found amongst the vegetation along the shores. Most species prefer waters with a well developed vegetation of filamentous algae or characeans. Acid conditions are usually avoided by most species. Some species are equipped to survive in polyproductive waters and do not seem to be very sensitive to pollution.

MODE OF LIFE: Haliplidae live most of the year in the water and can be found there, dependent on climatic conditions, throughout the year. They crawl between water plants, usually near the bank and less often in open water. Haliplidae are not often good swimmers, the beetles move their hindlegs one after another, giving the impression of walking through the water. The larvae are not capable of swimming. The beetles have to come to the surface to renew their air supply under the elytra and coxal plates; the tip of the abdomen pierces through the water surface. *Brychius* species, living in clean oxygen rich water probably stay under water for a long time, because under these circumstances the air bubble works like a physical gill. In this way the beetle can survive in fast running water without getting caught by the current.

With a few exceptions Haliplidae have wings and in general they are supposed to be able to fly. In the temperate zones there are, however, only few observations of flying-activities. In the tropics, Haliplidae are often attracted to light. JACKSON (1952a, 1952b) did research on the flight capacity of European species. Biological notes are given by BROCHER (1922). SEEGER (1971a-c) did extensive research on morphology, bionomics, ethology, autecology, zoogeography and habitat distribution of a number of European Haliplidae.

LIFE-CYCLE: Usually, mating takes place in spring or summer. During copulation the male holds the female with his fore- and midlegs. The hindlegs are moved alternately along the metacoxal plates, obviously to refresh the water near the air supply for a better function of the physical gill. From time to time a certain vibration in the body and the hindlegs may be observed, but its function is unknown. After mating *Haliplus* spp. place their eggs in the stems of algae or higher plants, for which they use available holes, damage or holes that they create themselves by biting. *Peltodytes* species attach the eggs to the stems. Currently it is not possible to identify these eggs at species level. After hatching, 9 - 16 days later, the first-instar larvae begin to eat filamentous algae (*Haliplus* s. str.) or characeans (*Haliplus* subg. *Liaphlus*). *Peltodytes* seems to eat both filamentous algae and characeans. One group of larvae, which possess forelegs with thumblike tibial lobes (*Peltodytes* and *Haliplus* s.str.) hardly move forward, but draw the algal threads to the mandibles by means of the forelegs. The other group (*Liaphlus*), lacking the tibial lobes, climb along the stems, mainly of Charophyta. The sharp mandibles pierce the cells and suck out the contents. After 6 - 10 days moulting takes place. The second-instar larvae live another 7 - 13 days before moulting to the third instar. The life of the third instar is very variable in length (SEEGER 1971a). In Michigan (USA) HICKMAN (1931) has observed pupation after 10 days, shortly followed by emergence. In other cases the larvae hibernated and pupated in the next year. In my own rearing experiments some larvae hibernated twice before emergence. When the larva is ready for pupation it goes ashore and makes a small cavity in the soil or the sand not far from the water. It may be more than a month before actual pupation takes place. In spring the adult, with all except the eyes still uncoloured, emerges and enters the water after a while. It may be some days before it has its final coloration. Possibly these young adults just reproduce only during the next year. Sometimes even two generations a year seem to be possible.

FOOD: The larvae are herbivorous. Some species eat all kinds of filamentous algae, other species

eat characeans and maybe in some cases higher plants are used as foodplant.

The adults are omnivorous. Besides the vegetable food, usually the same as the larvae, all kind of animal food is taken. SEEGER (1971a) examined the contents of the gut of several species and discovered a large differentiation in the diet of the separate species. *Haliplus* s.str. species are mainly herbivorous, while most other species are mainly carnivorous. The animal food may consist of insect eggs, larvae of Chironomidae and other water insects, worms, smaller and larger crustaceans etc. In my rearing experiments with 16 Central European *Haliplus* species all ate freshly killed *Asellus aquaticus*. Dead *Haliplus* specimens had the soft parts immediately eaten by the remaining beetles.

Collecting

Haliplidae can be collected in a large variety of water bodies, such as pools, ditches, lakes, marshes, brooks and rivers by using a water net or a kitchen sieve. The beetles usually hide amongst the vegetation. After sweeping the net through the waterplants, especially close to the shores and banks, the contents of the net can best be thrown in a white tray or on a cloth or sheet. The beetles will move shortly after that, but larvae will keep hiding for a long time and patience is needed. The best way to collect larvae is to throw the contents of the net into a widemashed sieve above a clean white tray with a little clean water after sweeping through the waterplants and especially the algae. After a while, and even after days, the larvae will crawl out and fall into the tray. In wintertime larvae and also adults can be collected by sieving the soil along the shore. In warmer countries the beetles will also come to light.

Identification in the field is impossible in most cases. Preservation is possible by killing them with aethyl acetate, in boiling water or in alcohol. The beetles and larvae may stay in 80% alcohol until further preparation or examination is needed. Extraction of genitalia is easy, but proper mounting becomes difficult after a stay in alcohol.

Systematics

Only adults are further treated, because very little is known about the immature stages of Chinese Haliplidae.

The phylogenetic relations between the genera were studied by BEUTEL & RUHNAU (1990). The relation of the Haliplidae to other families is discussed by CROWSON (1955), BEUTEL & ROUGHLEY (1988) and BEUTEL (1993).

Key to the genera of Haliplidae of the Palaearctic region:

1. Pronotum almost square, front corners strongly rounded, elytra usually with longitudinal ridges. Length 3.5 - 4.3 mm ..... [*Brychius* (not in China)]

-- Pronotum widest at base, sides converging anteriorly. Elytra without longitudinal ridges 2

2. Metacoxal plates covering at least part of sixth abdominal sternite, only seventh completely visible. Last segment of maxillary palpus and labial palpus longer than penultimate segment. Length 3.5 - 4.0 mm ..... *Peltodytes*

-- Metacoxal plates leaving last three abdominal sternites freely visible. Last segments of palpi considerably shorter than penultimate segments (fig. 6, 7). Length 2.0 - 4.6 mm ..... *Haliplus*

Key to the Palaearctic subgenera of *Haliplus:*

1. Dorsal and ventral side of body with a clearly visible (30x) micropunctation between the small primary punctures. Elytral epipleura without strong punctures..... [*Haliplidius* (not in China)]

-- Elytra smooth or with less strong micropunctation (visible at 50x) between the strong primary punctures. Epipleura with coarse punctures 2

2. Hind tibia with a setiferous striole on dorsal face (fig. 56). Pronotum without basal longitudinal plicae (fig. 53) ..... *Liaphlus*

-- Hind tibia without a setiferous striole on dorsal face. Base of pronotum on both sides with a, sometimes very short, rarely absent, longitudinal plica (fig. 3) 3

3. Pronotal plicae reaching beyond middle, strongly bent ..... [*Neohaliplus* (not in China)]

-- Pronotal plicae not reaching beyond middle, straight or slightly curved ..... *Haliplus* s.str.

Key to the Chinese species of *Haliplus* subgenus *Haliplus* s.str.:

1. Metasternal process flat or bulbous in the middle, with a more or less strong impression or at last a group or row of stronger punctures on each side, prosternal process ridged along its margins (fig. 8) 2

-- Metasternal process not impressed on each side, but more or less impressed in the middle, prosternal process posteriorly flat or slightly impressed in the middle (fig. 17) 5

2. Metacoxal plate with 7 - 8 setae on posterior edge (fig. 24) 3

-- Metacoxal plate without setae on posterior edge 4

3. Metasternal process almost flat, with at most a weak depression each side of the middle (fig. 22). Elytral punctures comparatively finer and more numerous. Length 2.9 - 3.4 mm ..... *japonicus*

-- Metasternal process with a deep depression each side of the middle (fig. 31). Elytral punctures comparatively larger and less numerous. Length 2.7 - 3.0 mm ..... *regimbarti*

4. Elytra with more or less interrupted dark lines, no dark blotches (fig. 45). Length 2.9 - 3.0 mm ..... *steppensis*

-- Elytra with distinct maculation (fig. 3) Length 2.5 - 2.7 mm ..... *furcatus*

5. Elytra with more or less interrupted dark lines, no dark blotches (fig. 37). Length 2.6 - 3.1 mm ..... *simplex*

-- Elytra with dark blotches, no distinct dark lines (fig. 14). Length 2.6 mm ..... *harminae*

Key to the Chinese species of *Haliplus* subgenus *Liaphlus:*

1. Distance between eyes about eye-width (fig. 120) 2

-- Distance between eyes at least 1.2x eye-width 3

2. Prosternal process furrowed on each side (fig. 133). Length 2.5 - 3.4 mm ..... *pulchellus*

-- Prosternal process impressed in the middle (fig. 124). Length 3.5 - 3.6 mm ..... *kotoshonis*

3. Elytra without dark blotches. Pronotal and elytral punctures black (fig. 100). Length 3.4 - 3.9 mm ..... *eximius*

-- Elytra with dark blotches, or if these blotches are strongly reduced or absent, then punctures on disc of pronotum not black 4

4. Elytra with basal transverse black band as dark as sutural maculation 8

-- Elytra without basal black band. Sometimes some transverse darkening separated from basal margin or a brown basal band, clearly less dark than sutural maculation 5

5. Length 2.6 - 3.6 mm 6

-- Length 3.6 - 4.5 mm 7

6. Prosternal process hardly narrowed near coxae (fig. 74). Male: left paramere with short digitus (fig. 77). Length 3.2 mm ..... *davidi*

-- Prosternal process clearly narrowed near coxae (fig. 84). Male: left paramere without digitus (fig. 86). Length 2.8 - 3.5 mm ..... *diruptus*

7. Black suture not reaching first secondary puncture-row in basal part (fig. 89). Body strongly tapering apically. Length 3.7 - 3.8 mm ..... *excoffieri*

-- Black suture reaching first secondary puncture-row in basal part (fig. 62). Body more oval. Length 3.9 - 4.2 mm ..... *chinensis*

8. Elytra with black sutural stripe in anterior part at most reaching to first secondary puncture-row (fig. 53). Length 3.5 - 4.0 mm ..... *basinotatus*

-- Elytra with black sutural stripe in anterior part reaching to first primary puncture-row 9

9. Distance between eyes about 1.2x eye-width. Prosternal process wide, impressed apically, weakly narrowed near coxae (fig. 114). Setiferous striole on dorsal side of hind tibia with about 6 isolated points, not grooved (fig. 113). Male: left paramere with solid digitus (fig. 117). A small cushion between fore-claws (fig. 112). Length 3.3 mm ..... *holmeni*

-- Distance between eyes 1.3 - 1.5x eye-width 10

10. Fourth and fifth antennal segment about as long as wide (fig. 139). Punctures in first to fourth primary elytral rows weaker than in other puncture-rows. Prosternal process broad, hardly narrowed near coxae, hardly or not impressed apically (fig. 143). Anterior edge of prosternum completely margined. Length 3.6 mm ..... *sharpi*

-- Fifth antennal segment clearly longer than wide (fig. 81). Inner primary puncture-rows of elytra not weaker than outer rows. Prosternal process strongly narrowed near coxae, strongly impressed apically (fig. 84). Anterior edge of prosternum only margined near process. Length 2.8 - 3.5 mm. South-east Palaearctic or north Oriental specimens of ..... *diruptus*

Key to the Chinese species of *Peltodytes:*

1. Lateral margins of pronotum narrow, not thicker than antennae, hind corners hardly protruding (fig. 158) 2

-- Lateral margins of pronotum broad, clearly thicker than antennae, hind corners strongly protruding (fig. 147). Length 3.2 - 3.5 mm ..... *coomani*

2. Hind margin of metacoxal plates with a weak blunt tooth (fig. 192). Length 3.4 - 3.8 mm..... *sinensis*

-- Hind margin of metacoxal plates with a sharp long tooth (fig. 174) 3

3. Punctures on elytral epipleura black. Prosternal process clearly bordered in the anterior half (fig. 172). Male: surface of apical parts of parameres areolate (fig. 179) 4

-- Punctures on elytral epipleura not black. Prosternal process usually not completely and clearly bordered in anterior half (fig. 161). Male: surface of apical parts of parameres hairy (fig. 168). Length 4.2 mm ..... *dauricus*

4. Pronotum without black punctures in the posterior corners between margin and widened basal punctures (fig. 180). Proepisternum without strong dark punctures; if very weak punctures present then punctures not darkened. Teeth of coxal plates usually long but with a blunt point, especially in lateral view (fig. 187). Head with a black collar behind the eyes (fig. 181). Length 3.6 - 3.9 mm ..... *pekinensis*

-- Pronotum with black punctures in the posterior corners between margin and widened basal punctures (fig. 169). Proepisternum with strong darkened punctures. Teeth of coxal plates long and sharp (fig. 174, 175). Head without a black collar directly behind the eyes. Length 3.2 - 3.7 mm ..... *intermedius*

Haliplus basinotatus ZIMMERMANN, 1924
Fig. 53 - 61

DIAGNOSIS: This species differs from related species in having a dark basal elytral band together

with the sutural darkening at most reaching first secondary puncture-row in anterior part.

DISTRIBUTION: Easternmost RUSSIA, KOREA, JAPAN and N.E. CHINA.

Brinck (1946) reported this species from "Djalantun" [= Butha Qi, NEI MONGOL].

MATERIAL EXAMINED (Fig. 205): HEILONGJIANG: Harbin, leg. Hammond, 14.VI.1965 (BMNH). JILIN: **CWBS** loc. 88 (NMW).

Haliplus chinensis FALKENSTRÖM, 1932
Fig. 62 - 70

DIAGNOSIS: This species differs from the related *H. excoffieri* in being more oval, while the penis is gradually curved unlike the humpbacked penis of *H. excoffieri*.

BIOLOGY: Found up to an altitude of 1800 m.

DISTRIBUTION: Only known from CHINA.

WU (1932) treated this species as *H. ovalis* SHARP, but according to VONDEL (1991) all Chinese records probably concern *H. chinensis*. WU (1932) recorded it from Peiping [= BEIJING], Kiangsu [= JIANGSU], Szechuan [= SICHUAN], SHANGHAI, YÜNNAN, Tai-an [= Tai-an, SHANDONG?]. BALFOUR-BROWNE (1946) reported this species (as *H. ovalis*) from "Djalantun" [= Butha Qi, NEI MONGOL]. LI (1992) reported this species (as *H. ovalis*) from N.E. China, without indicating the particular province.

MATERIAL EXAMINED (Fig. 206): FUJIAN: "Foochow" [= Fuzhou] (MCZ). JIANGSU: "Kiangsu", leg. Wu (OLML); "Nanking" [= Nanjing], leg. Needham, V.1928 (ISNB). SHANGHAI: "Shanghai" (MNHN). SHANXI (?): "Kelan Pt." [= Kelan ?] (BMNH). SICHUAN: "N.O.Szechuan, Kina", leg. Hummel [holotype] (NHRS). XINJIANG: "Nordwestl. China, Chinkiang" (SMFD). YÜNNAN: "Yunnan-Sen" (MNHN); Lijiang, 26°53'N, 100°18'E, 1800 m, leg. Jendek, 23.VI-21.VII.1992 (NMW). ZHEJIANG: "Chusan Isl." [= Zhoushan Qundao], leg. Walker (BMNH).

Haliplus davidi VONDEL, 1991
Fig. 71 - 79

DIAGNOSIS: This species closely resembles *H. diruptus*, but males can be recognized by its left paramere having a solid digitus.

DISTRIBUTION: JAPAN (Okinawa), VIETNAM and CHINA.

MATERIAL EXAMINED (Fig. 208): BEIJING: "Nord Pekin" [= N Beijing], leg. David, 1865 [holotype] (MNHN); "Peping" [= Beijing], leg. Wu (OLML). HEILONGJIANG: Harbin, leg. Jettmer, 28.IX.1930 (ZMHB). YÜNNAN (MNHN).

Haliplus diruptus BALFOUR-BROWNE, 1946
Fig. 80 - 88

DIAGNOSIS: This species is very variable in elytral maculation. It resembles *H. davidi*, sometimes very closely, in which case males of *H. diruptus* can be recognized by its lack of a solid digitus on the left paramere.

BIOLOGY: Found up to an altitude of 2100 m.

DISTRIBUTION: Easternmost RUSSIA, JAPAN (Ryukyu Islands), VIETNAM, KOREA, INDIA and CHINA. GUIGNOT (1954a) cites BURMA (Shan State).

WU (1932) recorded this species (under the name *H. simplex*; see discussion by VONDEL, 1991) from Peiping [= BEIJING], Kiangsu [= JIANGSU], HONG KONG, SHANGHAI, Foochow [= Fuzhou, FUJIAN], HAINAN.

MATERIAL EXAMINED (Fig. 205): BEIJING: "Peping" [= Beijing], leg. Wu (OLML); "Nord Pekin" [= N Beijing], leg. David, 1865 (MNHN). FUJIAN: "Amoy" [= Xiamen], leg. Chung (MCZ). HEILONGJIANG: "Charbin" [= Harbin], 25.VIII.1952; Harbin, leg. Hammond, 26.VI.1966 (BMNH). HUBEI: "Wuchang" [= Wuhan], leg. Liu, IV.1932 (MCZ). HUNAN: "Hontsang" [= Hengshan], leg. Weber (MNHN). JIANGSU: "Yang Chow Ku" [= Yangzhou], leg. Sunabricotier, 20.VI.1947 (ISNB). LIAONING: **CWBS** loc. 64. SHANGHAI: "ChangHai" (MNHN). TIANJIN: "Tientsin"; "Tientsin" (SFMD); "Tien-Tsin" (MNHN); "Tientsin", leg. Thomson, VII.1902 [holotype] (BMNH). YÜNNAN: Kunming, leg. Maa, 2.VI.1940; Western Hills nr. Kunming, 2100 m., leg. Gressitt, 7.VIII.1940 (BPBM).

Haliplus excoffieri VONDEL, 1991
Fig. 89 - 99

DIAGNOSIS: This species is closely related to *H. chinensis*, but the distance between the eyes is usually less than 1.4x eye-width; the darkened suture only reaches to the first secondary puncture-row and in the males the penis is clearly widened before the apex.

DISTRIBUTION: Only known from S. CHINA.

MATERIAL EXAMINED (Fig. 206): YÜNNAN: "Yunnan Sen" [= Yünnan Province], leg. Excoffier, 1898 [holotype] (MNHN).

Haliplus eximius CLARK, 1863
Fig. 100 - 108

DIAGNOSIS: This species can be distinguished from related species by the lack of maculation between the rows of elytral punctures.

DISTRIBUTION: KOREA, JAPAN, VIETNAM, INDONESIA (Sumatra) and CHINA.

WU (1932) reported this species (under the name *H. flavicollis*; see discussion by VONDEL 1991) from Peiping [= BEIJING], Kiangsu [= JIANGSU]. LI (1992) reported this species from LIAONING (as *H. eximius* and *H. flavicollis*, but the latter likely concerns *H. eximius* too).

MATERIAL EXAMINED (Fig. 207): FUJIAN: "Foochow" [= Fuzhou] (MCZ); "Yungan" [= Yong'an], leg. Maa, 5.IX.1940 (BPBM). HUNAN: Huitong, 350 m, leg. Ji, 9-15.VII.1992 (NMW). JIANGSU: "Nanking" [= Nanjing], leg. Liu, 17.VII.1928 (MCZ); "Kiangsu", leg. Wu (OLML). SICHUAN: "Nitou Tatsienlu" [= Kangding Xian] [holotype *H. emmerichi*] (NHRS). XINJIANG: "Nordwestl. China, Chinkiang" (SFMD). ZHEJIANG: "Chusan" [= Zhoushan Qundao], 15.VI.1931 (MNHN); "Chusan Isl." [= Zhoushan Qundao], leg. Walker (BMNH).

Haliplus furcatus SEIDLITZ, 1887
Fig. 3 - 13

DIAGNOSIS: This species can be distinguished from related species by the lack of setae on the posterior edge of the metacoxal plate and its maculate elytra.

BIOLOGY: Usually found in sun-exposed marshes with temporary water near the sea or in areas with steppe. Found also under cowdung.

DISTRIBUTION: CENTRAL EUROPE to SIBERIA and N.E. CHINA.

MATERIAL EXAMINED (Fig. 204): HEILONGJIANG: Harbin, shore of "Sungari" [= Songhua Jiang], cowdung, leg. Jettmer, 28.IX.1930 (ZMHB).

Haliplus harminae VONDEL, 1990
Fig. 14 - 18

DIAGNOSIS: This species can be distinguished from related species by its prosternal process being impressed medially and its elytra having a large vague maculation instead of dark lines.

DISTRIBUTION: Only known from CHINA.

MATERIAL EXAMINED (Fig. 203): HUBEI: "Hupeh, Mts. Wu-schan" [holotype] (ISNB, SFMB).

Haliplus holmeni VONDEL, 1991
Fig. 109 - 119

DIAGNOSIS: This species appears to be related to *H. sharpi*, but the male has a left paramere with a solid digitus.

DISTRIBUTION: Only known from S. CHINA.

MATERIAL EXAMINED (Fig. 207): YÜNNAN [holotype] (MNHN).

Haliplus japonicus SHARP, 1873
Fig. 19 - 27

DIAGNOSIS: This species can be distinguished from related species by its metacoxal plate having setae posteriorly and its metasternal process not or hardly being impressed on each side.

BIOLOGY: Found up to an altitude of 2500 - 3000 m.

DISTRIBUTION: JAPAN and CHINA.

MATERIAL EXAMINED (Fig. 203): YÜNNAN: "Yunnan-sen" [= Yünnan Province], leg. Excoffier, 1898 (MNHN, ZMHB); Kunming, Diaolin Nat. Res., leg. Jendek & Sausa, 22.V.-2.VI.1993 (NMW); **CWBS** loc. 14 or 15 (NMW). SICHUAN: "Chungking" [= Chongqing], leg. Liu, VI.1932 (MCZ). Wu (1932) records this species from Peiping [= BEIJING], Kiangsu [= JIANGSU], Soochow [= Suzhou, JIANGSU].

Haliplus kotoshonis KANO & KAMIYA, 1932
Fig. 120 - 128

DIAGNOSIS: This species resembles *H. pulchellus* in having the eyes approximate, but it can be distinguished by its simply impressed prosternal process and its lack of a basal black elytral band.

DISTRIBUTION (Fig. 208): TAIWAN: "Kotosho Isl." [= Lanyu] [type locality]. Further recorded from JAPAN (Ryukyu Islands) and LAOS [identification uncertain, see VONDEL 1993].

Haliplus pulchellus CLARK, 1863
Fig. 129 - 137

DIAGNOSIS: This species differs from other species in the area by the small space between the eyes and the double furrowed prosternal process.

BIOLOGY: Specimens were collected up to an altitude of 920 m and are attracted to light.

DISTRIBUTION: THAILAND, VIETNAM, INDIA, SRI LANKA, INDONESIA and S.E. CHINA.

MATERIAL EXAMINED (Fig. 207): FUJIAN: "Amoy" [= Xiamen] (ZMUC).

Haliplus regimbarti ZAITZEV, 1907
Fig. 28 - 36

REMARKS: After examination of a syntype of *H. regimbarti* and specimens of *H. sauteri* ZIMMERMANN from the type locality, I conclude that both are conspecific.

DIAGNOSIS: This species can be distinguished from the related *H. japonicus* by its metasternal process being distinctly impressed on each side.

BIOLOGY: Found up to an altitude of 400 m.

DISTRIBUTION: Only known from CHINA.

MATERIAL EXAMINED (Fig. 203): ANHUI: "Kiuhua Shan" [= Jiuhua Shan], leg. Liu, 1.X.1932 (MCZ). FUJIAN: "Foochow" [= Fuzhou], leg. Chung, VIII.1925; "Amoy" [= Xiamen], leg. Chung, XI.-XII.1924 (MCZ); Shaowu, leg. Maa, 30.VII.1945 (BPBM). HENAN: "Honan, Loyang" [= Luoyang], leg. Hammond, 6.VIII.1966 (BMNH). HUNAN: **CWBS** loc. 28; **CWBS** loc. 33; **CWBS** loc. 34. JIANGSU: "Nanking" [= Nanjing], leg. Wu (OLML). JIANGXI: Ciping, Jinggang Shan, 2-14.VI.1994 (NMW); "Kia-Kiang" [syntype of *H. brevis*] (MNHN). ? SHANDONG: "Tai-an" (OLML). TAIWAN: Anping, leg. Sauter IV.1910 (ZMHB); Taipei, leg. Lee, 16.VIII.1991 (NMW). ZHEJIANG: "Chusan Isl." [= Zhoushan Qundao], leg. Walker (BMNH). WU (1932) recorded this species from Kiukiang [= Jinjiang, JIANGXI], Nanking [= Nanjing, JIANGSU], Canton [= Guangzhou, GUANGDONG], Foochow [= Fuzhou, FUJIAN], Amoy [= Xiamen, FUJIAN].

Haliplus sharpi WEHNCKE, 1880
Fig. 138 - 146

DIAGNOSIS: This species could be confused with specimens of *H. diruptus* in which a basal dark band is present on the elytra. The prosternal process in *H. sharpi* is wide and hardly narrowed near the coxae, while *H. diruptus* has a narrow prosternal process, which is strongly narrowed near the coxae.

BIOLOGY: Specimens were collected in stagnant pools and others were attracted to light.

DISTRIBUTION: JAPAN and KOREA and E. CHINA.

WU (1932) recorded this species from Foochow [= Fuzhou, FUJIAN]. LI (1992) reported this species from LIAONING.

MATERIAL EXAMINED (Fig. 207): FUJIAN: "Foochow" [= Fuzhou], leg. Yang, 1937-38 (BMNH); "Foochow" [= Fuzhou] (MCZ); "Yungan" [= Yong'an], leg. Maa, 4.VI.1940; Shaowu, Shuipeichieh, leg. Maa, 16.IX.1941 (BPBM). SHANGHAI: leg. Marist, 1943 (ISNB). TAIWAN: "Taihoku" [= Taipei], leg. Hadden, 4.VI.1928 (BPBM). No province known: [lectotype] (MNHN).

Haliplus simplex CLARK, 1863
Fig. 37 - 44

DIAGNOSIS: This species can be distinguished from related species by its prosternal process not being ridged along lateral margins and its elytra being striped, but not distinctly maculated.

BIOLOGY: Found in sand dune ponds, stream fens, silt ponds, coastal fens. Found also under cowdung.

BALFOUR-BROWNE (1946) recorded this species from "Djalantun" [= Buth Qi, NEI MONGOL]. BRINCK (1946) recorded it under the name *H. lineolatus* subsp. *sahlbergi* from the same locality.

DISTRIBUTION: Easternmost RUSSIA and E. CHINA.

MATERIAL EXAMINED (Fig. 204): BEIJING: "Peping" [= Beijing], leg. Wu (OLML). HEILONGJIANG: Harbin, shore of Sungari [= Songhua Jiang], cowdung, leg. Jettmar, 28.IX.1930 (ZMHB); Harbin, leg. Hammond, 15.V.-5.IX.1965, 3.IX.1966; "Charbin" [= Harbin], 2.X.1952 (BMNH). JILIN: **CWBS** loc. 65; **CWBS** loc. 67; **CWBS** loc. 77; **CWBS** loc. 79; **CWBS** loc. 88; **CWBS** loc. 89; **CWBS** loc. 91; **CWBS** loc. 93. ZHEJIANG: "Ning-po" [= Ningbo] (ZMHB).

Haliplus steppensis GUIGNOT, 1954b
Fig. 45 - 52

DIAGNOSIS: This species can be distinguished from the related *H. furcatus* by its elytra being striped but not distinctly maculated.

DISTRIBUTION: MONGOLIA and N.E. CHINA.

MATERIAL EXAMINED (Fig. 204): HEILONGJIANG: Harbin, leg. Hammond, 10.VII.1966; "Charbin" [= Harbin], 1.X.1952 (BMNH).

Peltodytes coomani PESCHET, 1923
Fig. 147 - 157

DIAGNOSIS: This species can be distinguished from others by its very thick lateral pronotal margins.

DISTRIBUTION: VIETNAM and S.E. CHINA.

MATERIAL EXAMINED (Fig. 210): GUANGDONG: "Canton" [= Guangzhou], leg. Mell, X.1910 (ZMHB). HAINAN: "Nodoa" [= Nada], 17.VII.1929; "Kochek", leg. Gressitt, 5.VIII.1935 (BPBM).

Peltodytes dauricus ZIMMERMANN, 1924
Fig. 158 - 168

DIAGNOSIS: This species can be distinguished from others in the region by its unicoloured punctures on elytral epipleura and males having the parameres with a hairy apical part (Fig. 168).

DISTRIBUTION: Easternmost RUSSIA and N.E. CHINA.

BRINCK (1946) reported this species from "Djalantun" [= Butha Qi, NEI MONGOL] and "Dairen" [= Dalian, LIAONING].

MATERIAL EXAMINED (Fig. 210): HEILONGJIANG: Harbin, leg. Weymarn, 22.IX.1940; Harbin, leg. Hammond, 13.VI.1965 and 26.VI.1966; "Charbin" [= Harbin], 5.VIII + 2.X.1952; "Weishaho" [= Weihe], leg. Weymarn, 20.VII.1939; "Hsiaoling", leg. Weymarn, VII.1939 (BMNH).

Peltodytes intermedius (SHARP, 1873)
Fig. 169 - 179

DIAGNOSIS: This species can be distinguished from others by its long and sharp (lateral view) posterior tooth on the metacoxal plate.

BIOLOGY: Specimens were found in ponds and others in a river.

DISTRIBUTION: JAPAN, KOREA and E. CHINA. ZAITZEV (1953) reports this species from the easternmost part of RUSSIA.

WU (1932) also reported this species from Hangchow [= Hangzhou, ZHEJIANG]. ZIMMERMANN (1919) cites TAIWAN.

MATERIAL EXAMINED: (Fig. 210): SHANGHAI (RMNH). BEIJING: "Peping" [= Beijing], leg. Wu (OLML).

Peltodytes pekinensis VONDEL, 1992
Fig. 180 - 191

DIAGNOSIS: This species can be distinguished from *P. intermedius* by its black collar and its long blunt tooth on the metacoxal plate.

DISTRIBUTION: Only known from E. CHINA.

MATERIAL EXAMINED (Fig. 210): BEIJING: "Peping" [= Beijing], leg. Wu [holotype] (OLML); "Peking" [= Beijing], VII.1913 (ZMHB). FUJIAN: "Foochow" [= Fuzhou], leg. Gist Gee (MCZ). HEBEI: Beidahe, 39°49'N, 119°31'E, leg. Hellqvist, 9.V.1994 (CNU).

Peltodytes sinensis (HOPE, 1845)
Fig. 192 - 202

DIAGNOSIS: This species can be distinguished from others by its weak blunt tooth on the

metacoxal plate.

BIOLOGY: Specimens are found in stagnant water and in rivers up to an altitude of 2100 m.

DISTRIBUTION: JAPAN (Ryukyu Islands), KOREA, VIETNAM, PHILIPPINES and CHINA.

WU (1932) reports this species from Kirin [= JILIN], Peiping [= BEIJING], Kiangsu [= JIANGSU], Nanking [= Nanjing, JIANGSU], Soochow [= Suzhou, JIANGSU], Quinsan, Hangchow [= Hangzhou, ZHEJIANG], Huchow [= Huzhou, ZHEJIANG], Szechuan [= SICHUAN], Foochow [= Fuzhou, FUJIAN], Amoy [= Xiamen, FUJIAN], Canton [= Guangzhou, GUANGDONG], SHANGHAI, Kiangsi [= JIANGXI], YÜNNAN, Wuchang [= Wuchang, HUBEI], HAINAN, Wenchow [= Wenzhou, ZHEJIANG], Ihsing [= I-shien, ANHUI ?]. LI (1992) reported this species from LIAONING and JILIN.

MATERIAL EXAMINED (Fig. 209): ANHUI: "Kiuhua Shan" [= Kiuhwashan], leg. Liu (MCZ). FUJIAN: "Amoy" [= Xiamen], leg. Chung, XI-XII.1924 + VIII-X.1925; "Foochow" [= Fuzhou], leg. Chung, VI-IX.1925 (MCZ); "Foochow" [= Fuzhou], leg. Yang, 1935-38 (BMNH); "Lienkong" [= Lianjiang], leg. Chung, IX.1925 (MCZ); "Yungan" [= Yong'an], leg. Maa, 5-27.VII.1940; Shaowu, "Shiupeichieh", leg. Maa, 16.IX.1941 + 4.IV.1942 + 28.III.1943; Shaowu, "Tachuland", leg. Maa, 25.IV.1943; Shaowu, "KuHsienKay", leg. Maa, III.1945; "Shanghang, Fung-Shih", 7.VIII.1940; "Kien Yang" [= Jianyang], "Cha-po-hui", leg. Ngul, 10-18.V.1933; "Kien Ow", leg. Maa, 9.VIII.1940; "Liencheng" [= Liancheng], Wenheng, leg. Maa, 11.VI.1939; "Chungan" [= Guangze], Bohea Hill, leg. Maa, 30.IV.1940 (BPBM). GUANGDONG: "Penang", leg. Cantor [lectotype described from Canton, but the meaning of "Penang" on the label is unclear. The Malayan island Penang lies outside the presently known distribution] (BMNH); "Lo-ting" [= Luoding], Tai-ping, leg. Hoffman, 6.VII.1932; "Yim-na Shan", 1200 m., leg. Gressitt, 15.VI.1936 (BPBM); "Canton" [= Guangzhou], leg. Mell, V.1909 (ZMHB). GUANGXI: **CWBS** loc. 40. GUIZHOU: "Kouy Tchéou" [= Guizhou], leg. Cavalerie, 1910; "Dohnu" (MNHN). HEBEI: Beidahe, 39°49'N, 119°31'E, leg. Hellqvist, 9.V.1994 (CNU). HENAN: "Loyang" [= Luoyang], leg. Hammond, 6.VIII.1966 (BMNH). HUNAN: "Li Tsinshih", leg. Maa, 29.V.1937 (BPBM); Huitong, 350 m, leg. Ji, 9-15.VII.1992; **CWBS** loc. 28; **CWBS** loc. 33; **CWBS** loc. 34. JIANGSU: "Nanking" [= Nanjing], leg. Needham, V.1928 (ISNB). SHANGHAI: "Galathea" (ZMUC); "Shanghai" (RMNH); "Shanghaj", 1898 (MNHN). TAIWAN: "Taipe City" [= Taipei], leg. Lee, 16.VIII. 1991 (NMW); "Puli" [= Pu-li], VII.1954; "Taihoku" [= Taipei], leg. Hadden, 6.V.-4.VI.1928 (BPBM); "Takao" [= Kaohsiung] (ISNB); Anping, leg. Sauter, IV.1910 (ZMHB). YÜNNAN: "Western hills nr. Kunming", leg. Gressitt, 2100 m., 7.VII.1940 (BPBM); "Tali" [= Dali]; "Yunnan Fou" [= Kunming] (ISNB); "Yunnan-sen" [= Yünnan Province] (MNHN, ZMHB); Lijiang, 26°53'N, 100°18'E, 1800 m, leg. Jendek, 23.VI-21.VII.1992 (NMW). ZHEJIANG: "Hangchow" [= Hangzhou], leg. Liu, 22.IX.1927 (MCZ); "Chusan Isl." [= Zhoushan Qundao], leg. Walker (BMNH); "Ning-Po" [= Ningbo], VII.1937 (ISNB); "Ning-Po" [= Ningbo] (ZMHB).

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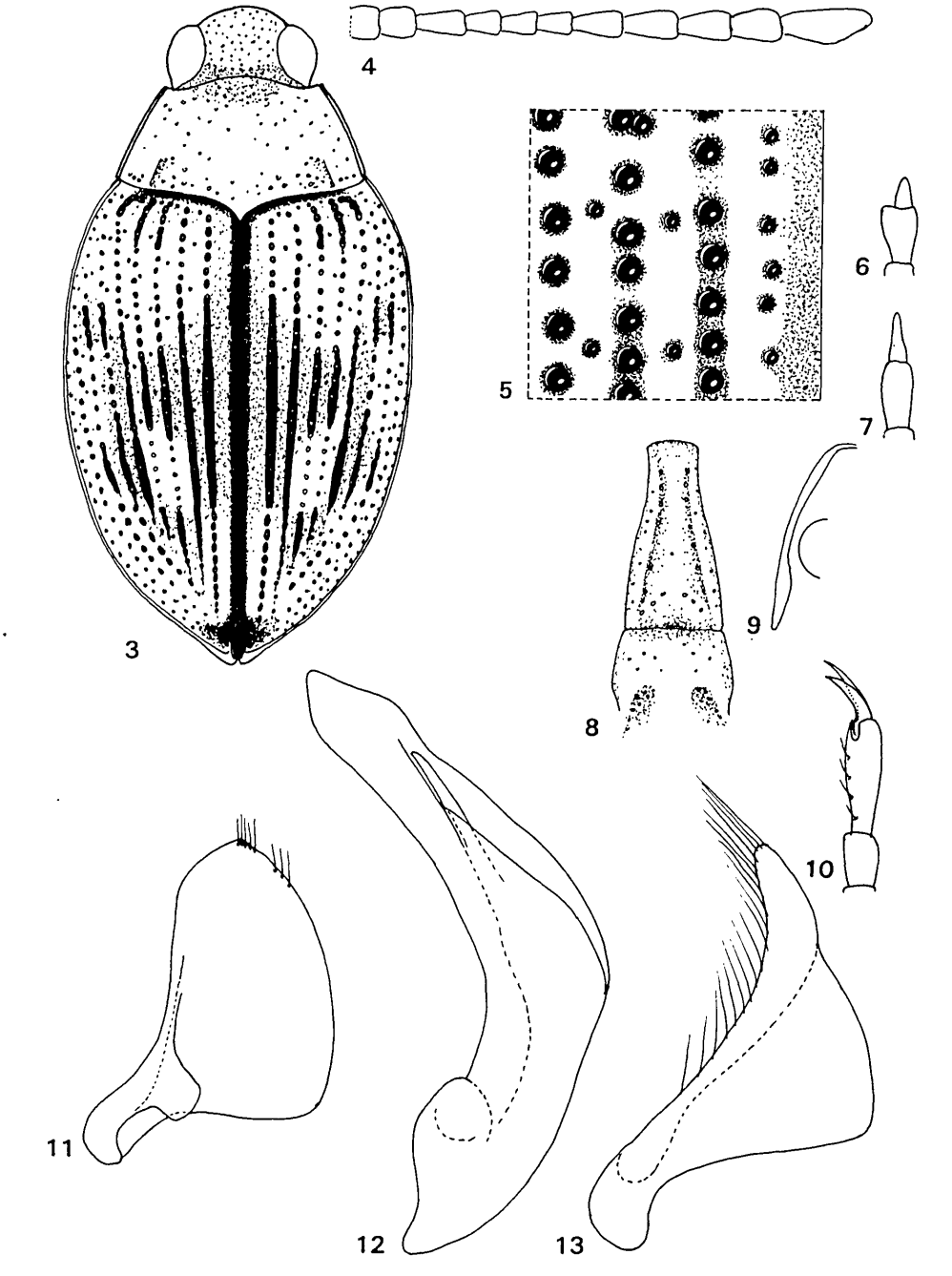
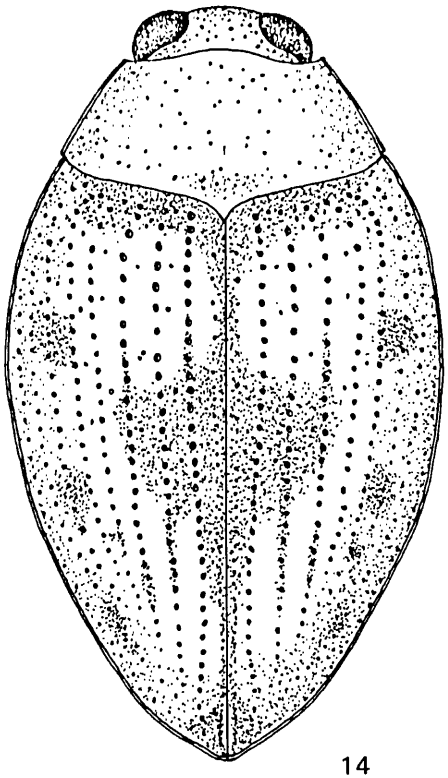
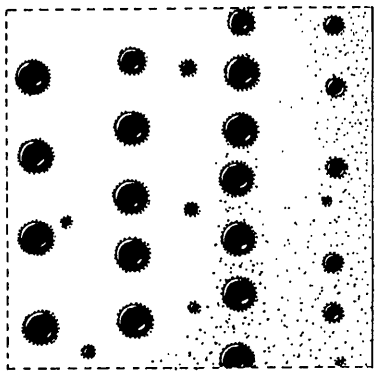
Zusammenfassung

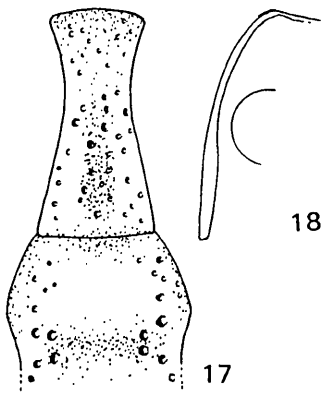
Die 21 aus China bekannten Haliplidae werden behandelt und illustriert. *Haliplus sauteri* ZIMMERMANN wird als jüngeres Synonym von *H. regimbarti* ZAITZEV eingezogen. Allgemeine Informationen über Haliplidae werden gegeben. Ein Schlüssel zu den chinesischen Arten wird präsentiert.



Figs. 3 - 13: *Haliplus furcatus*: 3) dorsal view; 4) antenna; 5) elytral punctation near base and suture; 6) labial palpus; 7) maxillary palpus; 8) pro- and metasternal process; 9) lateral view of prosternal process; 10) male protarsal claws; 11) left paramere; 12) penis; 13) right paramere.







Figs. 14 - 18: *Haliplus harminae*: 14) dorsal view; 15) elytral punctation near base and suture; 16) maxillary palpus; 17) pro- and metasternal process; 18) lateral view of prosternal process.

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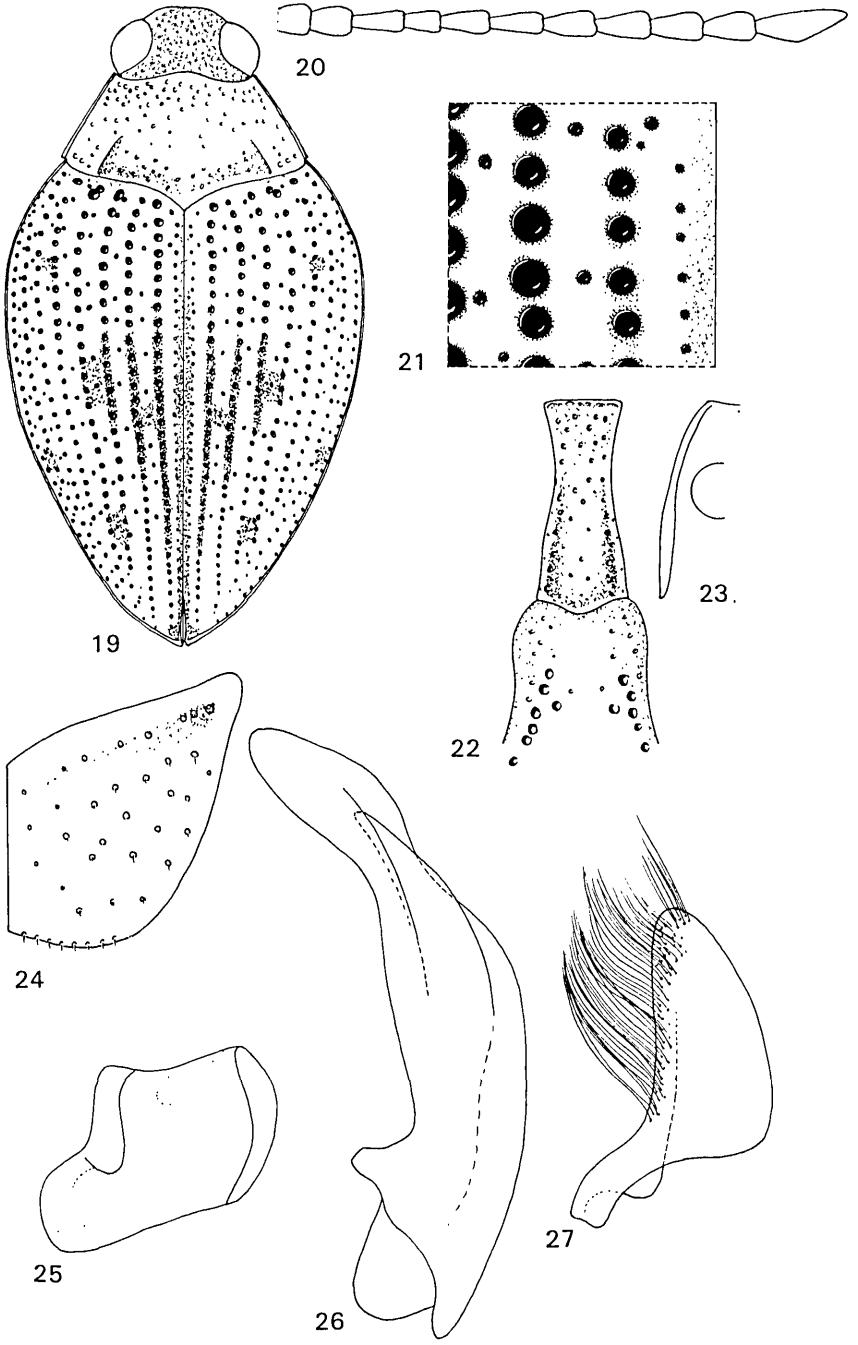
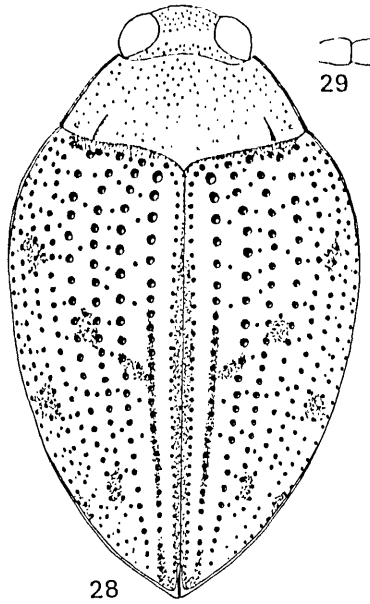
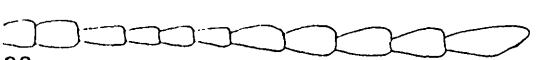
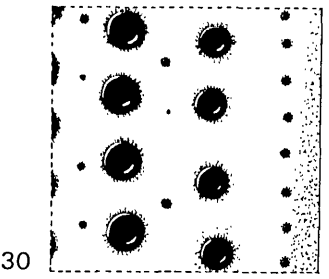
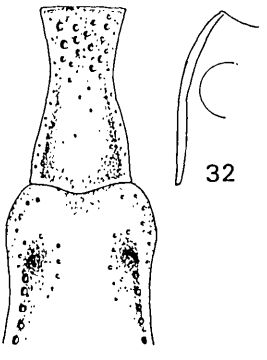


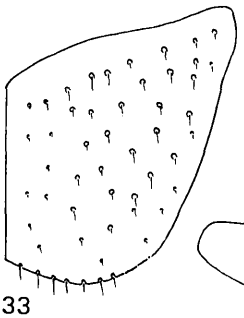
Figs. 19 - 27: *Haliplus japonicus*: 19) dorsal view; 20) antenna; 21) elytral punctation near base and suture; 22) pro- and metasternal process; 23) lateral view of prosternal process; 24) metacoxal plate; 25) left paramere; 26) penis; 27) right paramere.

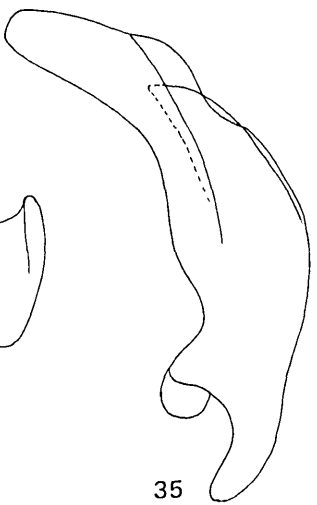


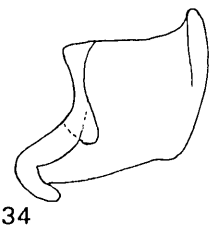


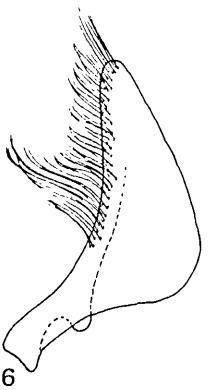




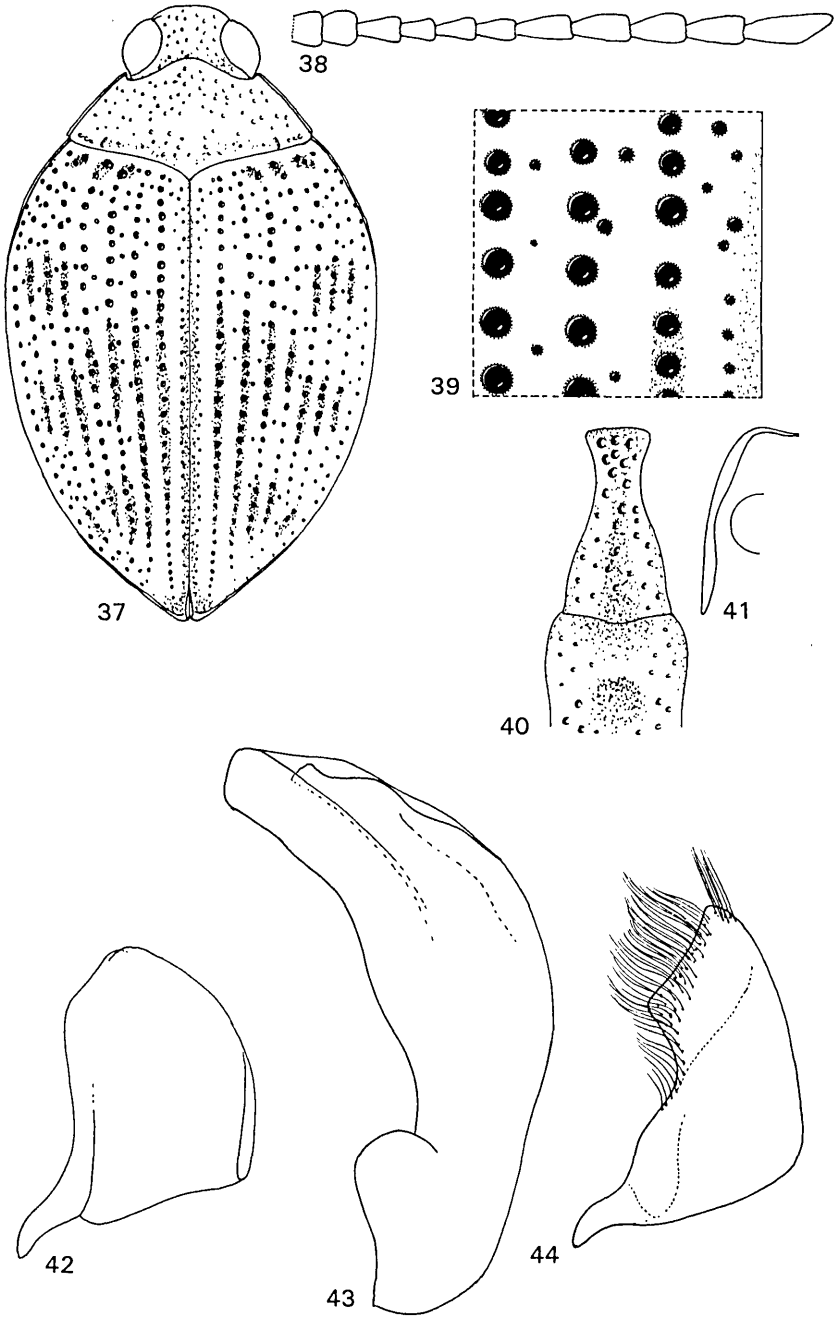




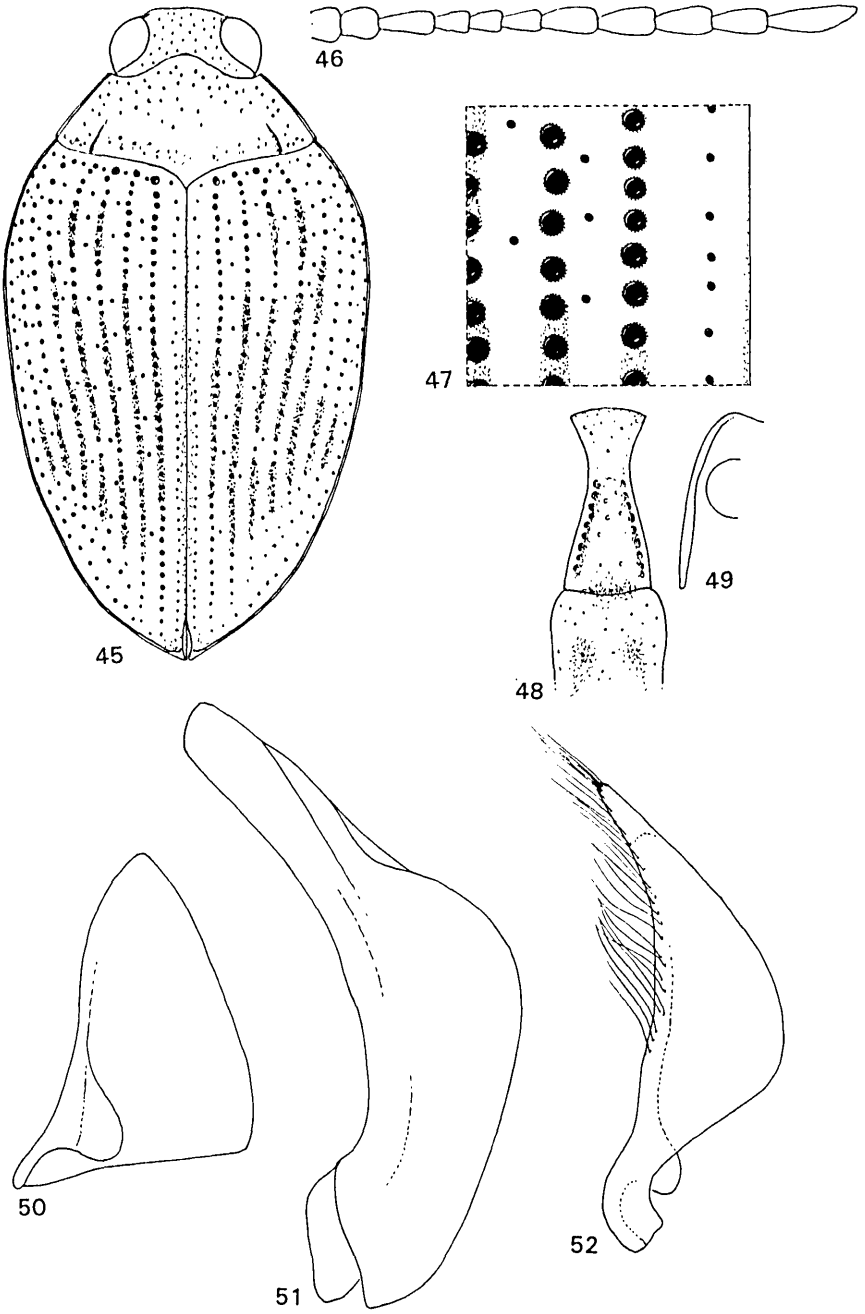




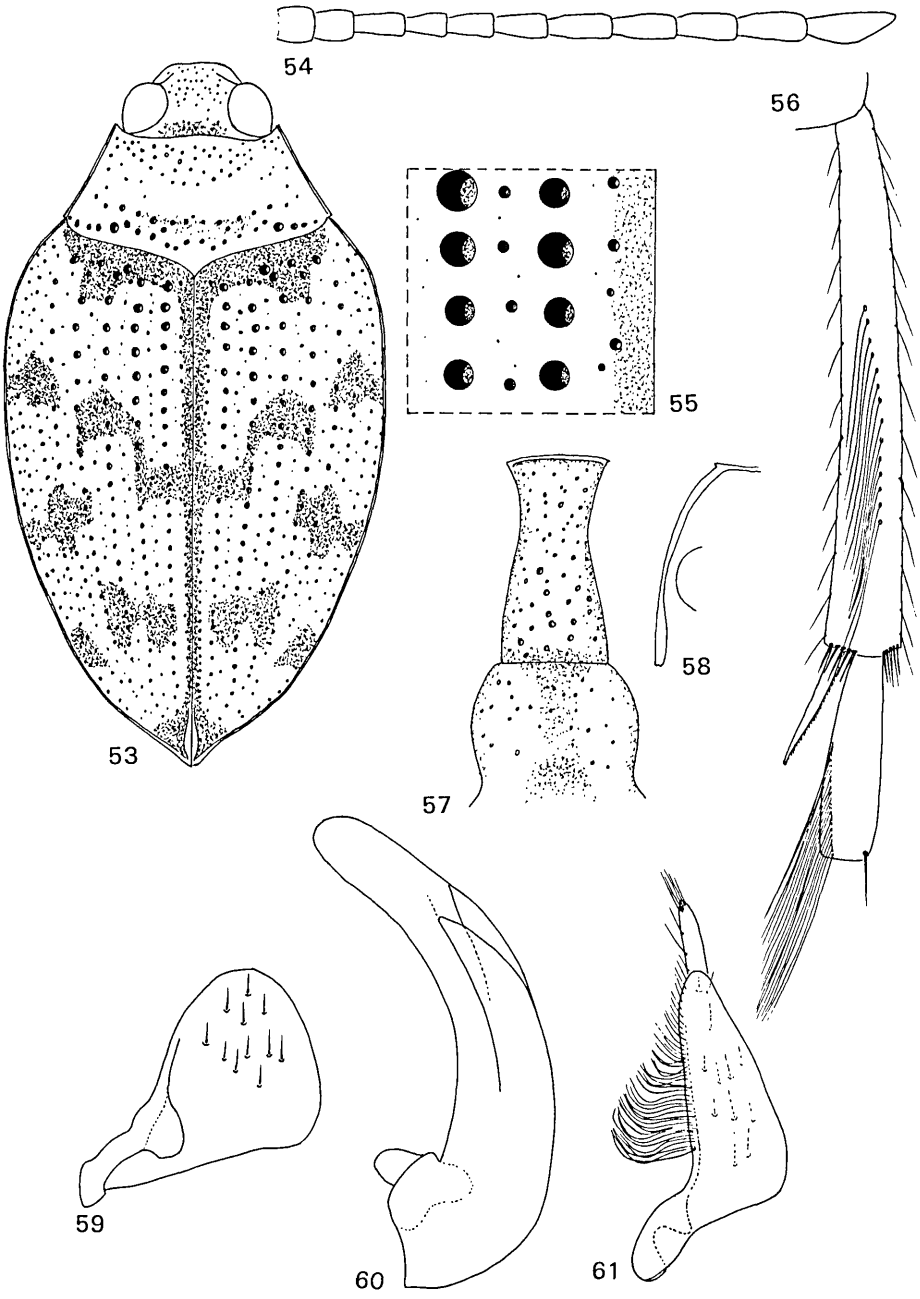
Figs. 28 - 36: *Haliplus regimbarti*: 28) dorsal view; 29) antenna; 30) elytral punctation near base and suture; 31) pro- and metasternal process; 32) lateral view of prosternal process; 33) metacoxal plate; 34) left paramere; 35) penis; 36) right paramere.



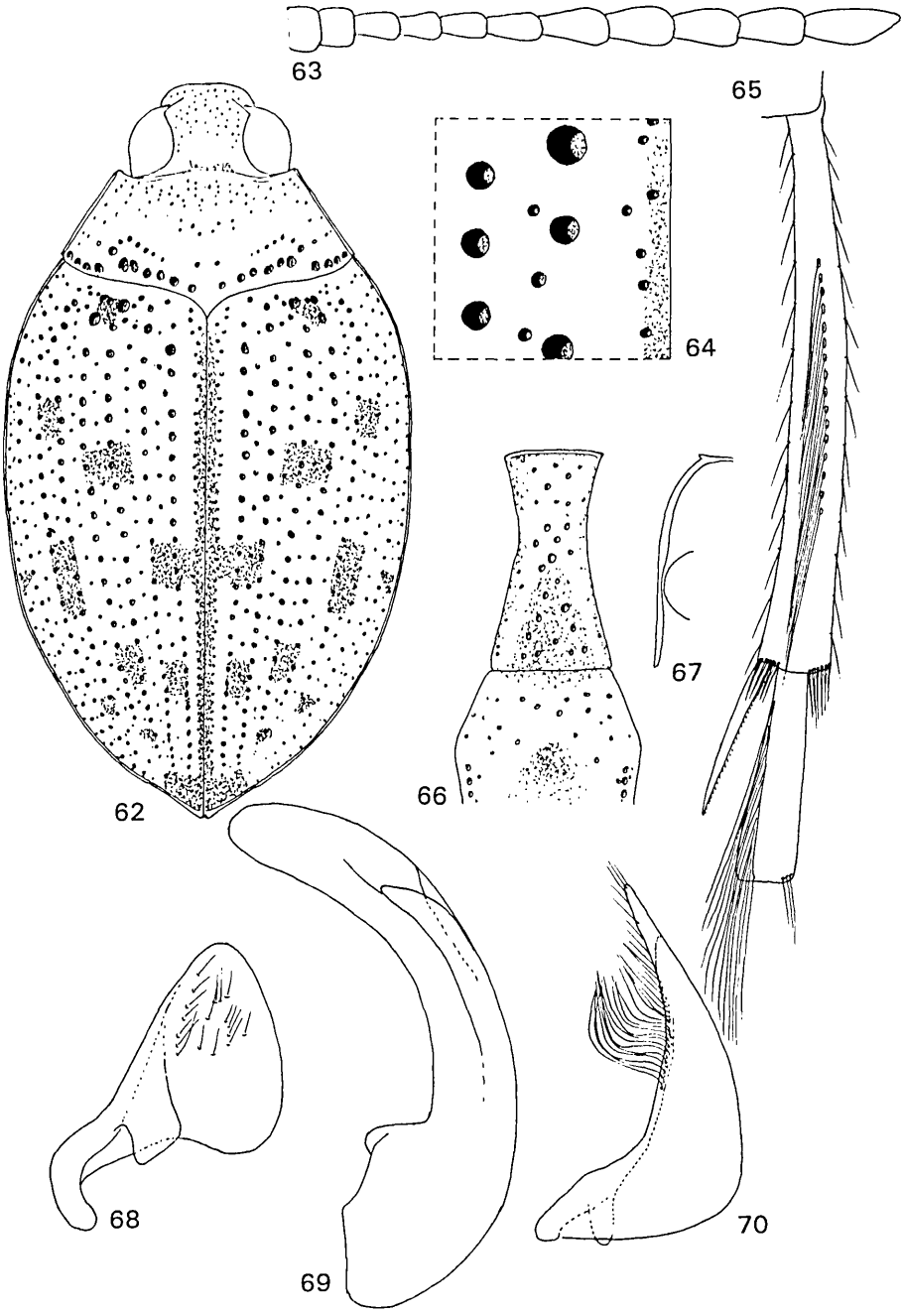
Figs. 37 - 44: *Haliplus simplex*: 37) dorsal view; 38) antenna; 39) elytral punctation near base and suture; 40) pro- and metasternal process; 41) lateral view of prosternal process; 42) left paramere; 43) penis; 44) right paramere.



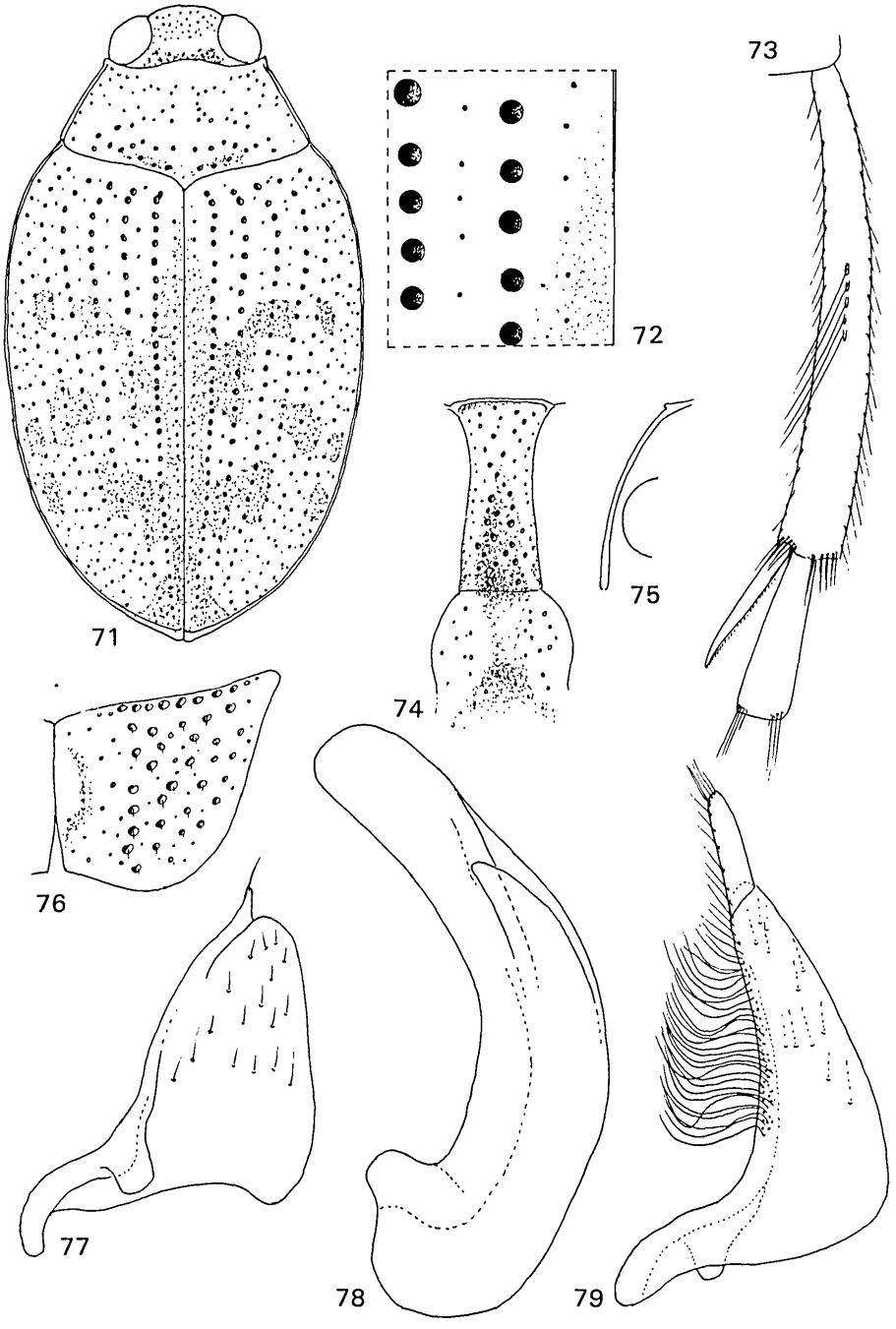
Figs. 45 - 52: *Haliplus steppensis*: 45) dorsal view; 46) antenna; 47) elytral punctation near base and suture; 48) pro- and metasternal process; 49) lateral view of prosternal process; 50) left paramere; 51) penis; 52) right paramere.



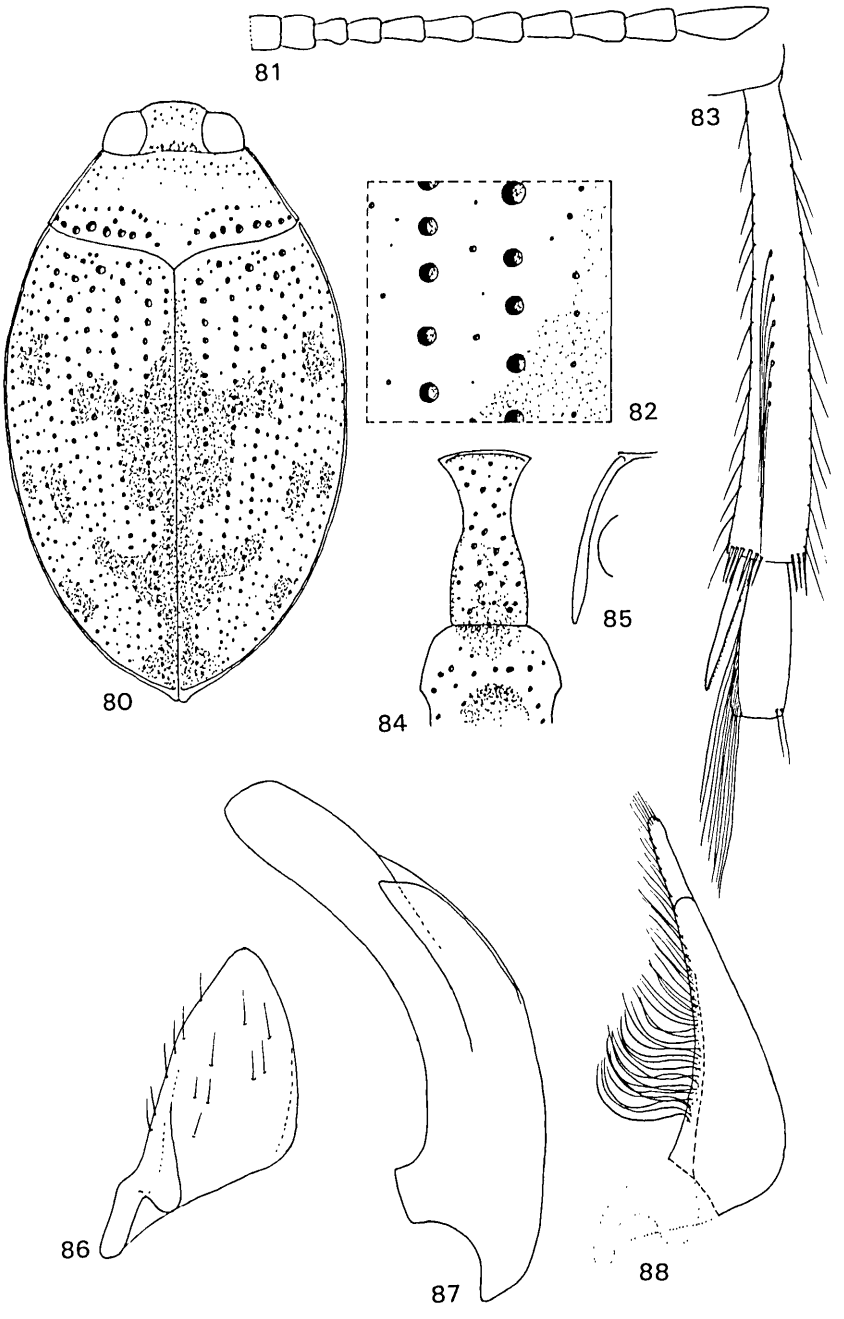
Figs. 53 - 61: *Haliplus basinotatus*: 53) dorsal view; 54) antenna; 55) elytral punctation near base and suture; 56) dorsal side of metatibia; 57) pro- and metasternal process; 58) lateral view of prosternal process; 59) left paramere; 60) penis; 61) right paramere.



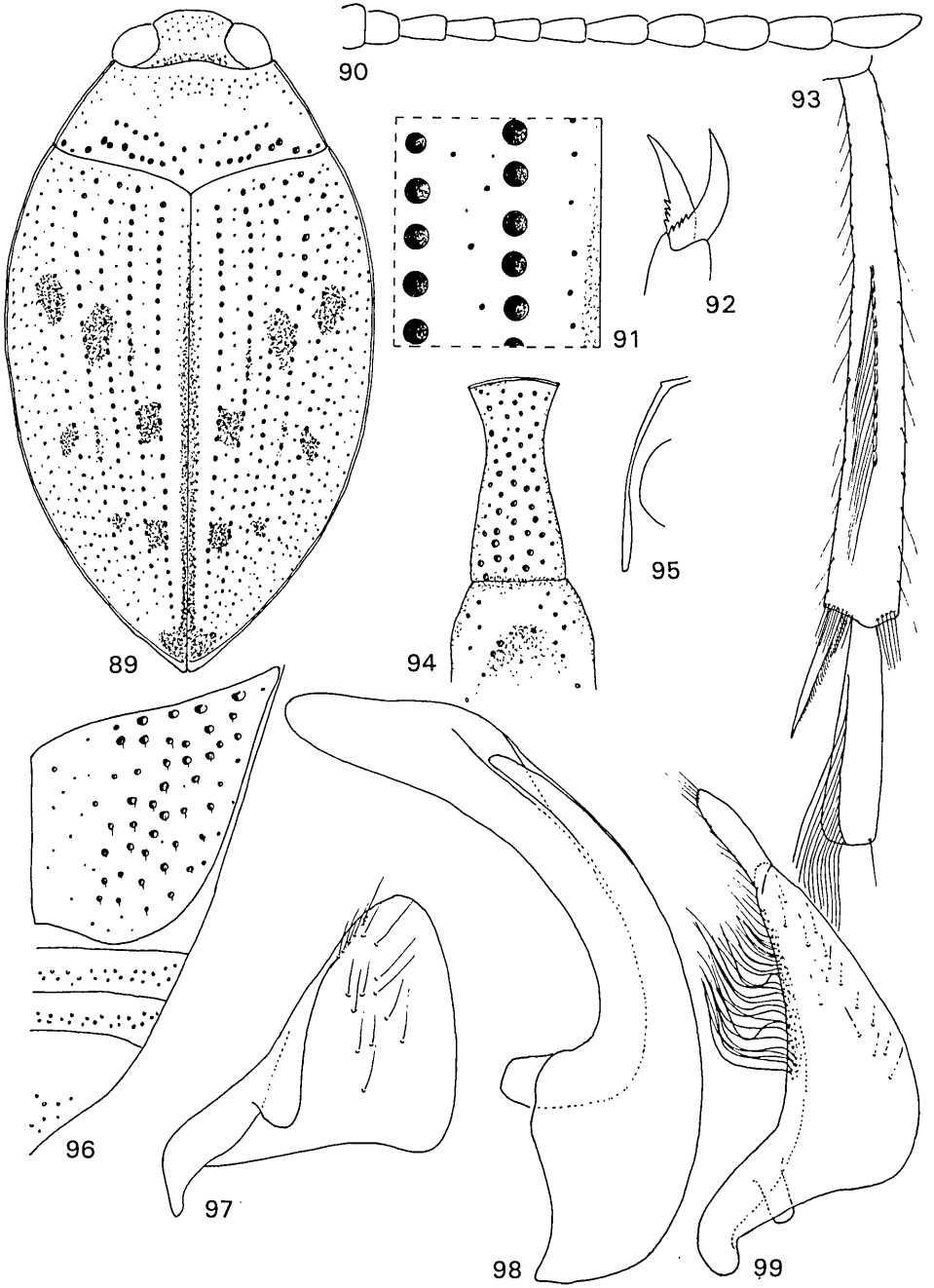
Figs. 62 - 70: *Haliplus chinensis*: 62) dorsal view; 63) antenna; 64) elytral punctation near base and suture; 65) dorsal side of metatibia; 66) pro- and metasternal process; 67) lateral view of prosternal process; 68) left paramere; 69) penis; 70) right paramere.



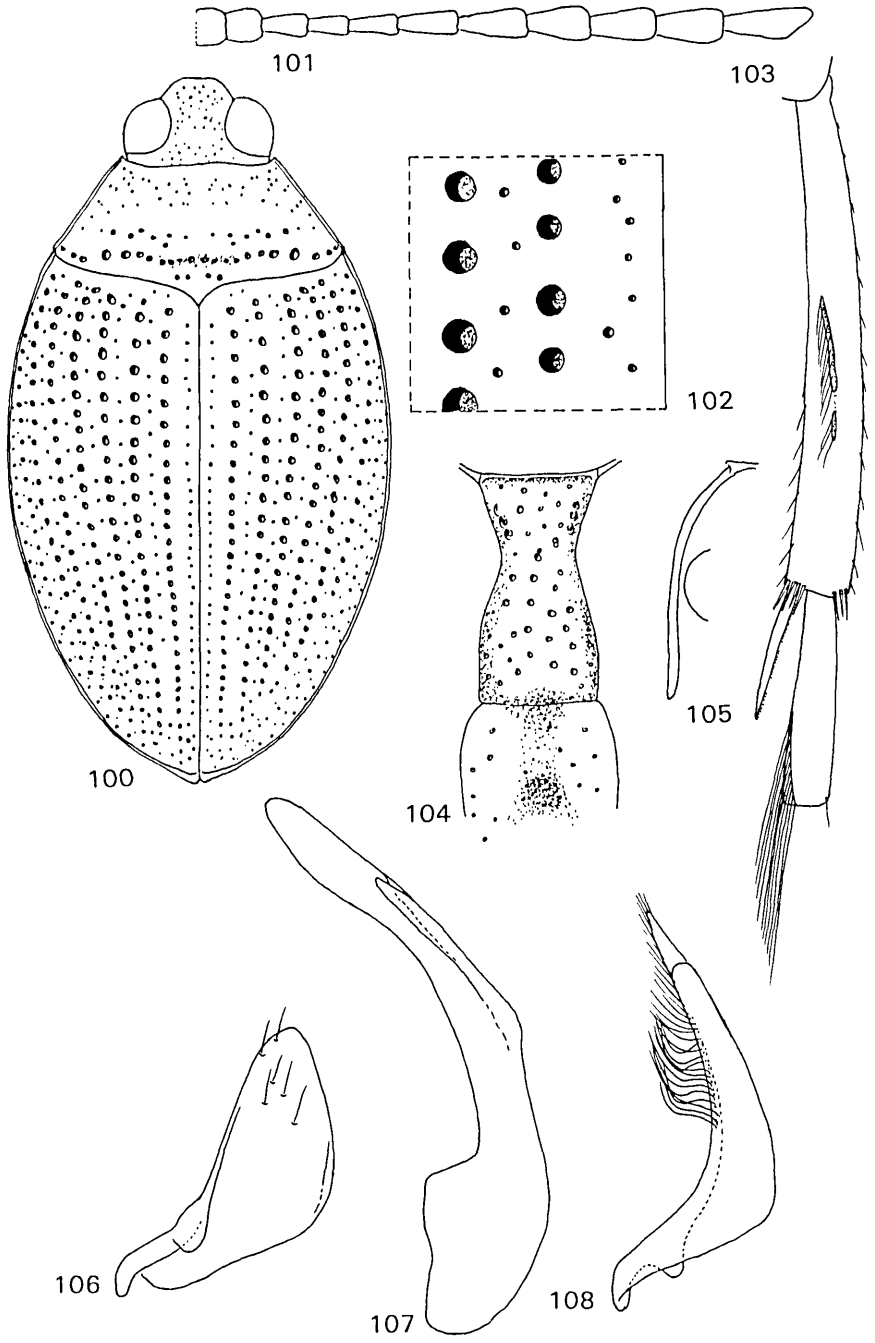
Figs. 71 - 79: *Haliplus davidi*: 71) dorsal view; 72) elytral punctation near base and suture; 73) dorsal side of metatibia; 74) pro- and metasternal process; 75) lateral view of prosternal process; 76) metacoxal plate; 77) left paramere; 78) penis; 79) right paramere.



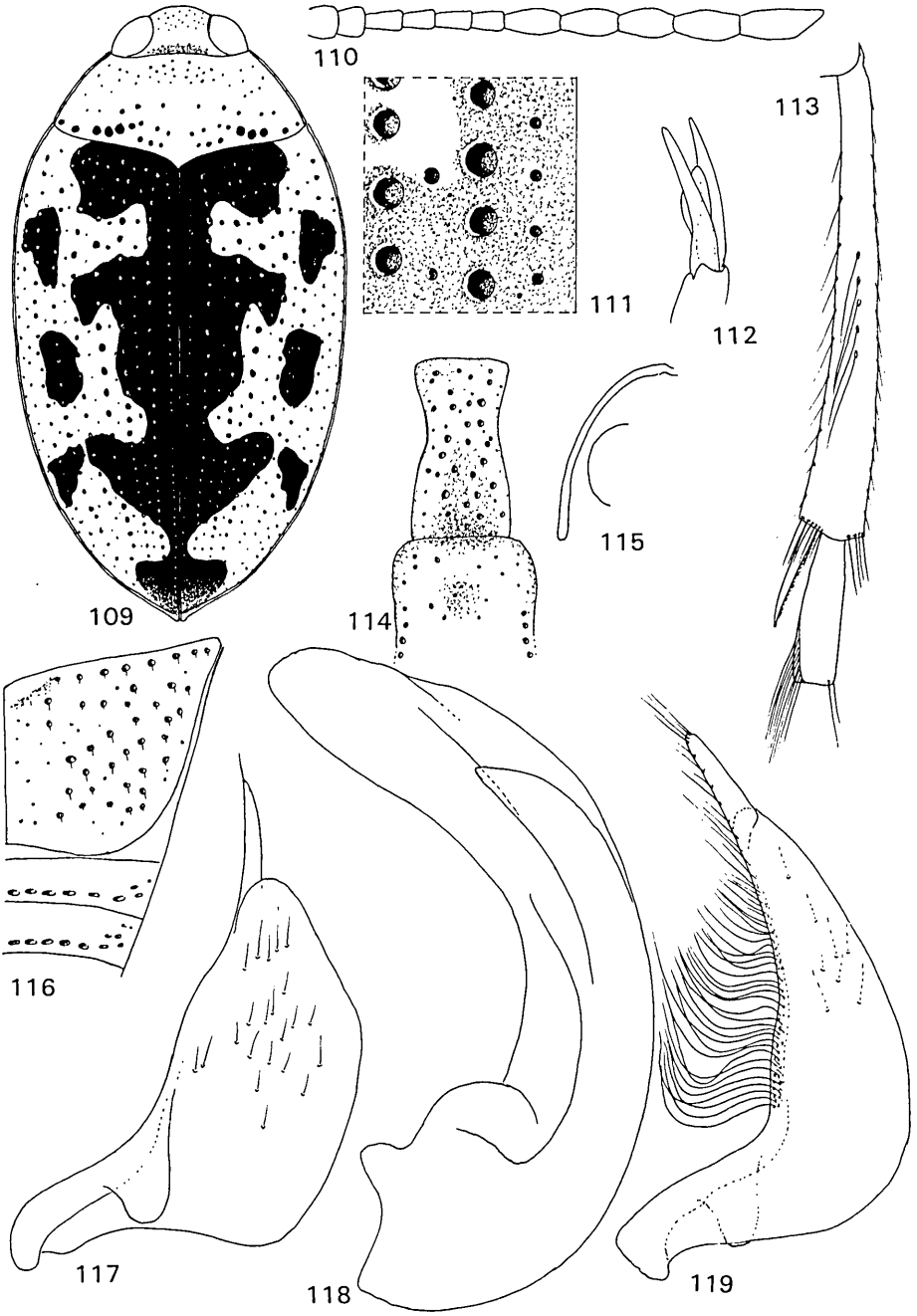
Figs. 80 - 88: *Haliplus diruptus*: 80) dorsal view; 81) antenna; 82) elytral punctation near base and suture; 83) dorsal side of metatibia; 84) pro- and metasternal process; 85) lateral view of prosternal process; 86) left paramere; 87) penis; 88) right paramere.



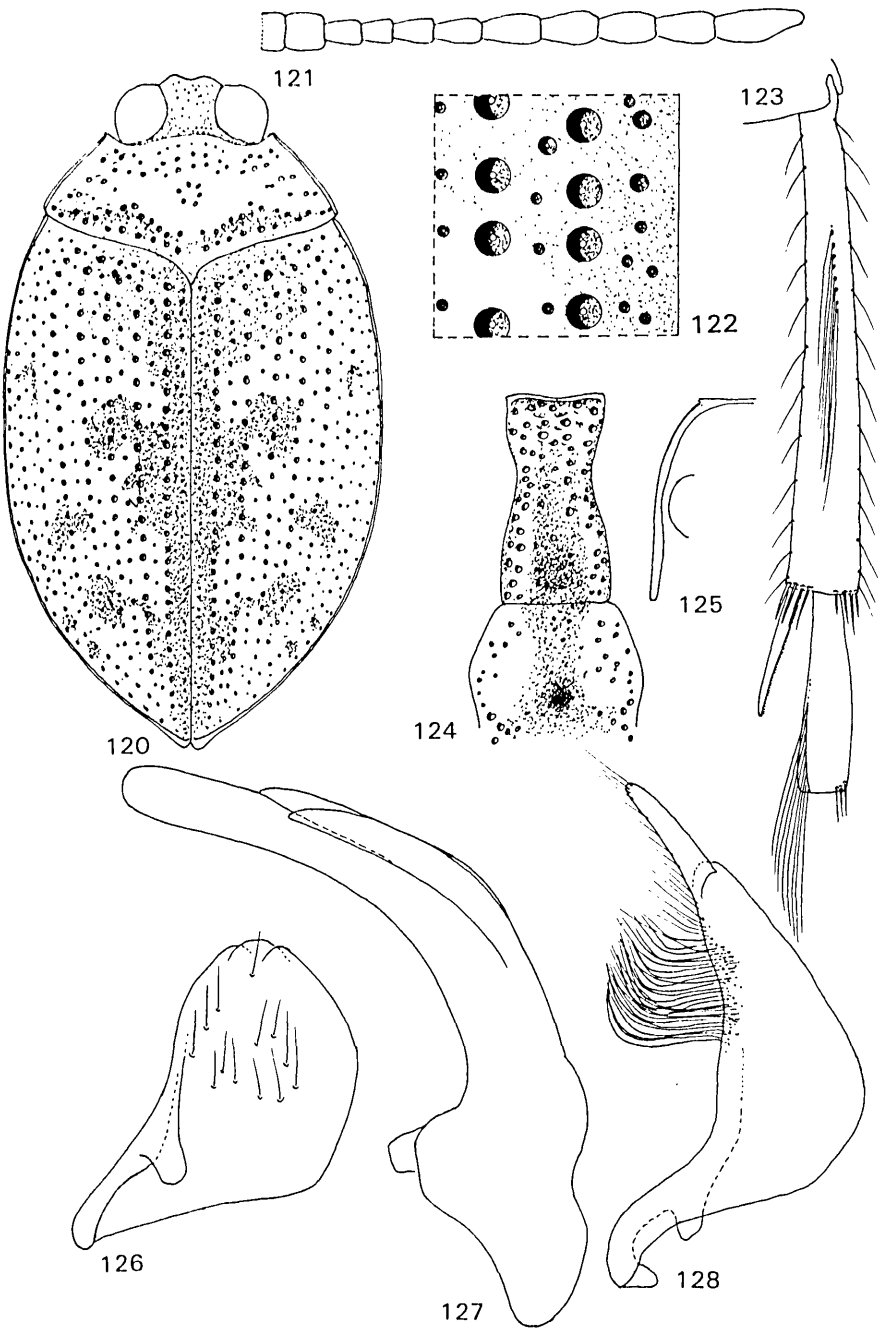
Figs. 89 - 99: *Haliplus excoffieri*: 89) dorsal view; 90) antenna; 91) elytral punctation near base and suture; 92) male protarsal claws; 93) dorsal side of metatibia; 94) pro- and metasternal process; 95) lateral view of prosternal process; 96) metacoxal plate and sternites; 97) left paramere; 98) penis; 99) right paramere.



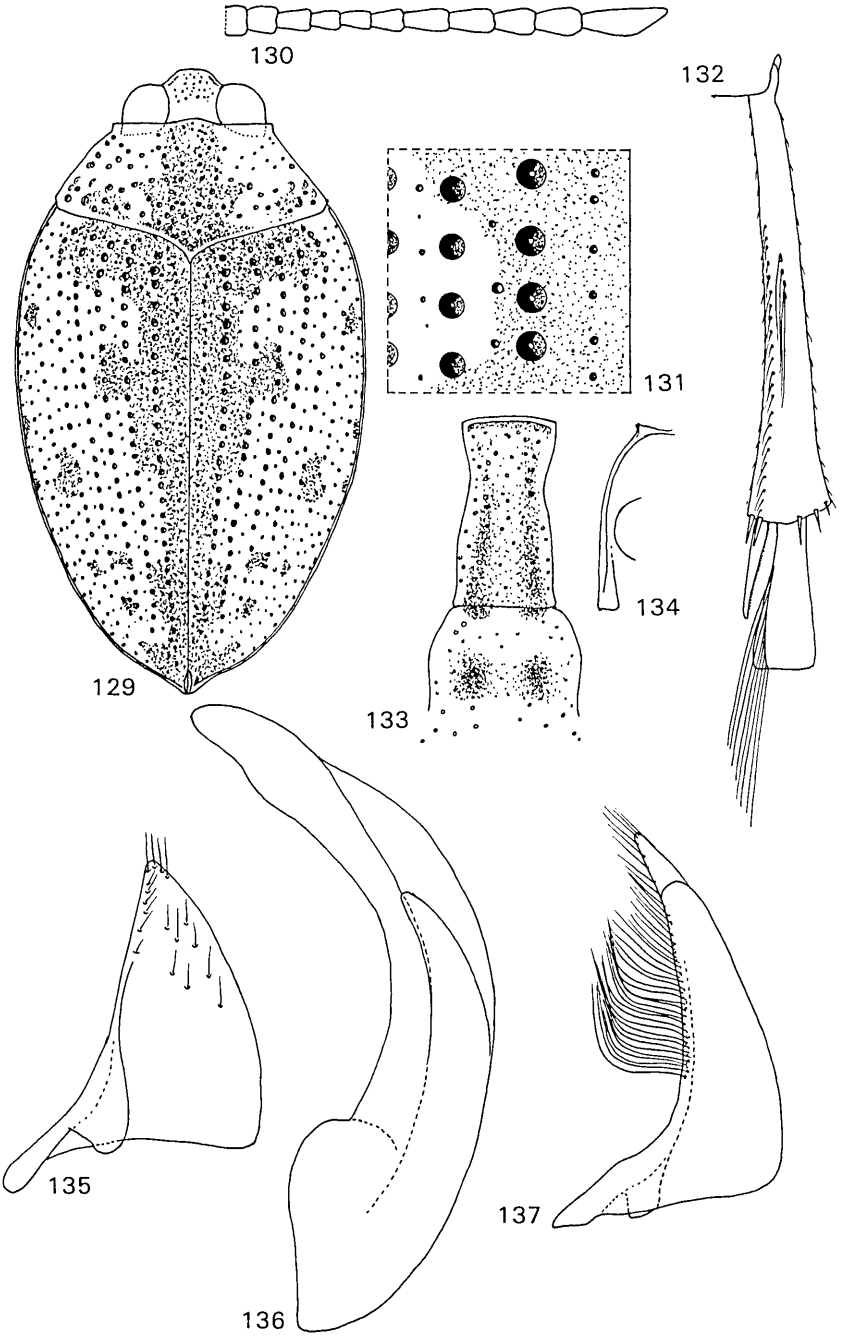
Figs. 100 - 108: *Haliplus eximius*: 100) dorsal view; 101) antenna; 102) elytral punctation near base and suture; 103) dorsal side of metatibia; 104) pro- and metasternal process; 105) lateral view of prosternal process; 106) left paramere; 107) penis; 108) right paramere.



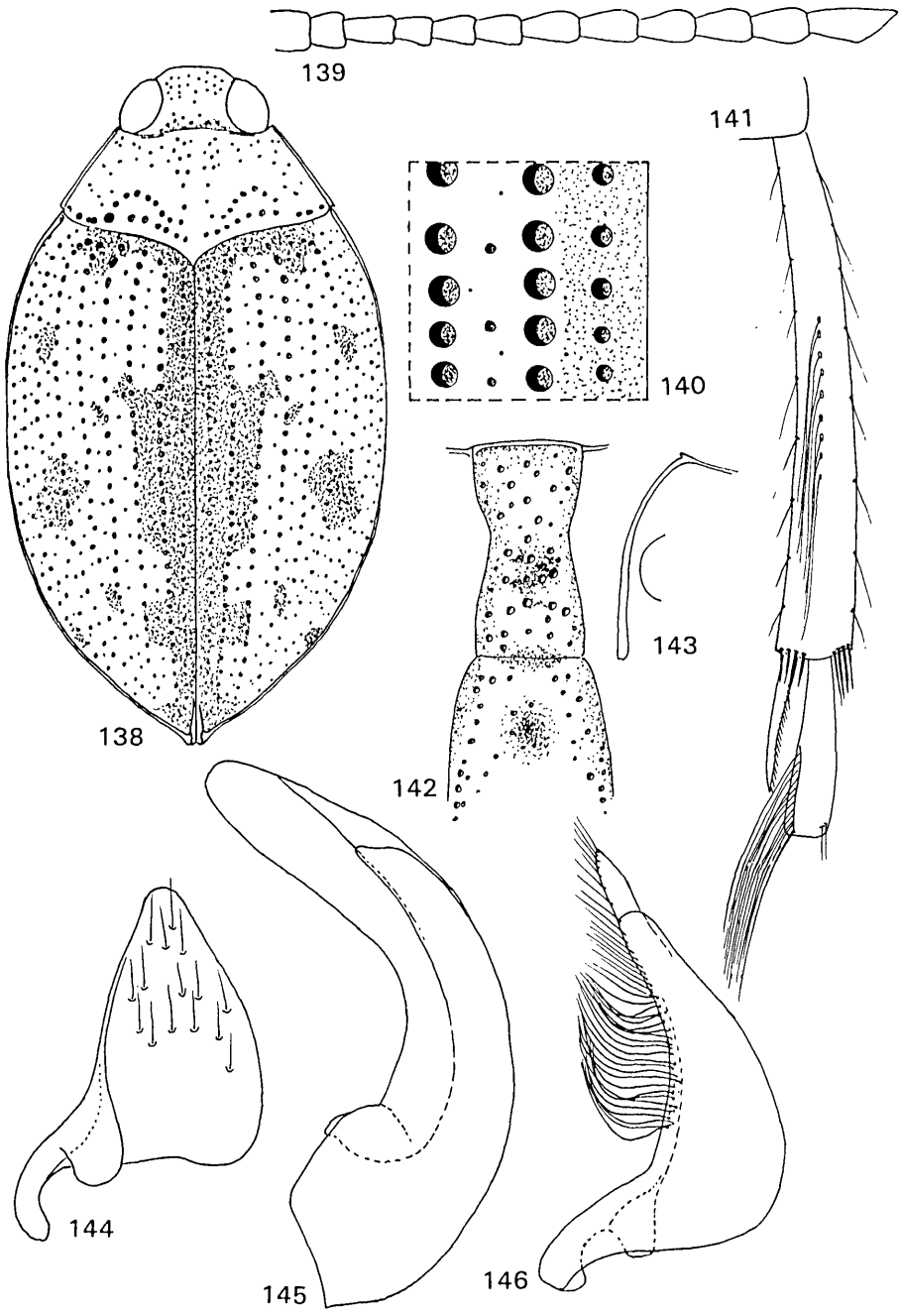
Figs. 109 - 119: *Haliplus holmeni*: 109) dorsal view; 110) antenna; 111) elytral punctation near base and suture; 112) male protarsal claws; 113) dorsal side of metatibia; 114) pro- and metasternal process; 115) lateral view of prosternal process; 116) metacoxal plate; 117) left paramere; 118) penis; 119) right paramere.



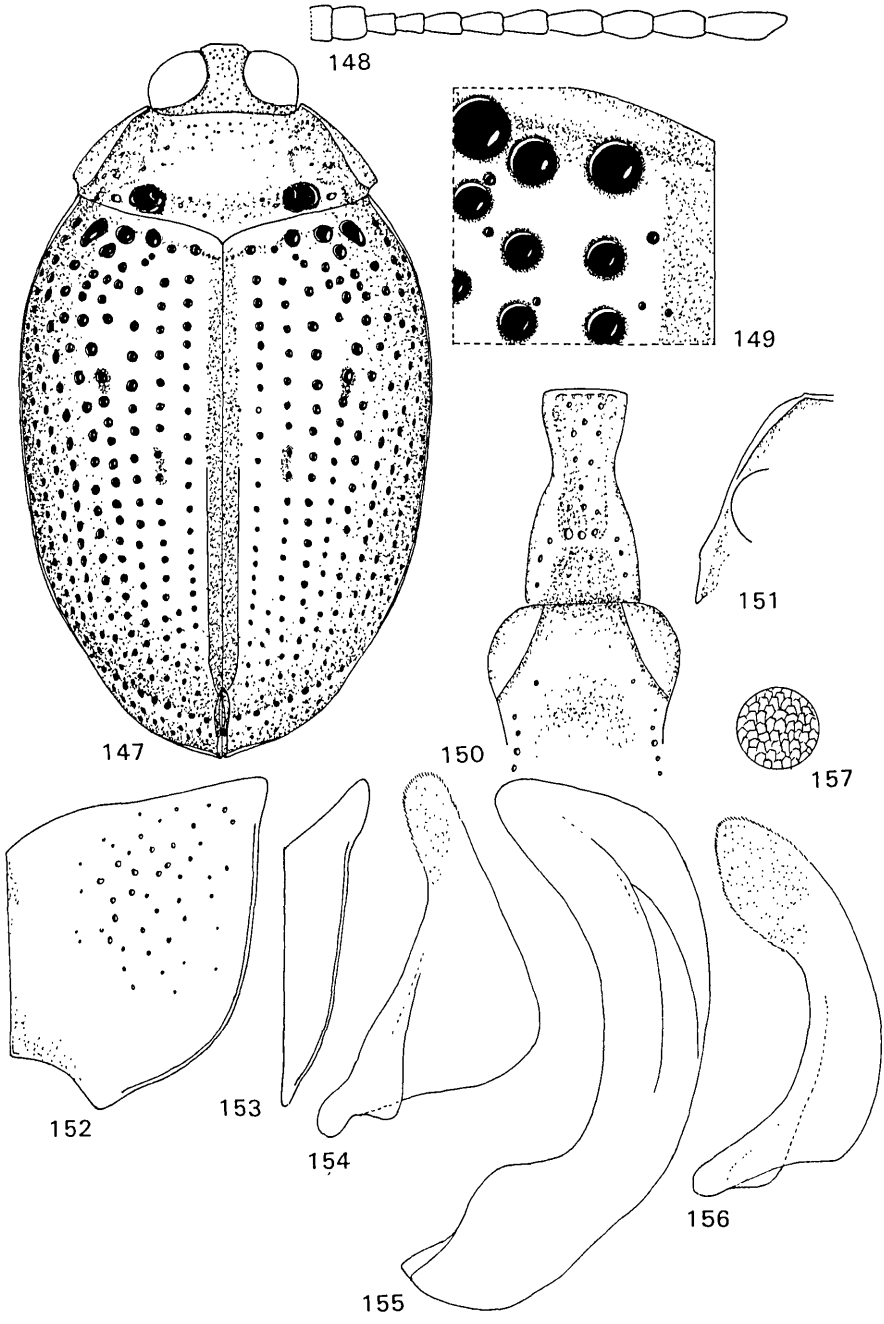
Figs. 120 - 128: *Haliplus kotoshonis*: 120) dorsal view; 121) antenna; 122) elytral punctation near base and suture; 123) dorsal side of metatibia; 124) pro- and metasternal process; 125) lateral view of prosternal process; 126) left paramere; 127) penis; 128) right paramere.



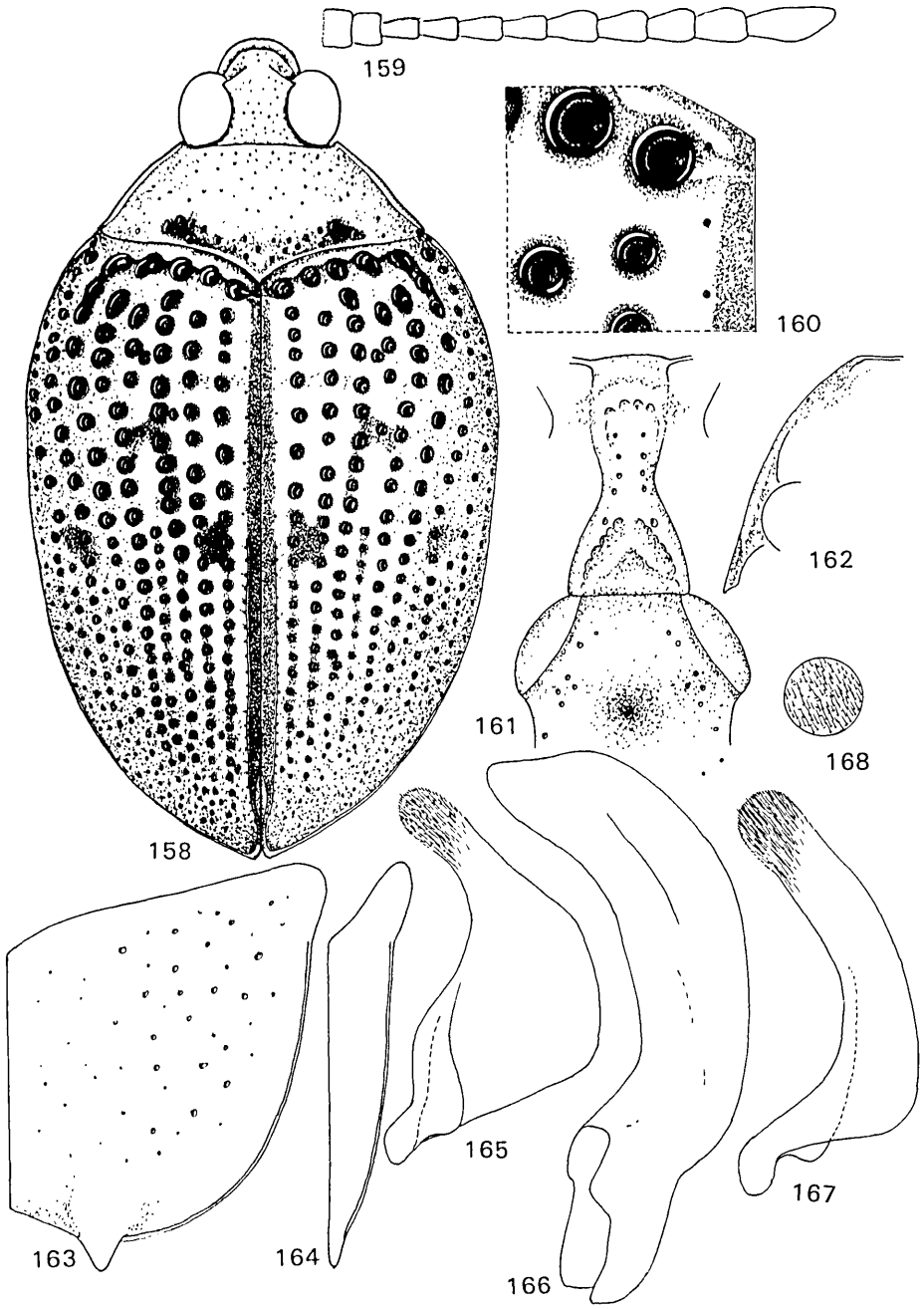
Figs. 129 - 137: *Haliplus pulchellus*: 129) dorsal view; 130) antenna; 131) elytral punctation near base and suture; 132) dorsal side of metatibia; 133) pro- and metasternal process; 134) lateral view of prosternal process; 135) left paramere; 136) penis; 137) right paramere.



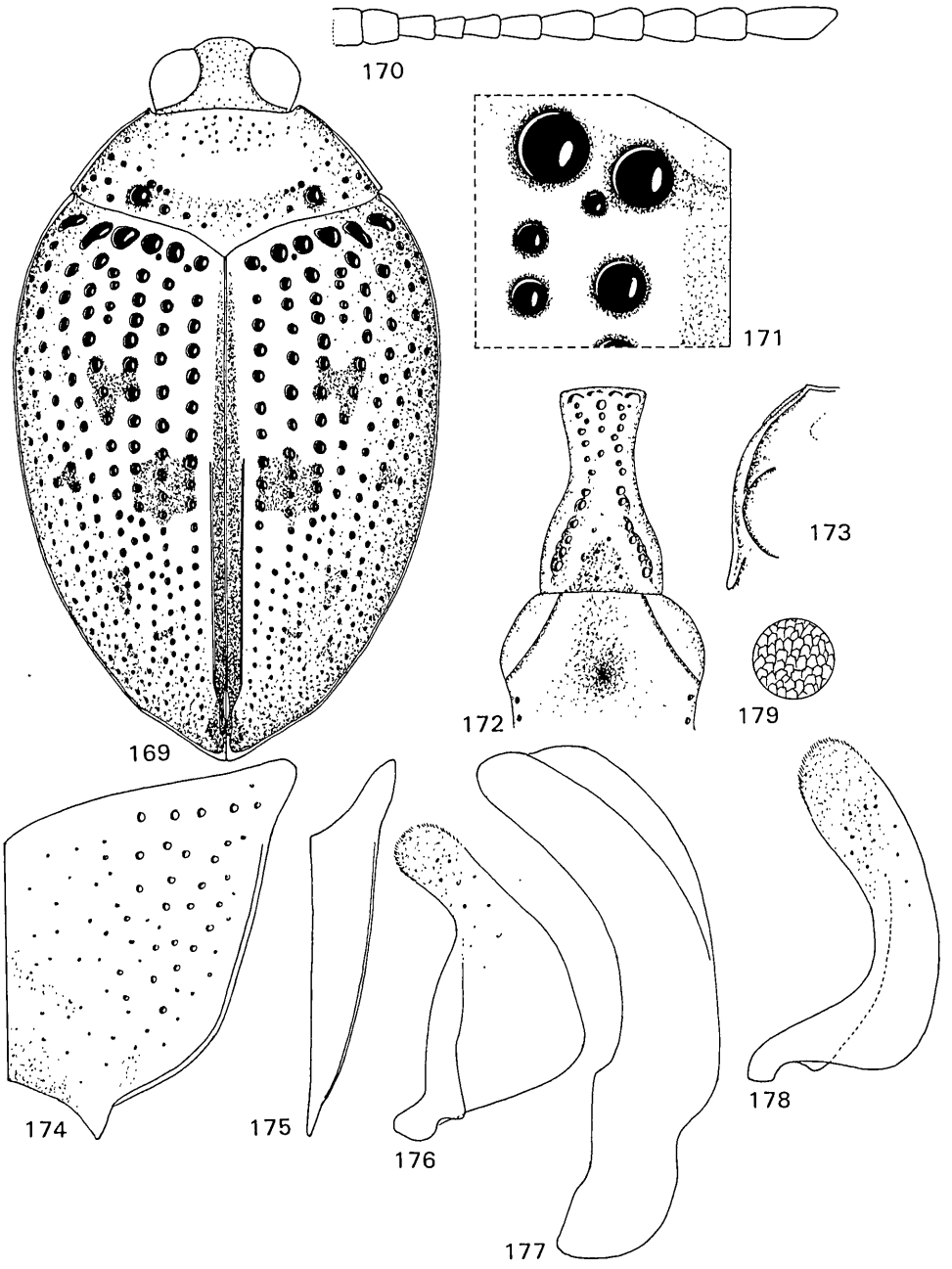
Figs. 138 - 146: *Haliplus sharpi*: 138) dorsal view; 139) antenna; 140) elytral punctation near base and suture; 141) dorsal side of metatibia; 142) pro- and metasternal process; 143) lateral view of prosternal process; 144) left paramere; 145) penis; 146) right paramere.



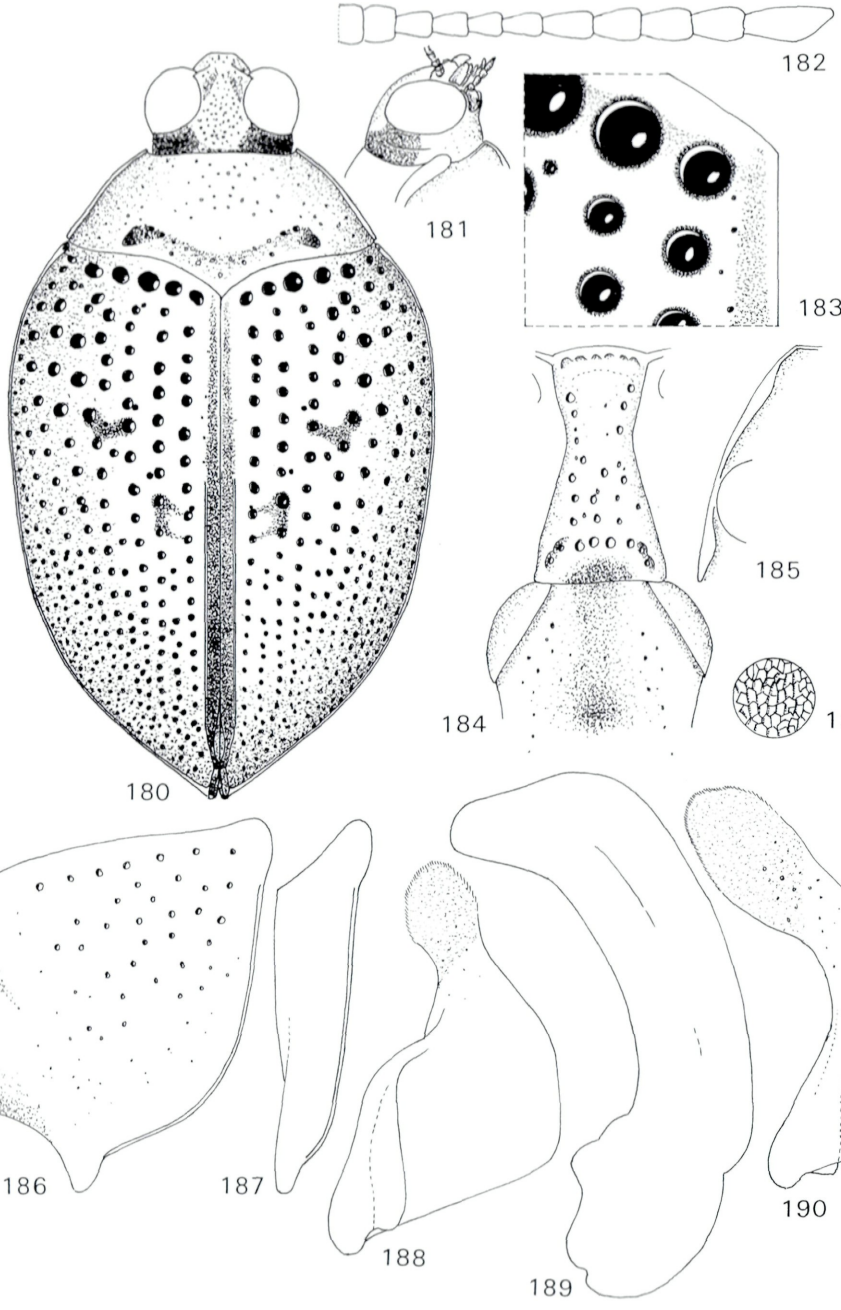
Figs. 147 - 157: *Peltodytes coomani*: 147) dorsal view; 148) antenna; 149) elytral punctation near base and suture; 150) pro- and metasternal process; 151) lateral view of prosternal process; 152) metacoxal plate; 153) metacoxal plate in lateral view; 154) left paramere; 155) penis; 156) right paramere; 157) structure of top of parameres.



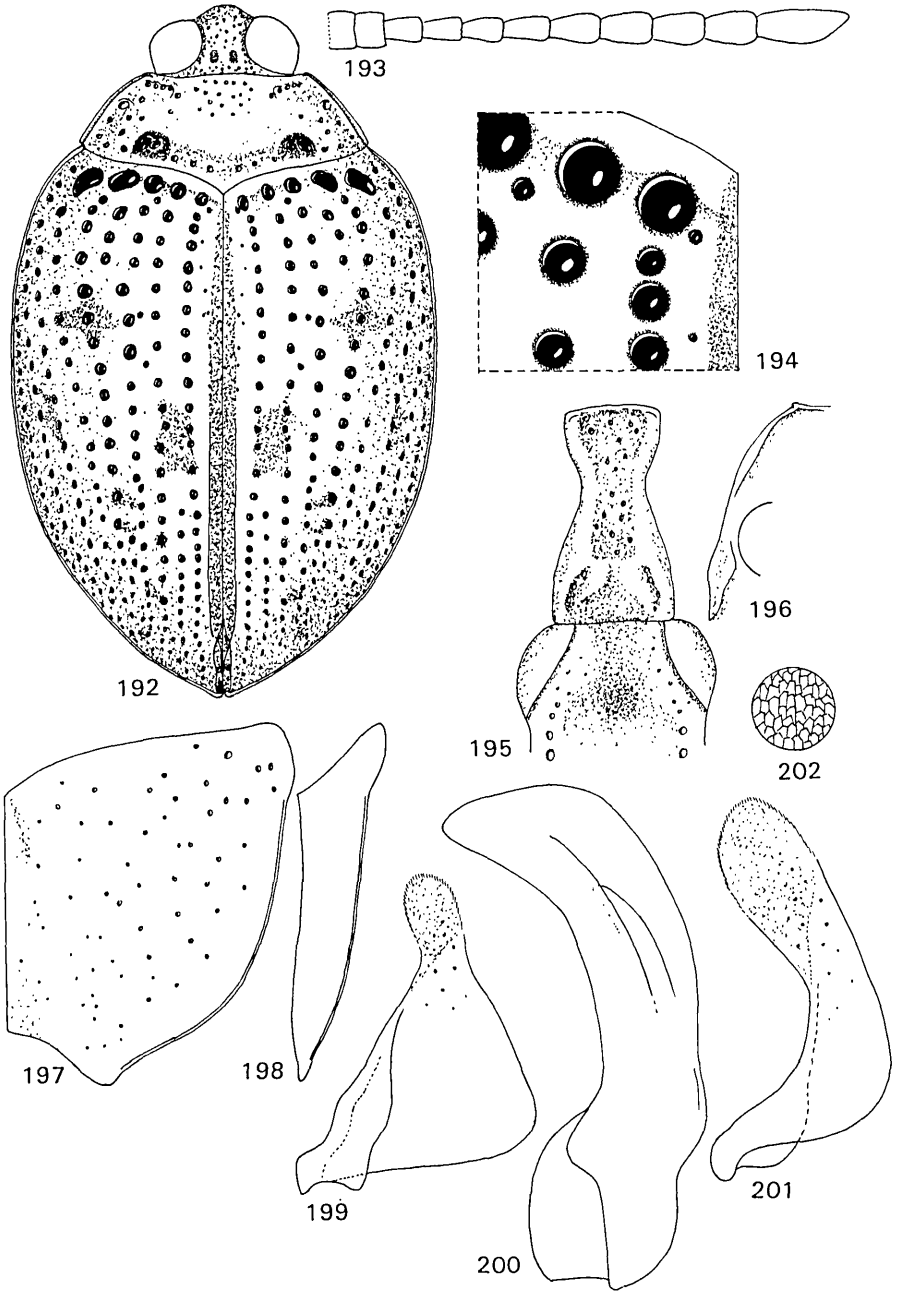
Figs. 158 - 168: *Peltodytes dauricus*: 158) dorsal view; 159) antenna; 160) elytral punctation near base and suture; 161) pro- and metasternal process; 162) lateral view of prosternal process; 163) metacoxal plate; 164) metacoxal plate in lateral view; 165) left paramere; 166) penis; 167) right paramere; 168) structure of top of parameres.



Figs. 169 - 179: *Peltodytes intermedius*: 169) dorsal view; 170) antenna; 171) elytral punctation near base and suture; 172) pro- and metasternal process; 173) lateral view of prosternal process; 174) metacoxal plate; 175) metacoxal plate in lateral view; 176) left paramere; 177) penis; 178) right paramere; 179) structure of top of parameres.



Figs. 180 - 191: *Peltodytes pekinensis*: 180) dorsal view; 181) head in lateral view; 182) antenna; 183) elytral punctation near base and suture; 184) pro- and metasternal process; 185) lateral view of prosternal process; 186) metacoxal plate; 187) metacoxal plate in lateral view; 188) left paramere; 189) penis; 190) right paramere; 191) structure of top of parameres.



Figs. 192 - 202: *Peltodytes sinensis*: 192) dorsal view; 193) antenna; 194) elytral punctation near base and suture; 195) pro- and metasternal process; 196) lateral view of prosternal process; 197) metacoxal plate; 198) metacoxal plate in lateral view; 199) left paramere; 200) penis; 201) right paramere; 202) structure of top of parameres.

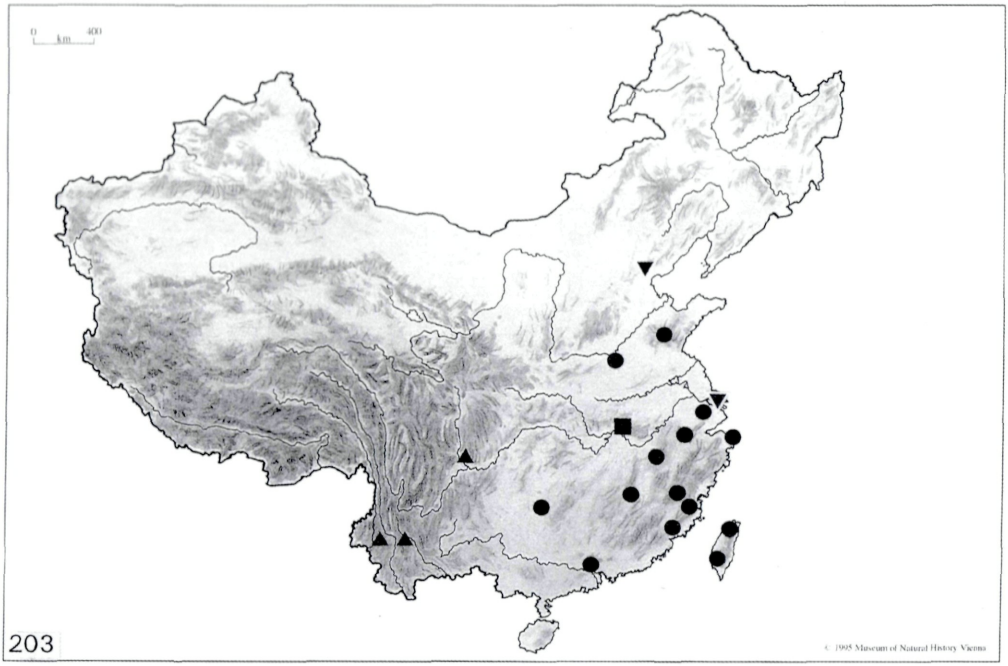


Fig. 203: Geographical distribution of (●) *Haliplus regimbarti*, (▲: examined, ▼: literature records) *H. japonicus*, (■) *H. harminae*.

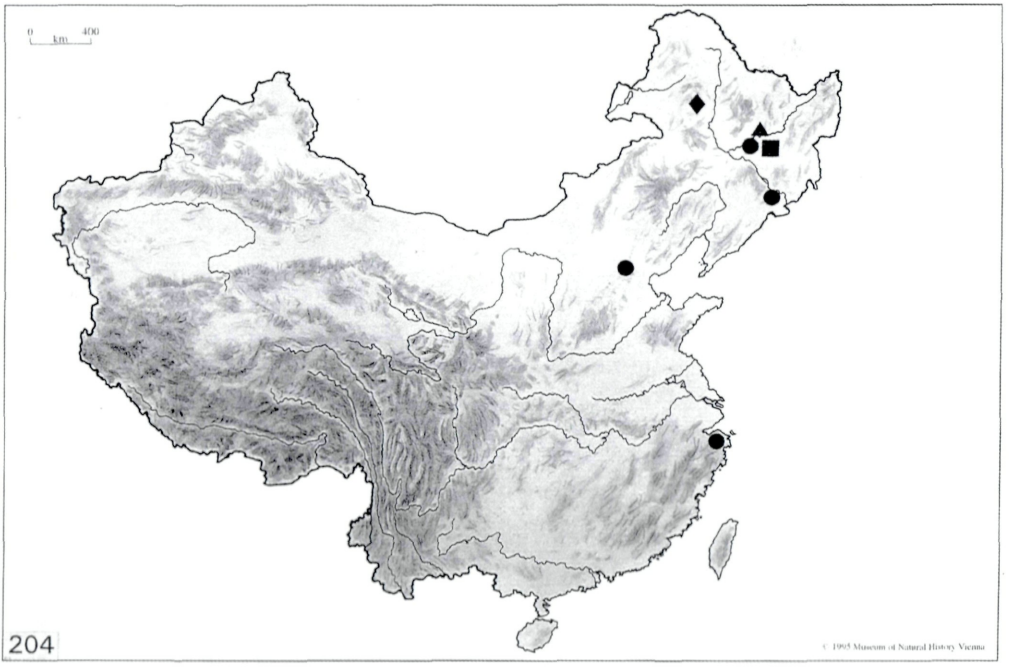


Fig. 204: Geographical distribution of (●: examined, ◆: literature record) *Haliplus simplex*, (▲) *H. steppensis*, (■) *H. furcatus*.

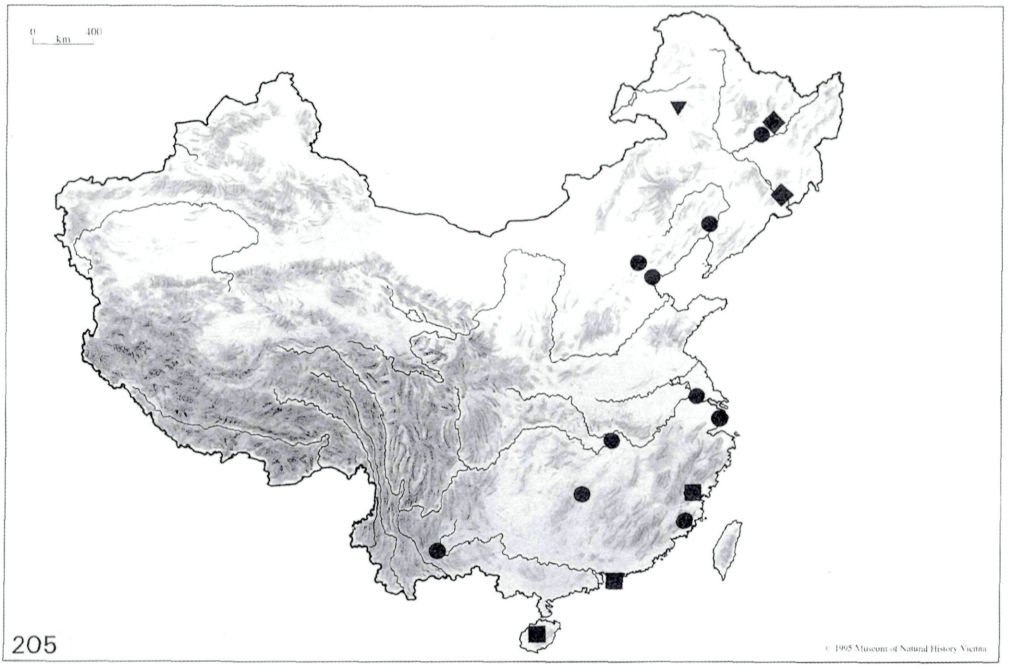


Fig. 205: Geographical distribution of (●: examined, ■: literature records) *Haliplus diruptus*, (◆: examined, ▼: literature record) *H. basinotatus*.

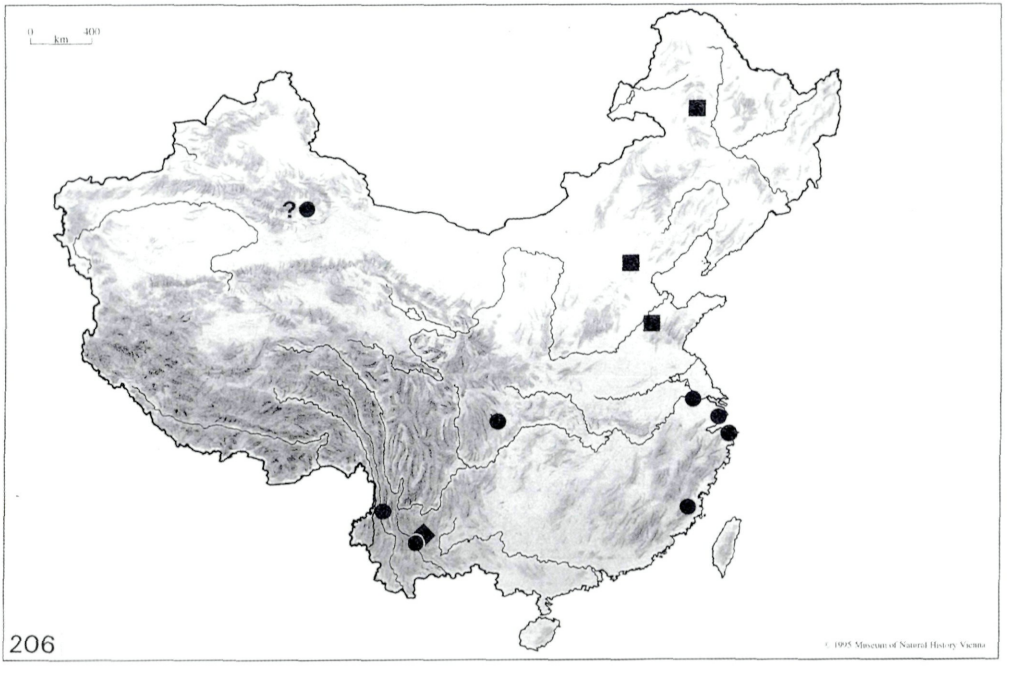


Fig. 206: Geographical distribution of (●: examined, ■: literature records) *Haliplus chinensis*, (◆) *H. excoffieri*.

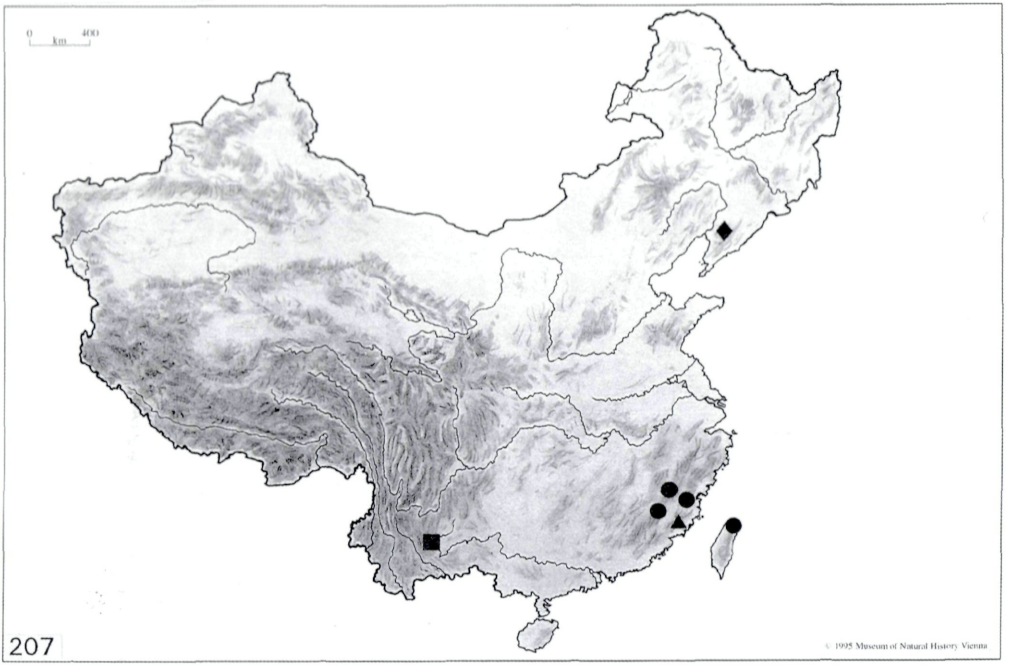


Fig. 207: Geographical distribution of (●: examined, ◆: literature record) *Haliplus sharpi*, (▲) *H. pulchellus*, (■) *H. holmeni*.

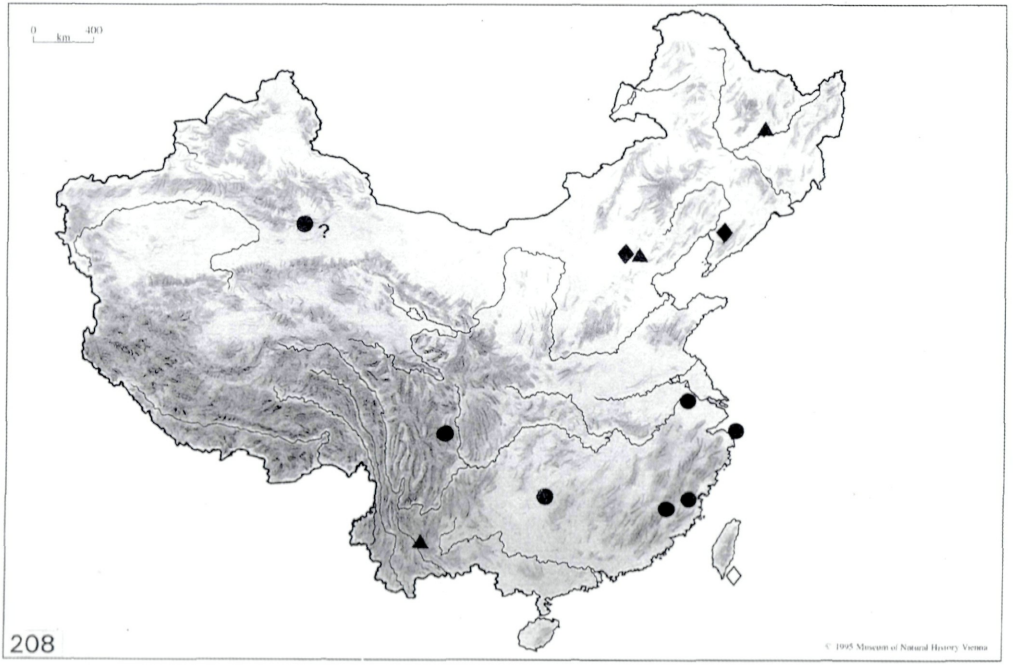


Fig. 208: Geographical distribution of (●: examined, ◆: literature record) *Haliplus eximius*, (▲) *H. davidi*, (◇: literature record) *H. kotoshonis*.

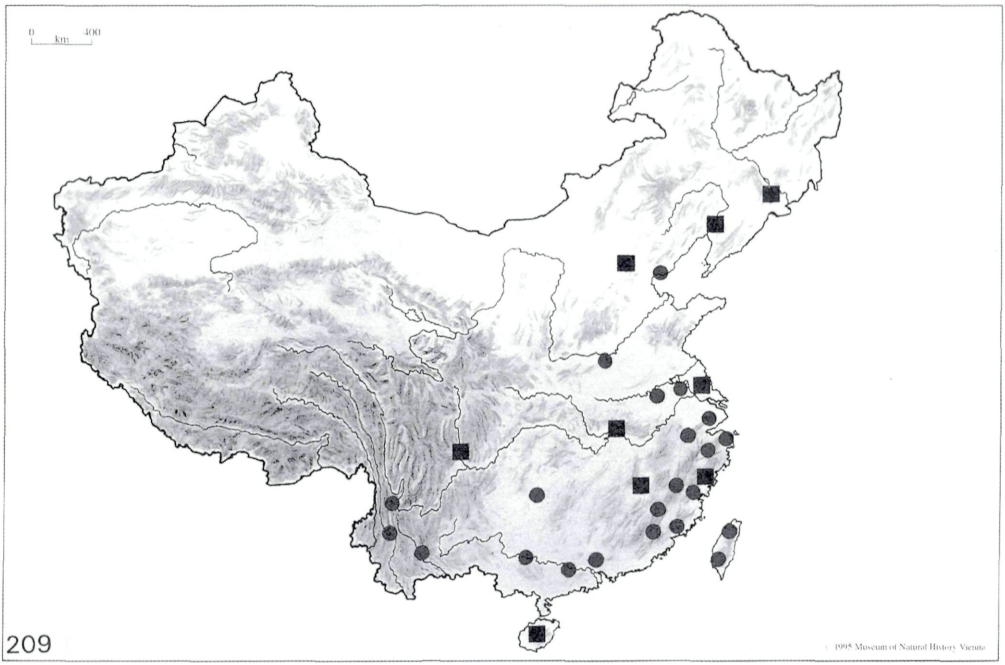


Fig. 209: Geographical distribution of (●: examined, ■: literature records) *Peltodytes sinensis*.

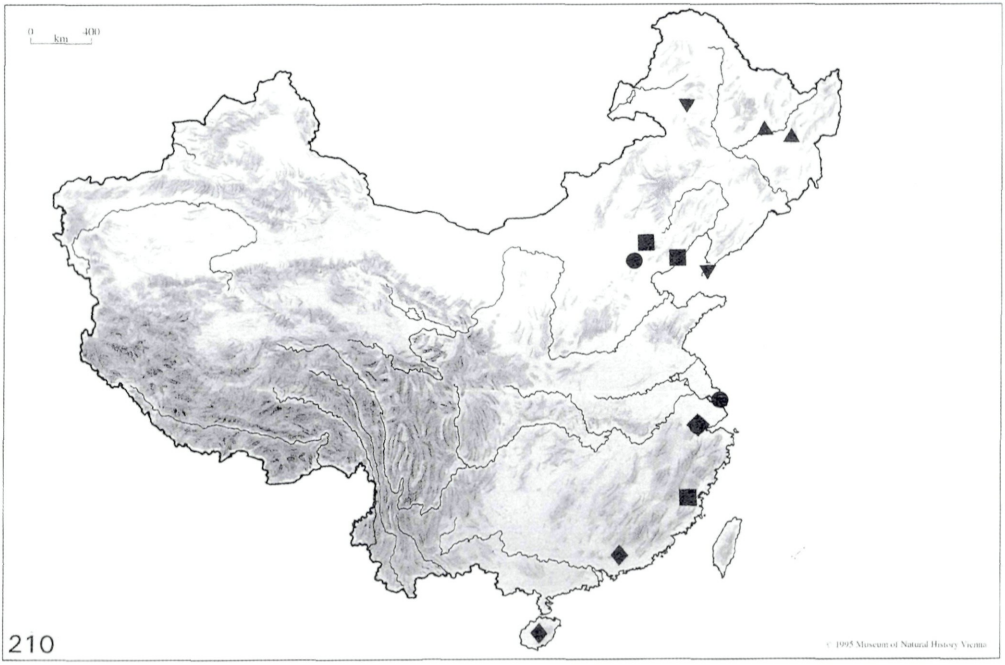


Fig. 210: Geographical distribution of (●: examined, ◆: literature record) *Peltodytes intermedius*, (▲: examined, ▼: literature record) *P. dauricus*, (■) *P. pekinensis*, (◆) *P. coomani*.

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