

**A revision of *Zyras* Stephens sensu strictu of China, Taiwan, and Hong Kong, with records and (re-)descriptions of some species from other regions (Coleoptera: Staphylinidae: Aleocharinae: Lomechusini)**

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Source: Stuttgarter Beiträge zur Naturkunde A, 9(1):87-175.

Published By: Stuttgart State Museum of Natural History

<https://doi.org/10.18476/sbna.v9.a7>

URL: <http://www.bioone.org/doi/full/10.18476/sbna.v9.a7>

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# A revision of *Zyras* Stephens sensu strictu of China, Taiwan, and Hong Kong, with records and (re-)descriptions of some species from other regions (Coleoptera: Staphylinidae: Aleocharinae: Lomechusini)

VOLKER ASSING

## Abstract

The species of the nominal subgenus of the lomechusine genus *Zyras* Stephens, 1835 of China, Taiwan, and Hong Kong are revised. In all, 50 named species, two of them of doubtful identity, are recognized, (re-)described, and illustrated, among them 33 new taxa: *Zyras* (*Zyras*) *athetoides* **n. sp.** (Sichuan), *Z. (Z.) atrapicalis* **n. sp.** (Yunnan), *Z. (Z.) atronitens* **n. sp.** (Tibet), *Z. (Z.) bangmaicus* **n. sp.** (Yunnan), *Z. (Z.) bicoloricollis* **n. sp.** (Yunnan), *Z. (Z.) bisinuatus* **n. sp.** (Yunnan), *Z. (Z.) caloderoides* **n. sp.** (Yunnan), *Z. (Z.) dabanicus* **n. sp.** (Qinghai), *Z. (Z.) discolor* **n. sp.** (Fujian), *Z. (Z.) exspoliatus* **n. sp.** (Guangxi), *Z. (Z.) extensus* **n. sp.** (Yunnan), *Z. (Z.) firmicornis* **n. sp.** (Fujian), *Z. (Z.) flexus* **n. sp.** (Fujian), *Z. (Z.) formosanus* **n. sp.** (Taiwan), *Z. (Z.) gilvipalpis* **n. sp.** (Yunnan), *Z. (Z.) granapicalis* **n. sp.** (Sichuan), *Z. (Z.) hebes* **n. sp.** (Taiwan), *Z. (Z.) inexcisus* **n. sp.** (China: Gansu, Qinghai; Russia: Far East, East Siberia), *Z. (Z.) lativentris* **n. sp.** (Yunnan), *Z. (Z.) maculicollis* **n. sp.** (Yunnan), *Z. (Z.) nigrapicalis* **n. sp.** (Yunnan, Sichuan, Jiangxi, Taiwan), *Z. (Z.) nigricornis* **n. sp.** (Hubei, Gansu, Shaanxi, Sichuan, Qinghai), *Z. (Z.) nigronitens* **n. sp.** (Yunnan), *Z. (Z.) pulcher* **n. sp.** (Gansu, Sichuan), *Z. (Z.) rectus* **n. sp.** (Yunnan), *Z. (Z.) rufapicalis* **n. sp.** (Taiwan), *Z. (Z.) rufoterminalis* **n. sp.** (Hubei, Sichuan), *Z. (Z.) schuelkei* **n. sp.** (Fujian, Sichuan), *Z. (Z.) subobsoletus* **n. sp.** (Sichuan), *Z. (Z.) tenebricosus* **n. sp.** (Sichuan, Tibet), *Z. (Z.) tenuicornis* **n. sp.** (Taiwan), *Z. (Z.) tumidicornis* **n. sp.** (Taiwan), *Z. (Z.) volans* **n. sp.** (Taiwan). Previous records of five species from China are considered doubtful. As many as 19 species remain unnamed for want of mature males. A catalogue and a key to species are provided. The distributions of 46 species are mapped. Additional records and (re-)descriptions of 15 species from other – Palearctic and Oriental – regions are provided. Two species are described for the first time: *Z. (Z.) iniquus* **n. sp.** (Pakistan) and *Z. (Z.) articollis* **n. sp.** (Laos). Seven synonymies and a new combination are proposed: *Zyras beijingensis* Pace, 1993 = *Z. restitutus* Pace, 1993, **n. syn.**; *Zyras alboantennatus* Pace, 1986 = *Z. sichuanorum* Pace, 2012, **n. syn.**; *Z. birmanus* Scheerpeltz, 1965 = *Z. pseudobirmanus* Scheerpeltz, 1965, **n. syn.**; *Z. hongkongensis* Pace, 1999 = *Z. benenensis* Pace, 2001, **n. syn.**; *Z. kambaitiensis* Scheerpeltz, 1965 = *Z. ferrugineiventris* Scheerpeltz, 1965, **n. syn.**; = *semiasperatus* Scheerpeltz, 1965, **n. syn.**; *Z. wei* Pace, 1993 = *Z. qingchengensis* Pace, 2012, **n. syn.**; *Zyras brignolii* (Pace, 1986), **n. comb.** (ex *Drusilla*). Lectotypes are designated for *Zyras chinkiangensis* Bernhauer, 1939 and *Z. seminigerrimus* Bernhauer, 1933.

**Key words:** Coleoptera, Staphylinidae, Aleocharinae, Lomechusini, *Zyras*, China, Taiwan, Hong Kong, Palearctic region, Oriental region, taxonomy, zoogeography, descriptions, new species, new synonymies, new combination, lectotype designations, key to species, catalogue, distribution maps.

## Zusammenfassung

Die Arten der Untergattung *Zyras* Stephens, 1835 sensu strictu Chinas, Taiwans und Hongkongs werden revidiert. Insgesamt 50 benannte Arten, davon zwei von zweifelhafter Identität, werden erkannt, beschrieben bzw. redeskribiert und abgebildet, darunter 33 neue Taxa: *Zyras* (*Zyras*) *athetoides* **n. sp.** (Sichuan), *Z. (Z.) atrapicalis* **n. sp.** (Yunnan), *Z. (Z.) atronitens* **n. sp.** (Tibet), *Z. (Z.) bangmaicus* **n. sp.** (Yunnan), *Z. (Z.) bicoloricollis* **n. sp.** (Yunnan), *Z. (Z.) bisinuatus* **n. sp.** (Yunnan), *Z. (Z.) caloderoides* **n. sp.** (Yunnan), *Z. (Z.) dabanicus* **n. sp.** (Qinghai), *Z. (Z.) discolor* **n. sp.** (Fujian), *Z. (Z.) exspoliatus* **n. sp.** (Guangxi), *Z. (Z.) extensus* **n. sp.** (Yunnan), *Z. (Z.) firmicornis* **n. sp.** (Fujian), *Z. (Z.) flexus* **n. sp.** (Fujian), *Z. (Z.) formosanus* **n. sp.** (Taiwan), *Z. (Z.) gilvipalpis* **n. sp.** (Yunnan), *Z. (Z.) granapicalis* **n. sp.** (Sichuan), *Z. (Z.) hebes* **n. sp.** (Taiwan), *Z. (Z.) inexcisus* **n. sp.** (China: Gansu, Qinghai; Russland: Ferner Osten, Ostsibirien), *Z. (Z.) lativentris* **n. sp.** (Yunnan), *Z. (Z.) maculicollis* **n. sp.** (Yunnan), *Z. (Z.) nigrapicalis* **n. sp.** (Yunnan, Sichuan, Jiangxi, Taiwan), *Z. (Z.) nigricornis* **n. sp.** (Hubei, Gansu, Shaanxi, Sichuan, Qinghai), *Z. (Z.) nigronitens* **n. sp.** (Yunnan), *Z. (Z.) pulcher* **n. sp.** (Gansu, Sichuan), *Z. (Z.) rectus* **n. sp.** (Yunnan), *Z. (Z.) rufapicalis* **n. sp.** (Taiwan), *Z. (Z.) rufoterminalis* **n. sp.** (Hubei, Sichuan), *Z. (Z.) schuelkei* **n. sp.** (Fujian, Sichuan), *Z. (Z.) subobsoletus* **n. sp.** (Sichuan), *Z. (Z.) tenebricosus* **n. sp.** (Sichuan, Tibet), *Z. (Z.) tenuicornis* **n. sp.** (Taiwan), *Z. (Z.) tumidicornis* **n. sp.** (Taiwan), *Z. (Z.) volans* **n. sp.** (Taiwan). Frühere Nachweise von fünf Arten aus China werden als zweifelhaft betrachtet. Insgesamt 19 Arten werden nicht benannt, da mature Männchen bislang fehlen. Ein Katalog und eine Bestimmungstabelle werden erstellt. Die derzeit bekannten Verbreitungsgebiete von 46 Arten werden anhand von Karten illustriert. Von 15 Arten aus anderen Regionen der Paläarkt und Orientalis werden weitere Nachweise gemeldet oder Beschreibungen bzw. Redeskriptionen gegeben. Zwei Arten werden erstmals beschrieben: *Zyras (Z.) iniquus* **n. sp.** (Pakistan) und *Z. (Z.) articollis* **n. sp.** (Laos). Sieben Namen



werden synonymisiert und eine Neukombination wird vorgenommen: *Zyras beijingensis* Pace, 1993 = *Z. restitutus* Pace, 1993, **n. syn.**; *Zyras alboantennatus* Pace, 1986 = *Z. sichuanorum* Pace, 2012, **n. syn.**; *Z. birmanus* Scheerpeltz, 1965 = *Z. pseudobirmanus* Scheerpeltz, 1965, **n. syn.**; *Z. hongkongensis* Pace, 1999 = *Z. benenensis* Pace, 2001, **n. syn.**; *Z. kambaitiensis* Scheerpeltz, 1965 = *Z. ferrugineiventris* Scheerpeltz, 1965, **n. syn.**, = *semiasperatus* Scheerpeltz, 1965, **n. syn.**; *Z. wei* Pace, 1993 = *Z. qingchengensis* Pace, 2012, **n. syn.**; *Zyras brignolii* (Pace, 1986), **n. comb.** (ex *Drusilla*). Für *Zyras chinkiangensis* Bernhauer, 1939 und *Z. seminigerrimus* Bernhauer, 1933 werden Lectotypen designiert.

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## 1 Introduction

According to a recent catalogue of the Lomechusini of the world, the nominal subgenus of the speciose genus *Zyras* Stephens, 1835 included 121 species, plus one nomen nudum (HLAVÁČ et al. 2011). Eight additional species from India, China, Thailand, and Vietnam were subsequently described by PACE (2011, 2012a, b) and ASSING (2015d). Thus, the subgenus previously comprised a total of 129 species, twelve from the Afrotropical region southwards to South Africa, seven from the Australian region (New Guinea and Australia), three from the Nearctic region, two from the Neotropics, and five from the West Palaearctic including Middle Asia. The remaining 92 species are distributed in the East Palaearctic and Oriental regions. As many as 18 species have been recorded from India, 16 from China, 15 from Malaysia, 15 from Indonesia (exclusive of West Papua), eleven from Burma, and ten from Nepal, followed by Japan (7), Thailand (7), Taiwan (5), Korea (5), Sri Lanka (5), Vietnam (5), Hong Kong (3), the Philippines (2), Cambodia (1), and Mongolia (1). These figures, however, should be considered tentative. HLAVÁČ et al. (2011) list as many as 123 species as *Zyras* incertae sedis. They have not been subject to modern revisions and the number of species actually belonging to the nominal subgenus is unknown. Moreover, additional species may be hiding in other genera of Lomechusini such as *Drusilla* Leach, 1819 (see section on *Z. brignolii* in this paper) or may have been confounded with other species. On the other hand, numerous species currently assigned to the subgenus *Zyras* have not been revised and the possibility that they in fact belong to other (sub-)genera cannot be ruled out.

Little is known about the bionomics of the species of *Zyras* sensu strictu. According to HORION (1967), one of the three European species, *Z. haworthi* (Stephens, 1832), is myrmecophilous and associated with *Lasius fuliginosus* (Latreille, 1798), whereas the other two species, *Z. collaris* (Paykull, 1789) and *Z. fulgidus* (Gravenhorst, 1806), are mostly found in moist habitats such as bogs, meadows, etc., only rarely with ants such as *Lasius fuliginosus* or *Myrmica* spp. (*Z. collaris*), and in forest margins, by sweeping the vegetation of meadows, or in other habitats, occasionally also with ants such as *Lasius brunneus* (Latreille, 1798) or *Camponotus* spp. (*Z. fulgidus*). MARUYAMA et al. (2013) state that the Japanese species *Z. pictus* (Sharp, 1874) is associated mainly with *Lasius* spp., feeds on dead ants, and scavenges the ants' food. All the specimens of *Zyras* sensu strictu collected by myself were mainly caught with pitfall traps (West Palaearctic; see also ASSING 1994) or sifted from leaf litter and debris (China) without evident association with ants.

The first three species of *Zyras* sensu strictu from China, Taiwan, and Hong Kong were described by BERNHAUER (1933a, 1933b, 1939). Rather recently, 13 species were described by PACE (1993, 1998, 1999, 2010a, 2012a), some of them exclusively based on females. The type localities of seven of the *Zyras* species described from Burma by SCHEERPELTZ (1965) are situated practically at the border with the Chinese province Yunnan, so that it seemed likely that these species were present in China, too. Several additional species originally described from other regions were more or less doubtfully recorded from China and Taiwan, e. g., *Z. hirtus* (Kraatz, 1859) (originally from Sri Lanka) from Taiwan by PACE (2010a). For a complete list of these records see the catalogue provided in this paper.

Previous studies of various genera of Lomechusini such as *Orphnebius* Motschulsky, 1858, *Tetrabothrus* Bernhauer, 1915, *Amaurodera* Fauvel, 1905, and *Pella* Stephens, 1833 have shown that the lomechusine fauna of China is remarkably diverse (ASSING 2006a, b, 2009, 2015a–c). A preliminary examination of some Chinese material of *Zyras* sensu strictu suggested that this also, and particularly, applied to this subgenus. The present study is based primarily on material collected during two field trips to China, the first conducted together with MICHAEL SCHÜLKE and DAVID WRASE (both Berlin) and the second together with MICHAEL SCHÜLKE, as well as on material from the private collection of MICHAEL SCHÜLKE collected during nine previous field trips to China from the mid-1990s to 2010. Additional material came from various other public and private collections.

#### Acknowledgements

My thanks are due to the colleagues indicated in the material section for the loan of material from the collections under their care. In particular, I am grateful to BENEDIKT FELDMANN (Münster), PETER HLAVÁČ (Praha), GUILLAUME DE ROUGEMONT (Oxford), ALEŠ SMETANA (Ottawa), and above all MICHAEL SCHÜLKE (Berlin) for the generous permission to retain important reference specimens, including holotypes. MUNETOSHI MARUYAMA (Fukuoka) confirmed the identification of *Zyras pictus* and kindly provided reference material of most of the species of *Zyras* sensu strictu from Japan, as well as a photograph of the holotype of *Z. sibiricus*. AL NEWTON (Chicago) cross-checked all the new names against his unpublished data base. Only thanks to ADRIANO ZANETTI (Verona) was it possible to examine the type material of two species deposited in the Verona museum.

#### 2 Material and methods

The material treated in this study is deposited in the following collections:

cAss	Author's private collection
cFel	Private collection BENEDIKT FELDMANN, Münster
cHla	Private collection PETER HLAVÁČ, Praha
cMar	Private collection MUNETOSHI MARUYAMA, Fukuoka
cPüt	Private collection ANDREAS PÜTZ, Eisenhüttenstadt
cRou	Private collection GUILLAUME DE ROUGEMONT, Oxford
cSch	Private collection MICHAEL SCHÜLKE, Berlin
cSme	Private collection ALEŠ SMETANA, Ottawa
FMNH	Field Museum of Natural History, Chicago (C. MAIER)
MCSNV	Museo Civico di Storia Naturale, Verona (L. LATELLA, via A. ZANETTI)
MHNG	Muséum d'Histoire Naturelle, Genève (G. CUCCODORO)
MNHUB	Museum für Naturkunde der Humboldt-Universität Berlin (J. FRISCH, J. WILLERS)
NHMB	Naturhistorisches Museum Basel (M. GEISER, I. ZÜRCHER)
NHMW	Naturhistorisches Museum Wien (H. SCHILLHAMMER)
NME	Naturkundemuseum Erfurt (M. HARTMANN)

NMP	National Museum of Natural History, Praha (J. HÁJEK)
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg (L. BEHNE)
SMNH	Swedish Museum of Natural History, Stockholm (J. BERGSTEN)

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). The images of external characters were created using a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software. A digital camera (Nikon Coolpix 995) was used for the remaining photographs. The maps were created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the labrum to the abdominal apex, the length of the forebody from the anterior margin of the labrum to the posterior margin of the elytra, head length from the anterior margin of the clypeus (without ante-clypeus) to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The “parameral” side (i. e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

The individual labels of type specimens are separated by slashes; they are cited in the original spelling and format, except that slashes were replaced with commas. Moreover, the following adaptations were made according to the general format requirements of the journal: names of persons (except authors of species) in small capitals, scientific names of genera and species in italics, dates with the months always in Roman numbers (capitals).

### 3 The *Zyras* sensu strictu fauna of China, Taiwan, and Hong Kong

#### 3.1 Diversity and biogeography

An examination of the *Zyras* sensu strictu material from China, Taiwan, and Hong Kong at hand revealed a remarkable diversity. Numerous new species were discovered in this material, 33 of which are described. Nearly 20 additional species, most (if not all) of which are undescribed, are represented only by females or teneral males and consequently remain unnamed. Additional undescribed species from Taiwan were seen in material sent to me by MUNETOSHI MARUYAMA, who will treat them in the context of one of his own studies. In all, 50 named species are now known from China, Taiwan, and Hong Kong. As can be inferred from the number of unnamed species examined, as well as from the fact that a considerable proportion of the species is known only from a single locality, the true diversity of *Zyras* sensu strictu in the study region is undoubtedly significantly greater.

With two exceptions (*Z. yongshengensis*, *Z. formosanus*), all the examined species are winged and probably capable of flight. Many of them have been collected also, or primarily, at lower altitudes. These observations

suggest that they are more or less widespread. Owing to the scarcity of material and the general rarity of collecting events, however, the ranges of the vast majority of species are poorly known. Among those species that have been collected less rarely, *Z. hongkongensis*, a species generally found at lower altitudes, is by far the most widespread, its distribution extending from northeastern India across South China to Indonesia. *Zyras inexcisus* has a more northern distribution and, accordingly, is widespread in North China, East Siberia, and the Russian Far East. *Zyras malaisei*, one of the larger species, has been recorded from Burma and Vietnam, suggesting that it is present also in South China. Some species and even species groups, by contrast, appear to have more restricted ranges. The three species of the *Z. glabricollis* group, for instance, have been recorded only from northeastern Burma and northern Yunnan, and a number of other species appears to be confined to the mountainous regions of Yunnan, western Sichuan, and to Taiwan, although they are fully winged.

Disregarding doubtful records and species of doubtful identity, the provinces/regions with the greatest diversity are Yunnan (18 species; 12 of them exclusive), Sichuan (14; 5), and Taiwan (8; 6), followed by Fujian (5; 3), Gansu (5; 0), Hubei (4; 0), Beijing (3; 1), Guangxi (3; 1), Qinghai (3; 1), Zhejiang (3; 0), Shaanxi (3; 0), Tibet (2; 1), Hong Kong (2; 1), Jiangxi (2; 1), Jiangsu (1; 1), Guizhou (1; 0), and Guangdong (1; 0).

### 3.2 Taxonomy

Among the numerous subgenera of *Zyras*, the nominal subgenus is characterized particularly by the absence of conspicuous modifications (e.g., of the abdomen), by the absence of microsculpture on the whole body, a simple morphology of the median lobe of the aedeagus and of the paramere, a very uniform shape of the spermatheca with a short more or less comma-shaped distal portion and a long and thin coiled proximal portion, and by the general punctuation pattern of the abdomen. The anterior impressions of tergites III–V and the anterior portions of tergites VI–VII mostly have more or less extensive non-setiferous punctation (gland openings?), whereas the – usually sparse to very sparse – setiferous punctation is confined to the posterior and lateral portions, as well as the posterior margins of the tergites.

While, on the one hand, *Zyras sensu strictu* species display a remarkable diversity of coloration patterns, they are rather uniform in many other characters such as the general habitus, microsculpture, body size, the shapes of the abdominal tergite and sternite VIII, the shape of the paramere, particularly the shape of the spermatheca, and to some extent even the morphology of the median lobe of the aedeagus. The latter, in most groups of Aleocharinae

of considerable taxonomic significance, is subject to relatively little interspecific variation in most species groups of *Zyras sensu strictu*, also because the internal structures are weakly sclerotized and consequently of little use for species identification. The spermatheca, which may provide highly reliable diagnostic characters in aleocharine taxa such as the Athetini and even in some lomechusine genera such as *Drusilla*, is remarkably uniform in *Zyras sensu strictu* species; for illustrations see, for example, the figures provided by PACE (1993, 1998, 2010a, 2012a). Since, in effect, the spermatheca is too uniform to be useful for species identification in *Zyras sensu strictu*, it is neither described nor illustrated in the species sections.

Aside from the coloration, which however may be subject to pronounced intraspecific variation in some species (e.g., *Z. haworthi*), the morphology of the antennae, the punctuation (particularly that of the abdomen), as well as the shapes of the ventral process and the crista apicalis of the median lobe of the aedeagus provide the most reliable characters for the identification of *Zyras sensu strictu* species from China.

The present revision revealed a remarkable extent of misinterpretation and misidentification of previously identified type and non-type material. This confusion is most likely a result of an under- or overestimation of intraspecific variation, of the fact that several species had been described based exclusively on females or on teneral specimens, and that practically all the previous descriptions are insufficient for a reliable identification. For example, material previously identified by ROBERTO PACE, the author of the majority of the species previously described from China, as *Z. wei* Pace, 1993 and partly recorded as such from various provinces was composed of at least five species, although some of them (e.g., the species described as *Z. rufapicalis* below) are remarkably different from *Z. wei* in many respects. One of the lessons learnt from this observation is that all the previous records from China should be considered doubtful and require revision.

### 3.3 Catalogue of the species of *Zyras sensu strictu* recorded from China, Taiwan, and Hong Kong

- alboantennatus* Pace, 1986 (= *sichuanorum* Pace, 2012; n. syn.) – China: Sichuan, Yunnan; Burma; Vietnam
- athetoides* n. sp. – China: Sichuan
- atrropicalis* n. sp. – China: Yunnan
- atronitens* n. sp. – China: Tibet
- bangmaicus* n. sp. – China: Yunnan
- beijingsensis* Pace, 1993 (= *restitutus* Pace, 1993; n. syn.) – China: Beijing, Gansu, Shaanxi, Zhejiang
- bicoloricollis* n. sp. – China: Yunnan
- birmanus* Scheerpeltz, 1965 (= *pseudobirmanus* Scheerpeltz, 1965; n. syn.) – China: Yunnan; Burma
- bisinuatus* n. sp. – China: Yunnan
- caloderoides* n. sp. – China: Yunnan
- chinkiangensis* Bernhauer, 1939 – China: Jiangsu



*dabanicus* n. sp. – China: Qinghai  
*discolor* n. sp. – China: Fujian  
*exspoliatus* n. sp. – China: Guangxi  
*extensus* n. sp. – China: Yunnan  
*firmicornis* n. sp. – China: Fujian  
*flexus* n. sp. – China: Fujian  
*formosanus* n. sp. – Taiwan  
*fratrunkadooriorum* Pace, 1998 – Hong Kong  
*gibbus* Pace, 2010 – Taiwan  
*gilvipalpis* n. sp. – China: Yunnan  
*granapicalis* n. sp. – China: Sichuan  
*hauserianus* Bernhauer, 1933 – China: Xinjiang  
*hebes* n. sp. – Taiwan  
*hongkongensis* Pace, 1999 (= *benenensis* Pace, 2001; n. syn.) – China: Guangdong, Guangxi, Yunnan; Taiwan; Hong Kong; Northeast India; Vietnam; Indonesia  
*inexcisus* n. sp. – China: Gansu, Qinghai; Russia: Far East, East Siberia  
*kambaitiensis* Scheerpeltz, 1965 (= *ferrugineiventris* Scheerpeltz, 1965; n. syn., = *semiasperatus* Scheerpeltz, 1965; n. syn.) – China: Yunnan; Burma  
*lativentris* n. sp. – China: Yunnan  
*maculicollis* n. sp. – China: Hubei, Jiangxi  
*nigrapicalis* n. sp. – China: Yunnan, Sichuan, Jiangxi; Taiwan  
*nigricornis* n. sp. – China: Hubei, Gansu, Shaanxi, Sichuan, Qinghai  
*nigronitens* n. sp. – China: Yunnan  
*notaticornis* Pace, 1998 – China: Guangxi, Zhejiang; Hong Kong  
*pulcher* n. sp. – China: Gansu, Sichuan  
*rectus* n. sp. – China: Yunnan  
*rufapicalis* n. sp. – Taiwan  
*rufoterminalis* n. sp. – China: Hubei, Sichuan  
*schuelkei* n. sp. – China: Fujian, Sichuan  
*seminigerrimus* Bernhauer, 1933 – China: Sichuan  
*shaanxiensis* Pace, 1998 – China: Gansu, Hubei, Shaanxi, Sichuan, Yunnan?  
*sibiricus* Bernhauer, 1914 – China: Beijing; Russia (East Siberia); North Korea; Japan  
*song* Pace, 1993 – China: Yunnan  
*songanus* Pace, 1993 – China: Beijing  
*subobsoletus* n. sp. – China: Sichuan  
*tenebricosus* n. sp. – China: Sichuan, Tibet  
*tenuicornis* n. sp. – Taiwan  
*tumidicornis* n. sp. – China: Sichuan, Yunnan  
*volans* n. sp. – Taiwan  
*wei* Pace, 1993 (= *qingchengensis* Pace, 2012; n. syn.) – China: Fujian, Guizhou, Sichuan, Zhejiang  
*yongshengensis* Pace, 2012 – China: Yunnan

#### Doubtful records:

*condignus* Last, 1969 – [Taiwan]; North India; Nepal  
*cylindricornis* Dvořák, 1981 – [China: Liaoning]; Japan; Korea  
*hirtus* (Kraatz, 1859) – [Taiwan]; Sri Lanka; South India  
*particornis* (Sharp, 1888) – [China: Jilin]; Japan; Korea; Russian Far East

#### 3.4 Key to the species of *Zyras* sensu strictu of China, Taiwan, and Hong Kong

The species described from the Burmese side of the Kambaiti pass at the border between Burma and the Chinese province Yunnan are included (in brackets) in the key below, even if they have not (yet) been recorded from China. It seems likely

that they are present also on the Chinese side of the border. Doubtfully recorded species are omitted.

- 1 Body nearly uniformly reddish (Figs. 105, 166). Abdomen broader than elytra and sparsely punctate (Fig. 166). Posterior margin of tergite VII without palisade fringe. Antennomeres IV–VI at least weakly oblong (Fig. 30). Median lobe of aedeagus shaped as in Figs. 284–285. – Taiwan (Fig. 305). .. *formosanus* n. sp.
- Head, pronotum, elytra, or abdomen at least partly darker. Abdomen usually narrower than, or as broad as, elytra. Posterior margin of tergite VII with palisade fringe..... 2
- 2 Pronotum reddish..... 3
- Pronotum reddish-brown to black, sometimes partly paler.... 11
- 3 Elytra conspicuously short, 0.65 times as long as pronotum (Fig. 104). Abdominal segments III–VI pale-reddish (Fig. 161); meso- and metafemora distinctly bicoloured with the basal halves pale-yellowish and the apical halves infuscate. Rather small species: body length 5.8 mm; length of forebody 2.5 mm. Median lobe of aedeagus as figured by PACE (2012a). – Yunnan (Fig. 305)..... *yongshengensis* Pace
- Elytra longer, at least 0.7 times as long as pronotum. Abdominal segment VI of dark coloration (sometimes except for the margins) or body of much greater size..... 4
- 4 Apical antennomeres, at least antennomere XI, yellowish. 5
- Apical antennomeres dark-reddish to black..... 9
- 5 Large and robust species; body length 7.5–9.5 mm; length of forebody 3.4–4.1 mm. Elytra extensively reddish at least in humeral portion..... 6
- Much smaller and more slender species; length of forebody <3.2 mm. Elytra black, sometimes except for the suture.... 7
- 6 Elytra with the postero-lateral angles extensively infuscate (Fig. 60), rarely uniformly reddish; apical 2–4 antennomeres yellowish (Fig. 3); abdominal tergite VI reddish (Fig. 117). Median lobe of aedeagus as in Figs. 180–181. – China: Sichuan; Vietnam (Fig. 304)..... *alboantennatus* Pace
- Elytra uniformly reddish (Fig. 58); apical 4 antennomeres yellowish (Fig. 4); abdominal tergite VI extensively infuscate (Fig. 114). Male unknown. – Burma..... [setosipennis] Scheerpeltz
- 7 Apices of femora very narrowly and weakly infuscate (Fig. 99). Median lobe of aedeagus as in Figs. 274–277; apical lobe of paramere very short (Fig. 297). – South China; Taiwan; Hong Kong; India; Vietnam; Indonesia (Fig. 306).... *hongkongensis* Pace
- Apical halves of meso- and metafemora infuscate; profemora brown with the bases yellowish. Apical lobe of paramere much longer and more slender..... 8
- 8 At least antennomeres VII–XI yellowish (Fig. 32). Median lobe of aedeagus as figured by PACE (1993). – Yunnan (Fig. 305)..... *song* Pace
- Only antennomere XI yellowish (Fig. 31). Median lobe of aedeagus as in Figs. 264–265. – Guangxi (Fig. 305). .. *exspoliatus* n. sp.
- 9 Abdominal tergites III–IV reddish, sometimes with tergite IV more or less distinctly and more or less extensively brownish in the middle (Figs. 151–152); elytra blackish (rarely brown), sometimes with the suture narrowly reddish (Figs. 93–95). Antenna clavate, strongly incrassate apically; antennomeres IV–X distinctly transverse (Fig. 50). Median lobe of aedeagus as in Figs. 256–257. – Widespread in China, from Gansu to Beijing and Zhejiang. .... *beijingensis* Pace

- Whole abdomen brown to black, sometimes with the posterior margins narrowly dark-reddish; elytra bicoloured: yellowish, with the postero-lateral portions more or less extensively blackish. Antenna slender or, if clavate, less strongly incrassate apically. .... **10**
- 10** Small species: body length 3.5–5.0 mm; length of forebody 1.7–2.2 mm. Antenna short (1.3–1.5 mm), distinctly incrassate apically; antennomeres IV–X distinctly transverse (Fig. 51). Eyes weakly convex, weakly protruding from lateral contours of head (Fig. 96). Pronotum larger in relation to head and distinctly broader, approximately 1.3 times as broad as head (Fig. 96). Dark spots in postero-lateral portions of elytra small (Fig. 96). Median lobe of aedeagus as in Figs. 258–259. – Min Shan (southern Gansu; northwestern Sichuan) (Fig. 305). .... ***pulcher* n. sp.**
- Larger species: body length 6.8–8.5 mm; length of forebody 3.1–3.3 mm. Antenna much longer (2.5–2.6 mm) and more slender; antennomeres IV and V distinctly oblong (Fig. 28). Eyes large and bulging, strongly protruding from lateral contours of head (Fig. 90). Pronotum smaller in relation to head and narrower, approximately 1.15 times as broad as head (Fig. 90). Dark spots in postero-lateral portions of elytra extensive (Fig. 90). Median lobe of aedeagus as in Figs. 260–261. – Sichuan, Fujian (Fig. 306). .... ***schuelkei* n. sp.**
- 11** Apical antennomeres, at least antennomere XI, pale-yellowish. .... **12**
- Apical antennomeres reddish to black. .... **15**
- 12** Large and robust species; width of pronotum > 1.3 mm. Abdominal tergites III–V reddish. Lateral margins of pronotum sinuate posteriorly in dorsal view. .... **13**
- Distinctly smaller and more slender species; width of pronotum < 1.2 mm. At least abdominal tergite V largely infusate. .... **14**
- 13** Elytra uniformly dark-brown and with dense and uniform punctation everywhere (Fig. 57). Lateral margins of pronotum weakly sinuate near posterior angles (Fig. 57). Abdominal tergites VI and VII with non-setiferous punctation nearly everywhere (Fig. 113). Median lobe of aedeagus as in Figs. 178–179. – Jiangsu (Fig. 301). .... ***chinkiangensis* Bernhauer**
- Elytra distinctly bicoloured with the anterior half yellowish and the posterior half infusate (Fig. 56). Lateral margins of pronotum not sinuate near posterior angles (Fig. 56). Abdominal tergites VI and VII with non-setiferous punctation only near anterior margins (Fig. 112). Median lobe of aedeagus as in Figs. 176–177. – East Burma, North Vietnam (Fig. 301). .... ***malaisei* Scheerpeltz**
- 14** Meso- and metafemora distinctly bicoloured, yellowish with the apex of the mesofemora and the apical  $\frac{1}{3}$ – $\frac{2}{5}$  of the metafemora blackish; apical 2–3 antennomeres yellowish (Fig. 29); pronotum blackish (Fig. 98); apical half of abdominal tergite VII yellowish (Fig. 155). On average larger and more slender species: body length 6.5–7.7 mm; length of forebody 3.0–3.1 mm. Antenna longer (2.4–2.6 mm) and more slender; antennomeres IV–VI longer than broad (Fig. 29). Aedeagus much larger and with very long ventral process of conspicuous shape (Figs. 266–267). – Yunnan (Fig. 304). .... ***bisinuatus* n. sp.**
- Meso- and metafemora uniformly dark-yellowish; only antennomere XI yellowish (Fig. 53); pronotum dark-brown with the margins broadly dark-reddish (Fig. 53); anterior margin of tergite VII narrowly reddish (Fig. 153). On average smaller and less slender species: body length 5.3–7.0 mm; length of forebody 2.5–3.1 mm. Antenna shorter (1.8–2.0 mm) and less slender; antennomeres IV–V approximately as broad as long and VI–X transverse (Fig. 53). Aedeagus smaller and with much shorter and differently shaped ventral process (Figs. 270–271). – Yunnan (Fig. 305). .... ***bicoloricollis* n. sp.**
- 15** Head distinctly wedge-shaped. Eyes very large, nearly reaching posterior margin of head. Pronotum with a pronounced large elevation posteriorly, along middle with conspicuously dense and distinctly granulose punctation. Male tergite III with a pronounced median projection posteriorly. Male tergite VII with dense and coarse granules in the middle. Male tergite VIII with dense oblong granules. Median lobe of aedeagus with pronounced crista apicalis (PACE 2010a: fig. 27). – Taiwan. .... ***gibbus* Pace**
- Head not distinctly wedge-shaped. Pronotum and abdomen without such modifications. .... **16**
- 16** At least abdominal tergites III and IV reddish. .... **17**
- Abdominal tergites IV–VI brown to black, often except for the margins. For the variable *Z. songanus*, a small and slender species from Beijing with very dense non-setiferous punctation in the anterior impressions of tergites III–V, whose tergites III and IV may be red or infusate, follow this alternative. .... **29**
- 17** Antennomere XI very short, much shorter than combined length of antennomeres IX and X, and of conical shape (Fig. 15). Abdominal sternites with dense and conspicuously long pubescence, in dorsal view distinctly projecting from lateral contours of abdomen. Forebody nearly uniformly brown (Fig. 101); abdomen reddish with the middle of tergite VI weakly infusate (Fig. 156); metafemora weakly bicoloured with the basal half yellowish and the apical half brown. Median lobe of aedeagus as in Figs. 282–283. – Fujian (Fig. 302). .... ***flexus* n. sp.**
- Antennomere XI longer, at least nearly as long as the combined length of IX and X, and not of distinctly conical shape. Abdominal sternites without dense and conspicuously long pubescence. Forebody and abdomen of different coloration; tergite VII at least partly infusate; metafemora not bicoloured. .... **18**
- 18** Abdominal tergites III–VI reddish; tergites VII–IX predominantly dark-brown to black (except for the anterior portion of tergite VII and sometimes the posterior margins). .... **19**
- Abdomen of different coloration; tergite VI at least partly infusate. .... **21**
- 19** Elytra uniformly dark-brown to blackish-brown (Fig. 91). Smaller (length of forebody 2.5–3.0 mm) and more slender species. Median lobe of aedeagus as in Figs. 262–263. – Fujian (Fig. 303). .... ***discolor* n. sp.**
- Elytra bicoloured, with the anterior portion reddish-yellow to pale-reddish and the posterior portion blackish. Larger (length of forebody 2.8–3.6 mm) and more robust species. .... **20**
- 20** Elytra predominantly reddish-yellow to pale-reddish, with only the postero-lateral portions blackish (Fig. 69). Antenna completely blackish-brown to black and longer (Fig. 27). Pronotum with less sparse punctation, maximal width in anterior half, but closer to middle than to anterior angles (Fig. 69). Anterior impressions of abdominal tergites III–V with dense and fine non-setiferous punctation not arranged in a distinct row (Fig. 119). Posterior excision of tergite VIII more distinct (Fig. 119). Aedeagus larger, median lobe approximately 1.0 mm long (Figs. 234–235). – Yunnan, Sichuan, Jiangxi; Taiwan (Fig. 301). .... ***nigrapicalis* n. sp.**

- Elytra blackish, with only the humeral portions yellowish (Fig. 172). Antennomere XI reddish, contrasting with antennomere X (Fig. 173). Pronotum with sparser punctation, maximal width close to anterior angles (Fig. 172). Anterior impressions of abdominal tergites III–V and anterior portion of VI each with a row of non-setiferous punctures (Fig. 174). Posterior margin of tergite VIII weakly concave in the middle (Fig. 175). Aedeagus smaller, median lobe 0.75 mm long (Figs. 231–233). – Yunnan (Fig. 302). ..... ***atruplicis* n. sp.**
- 21 Abdominal tergite VI with only the middle infusate; tergite VII with the anterior two-thirds pale-reddish and the posterior third infusate (Fig. 141). Pronotum weakly convex in cross-section and with irregularly spaced punctation (Fig. 83). Median lobe of aedeagus as in Figs. 221–222. – Hubei, Jiangxi (Fig. 305). ..... ***maculicollis* n. sp.**
- Abdominal tergites VI and VII more extensively infusate. .... 22
- 22 Small species: body length 4.3–5.5 mm; length of forebody 1.9–2.1 mm. Antennomere XI approximately as long as the combined length of antennomeres VIII–X. Pronotum weakly transverse and small in relation to head, approximately 1.10–1.15 times as broad as long and only approximately 1.13–1.18 times as broad as head. .... 23
- Larger species: length of forebody > 2.3 mm. Antennomere XI shorter, approximately as long as the combined length of antennomeres IX–X. Pronotum in most species larger in relation to head. .... 24
- 23 Eyes huge, nearly twice as long as postocular region in dorsal view (Fig. 97). Antennomere V approximately as broad as long (Fig. 43). Head and pronotum blackish (Fig. 97). Pronotum approximately 1.1 times as broad as long, 1.13 times as broad as head, weakly tapering posteriad, and strongly convex in cross-section (Fig. 97). Median lobe of aedeagus as in Figs. 272–273. – Hong Kong (Fig. 304). ..... ***fratrumkadooriorum* Pace**
- Eyes smaller, distinctly less than twice as long as postocular region in dorsal view (Fig. 169). Antennomere V distinctly transverse (Fig. 55). Head dark-brown; pronotum diffusely bicoloured, brown with the antero-lateral portion extensively paler yellowish-brown (Fig. 169). Pronotum 1.15 times as broad as long, 1.18 times as broad as head, strongly tapering posteriad, and weakly convex in cross-section (Fig. 169). Median lobe of aedeagus as in Figs. 227–228. – Taiwan. .... ***volans* n. sp.**
- 24 Pronotum very slender, 1.05–1.10 times as broad as long (Fig. 170). Anterior impressions of tergites III–V with sparse, anterior portions of tergites VI–VII without non-setiferous punctation (Fig. 168). Ventral process of aedeagus weakly curved and apically blunt in lateral view (Figs. 229–230). – Taiwan. .... ***hebes* n. sp.**
- Pronotum more transverse, > 1.10 times as broad as long. Abdominal punctation pattern different and ventral process of aedeagus of different shape. – Unknown from Taiwan, except for *Z. tenuicornis*. .... 25
- 25 Abdominal tergite VII distinctly bicoloured, with the anterior half reddish and the posterior half blackish; tergites III–IV reddish and V–VI infusate (Fig. 138). Antenna less slender; antennomeres IV and V approximately as broad as long, VI–X of increasing width and increasingly transverse, X approximately 1.5 times as broad as long (Fig. 44). Median lobe of aedeagus as in Figs. 236–237. – Sichuan (Fig. 302). .... ***seminigerrimus* Bernhauer**
- Abdominal tergite VII not distinctly bicoloured; tergites III–IV or III–V reddish. Antennae more slender; antenno-
- meres IV and V at least weakly oblong, X distinctly less than 1.5 times as broad as long. .... 26
- 26 Abdominal tergites III–V reddish (Fig. 142). Antenna less slender; antennomeres IV and V weakly oblong (Fig. 26). Pronotum with moderately dense and nearly equally spaced punctation on either side of the impunctate midline (Fig. 84). Abdominal tergite VI with a transverse row of approximately ten non-setiferous punctures anteriorly (Fig. 142). Apical lobe of paramere short and stout, much less than half as long as basal portion. Median lobe of aedeagus as in Figs. 223–224. – Taiwan (Fig. 302). .... ***tenuicornis* n. sp.**
- Abdominal tergites III–IV or III–V reddish. Antennae very long and slender; antennomeres IV and V more than 1.5 times as long as broad (e. g., Fig. 13). Pronotum largely impunctate, only with a cluster of punctures on either side of midline in posterior half and with sparse marginal punctures (Fig. 171). Abdominal tergite VI with or without very few non-setiferous punctures anteriorly. Apical lobe of paramere long and slender, at least half as long as basal portion. .... 27
- 27 Male sternite VIII with convex posterior margin. Antennomere IX weakly transverse (Fig. 13). Median lobe of aedeagus as in Figs. 291–292. – Yunnan (Fig. 306). .... ***rectus* n. sp.**
- Male sternite VIII with truncate or even concave posterior margin (Fig. 288). Antennomere IX weakly oblong. .... 28
- 28 Abdominal tergites III and IV reddish, V dark-brown with reddish margins (Fig. 163). Antennae slightly more massive and with shorter and stouter antennomere I; antennomeres IV–VIII blackish-brown (Fig. 12). Median lobe of aedeagus as in Figs. 289–290. – Yunnan (Fig. 306). .... ***extensus* n. sp.**
- Abdominal tergites III–V reddish (Fig. 162). Antennae slightly less massive and with longer and more slender antennomere I; antennomeres IV–VIII reddish (Fig. 11). Median lobe of aedeagus as in Figs. 286–287. – Northeast Burma (Fig. 306). .... ***glabricollis* Scheerpeltz**
- 29 Abdominal tergites II–III and VIII uniformly reddish; tergites IV–V with reddish anterior and lateral margins and paratergites; tergites VI–VII with reddish anterior and antero-lateral portions (Fig. 131). Antennomeres IV–V oblong (Fig. 23). Pronotum relatively weakly transverse and only slightly broader than head (Fig. 75). Anterior impressions of tergites III–V and anterior portion of tergite VI with rather sparse non-setiferous punctation (Fig. 131). Median lobe of aedeagus as in Figs. 205–206. – Yunnan (Fig. 301). .... ***bangmaicus* n. sp.**
- Abdominal tergite III at least partly infusate; tergites IV–VI darker. (For *Z. hauserianus*, which has tergite III very weakly infusate, tergite II more distinctly infusate, distinctly transverse antennomeres IV–X, and anterior impressions of tergites III–V with very dense non-setiferous punctation, follow this alternative.) .... 30
- 30 Abdomen distinctly bicoloured, blackish with segments VII and VIII reddish. .... 31
- Abdomen blackish, often with the margins of the segments reddish. .... 33
- 31 Elytra distinctly bicoloured, dark-yellowish with the postero-lateral portions extensively blackish (Fig. 61). Median lobe of aedeagus as in Figs. 186–187. – Hubei, Sichuan (Fig. 301). .... ***rufoterminalis* n. sp.**
- Elytra blackish. .... 32
- 32 Legs yellowish; antenna blackish (Fig. 5). Pronotum with very sparse and irregularly spaced punctation (Fig. 59). Posterior margins of abdominal tergites III–VI with very



- few punctures (Fig. 115). Median lobe of aedeagus as in Figs. 182–183. – Yunnan; Burma (Fig. 302). ..... *kambaitiensis* Scheerpeltz
- Legs with blackish femora and dark-brown tibiae; antennae reddish-brown to brown, with blackish-brown antennomere I (Fig. 6). Pronotum, except for the sparsely punctate posterior portion, with moderately dense and nearly regularly spaced punctation on either side of the impunctate midline (Fig. 62). Posterior margins of abdominal tergites III–VI with numerous fine punctures (Fig. 116). Median lobe of aedeagus as in Figs. 184–185. – Taiwan (Fig. 301). ..... *rufapicalis* n. sp.
- 33 Elytra uniformly blackish. .... 34
- Elytra bicoloured or uniformly yellowish. .... 39
- 34 Legs yellowish. .... 35
- Legs with at least the femora brown to blackish. .... 36
- 35 Antenna much longer and more massive; antennomeres IV–X weakly transverse at most (Fig. 8). Punctuation of pronotum and elytra rather dense and nearly equally spaced (Fig. 63). Anterior portions of abdominal tergites III–VI usually without non-setiferous punctation (Fig. 120). Median lobe of aedeagus as in Figs. 238–241. – Widespread in China, from Sichuan to Qinghai and Hubei (Fig. 303). .... *nigricornis* n. sp.
- Antenna much shorter and less massive; antennomeres IV–X distinctly transverse (Fig. 49). Punctuation of pronotum sparse and irregularly spaced, that of elytra sparse in posterior portion (Fig. 87). Anterior portions of abdominal tergites III–VI with non-setiferous punctation (Fig. 145). Median lobe of aedeagus as in Figs. 254–255. – Yunnan (Fig. 303). .... *nigronitens* n. sp.
- 36 Pronotum and elytra with sparse and fine punctation; interstices on average distinctly broader than diameter of punctures (Fig. 89). Antenna blackish-brown with antennomere XI reddish (Fig. 48). Median lobe of aedeagus as in Figs. 248–249. – Tibet (Fig. 303). .... *atronitens* n. sp.
- Pronotum and elytra with denser and coarser punctation. Antennomere XI blackish-brown to black. .... 37
- 37 Coloration paler; femora brown, tibiae yellowish to yellowish-brown; elytra brown (Fig. 88); antennae dark-brown with slightly paler basal antennomeres (Fig. 47). Median lobe of aedeagus as in Figs. 252–253. – Sichuan (Fig. 305). .... *athetoides* n. sp.
- Femora and tibiae blackish; elytra black; antennae blackish. .... 38
- 38 Antenna conspicuously massive; antennomere III stout and conical, barely 1.5 times as long as broad (Fig. 46). Median lobe of aedeagus as in Figs. 250–251. – Sichuan, Yunnan (Fig. 304). .... *tumidicornis* n. sp.
- Antenna much less massive; antennomere III slender and approximately twice as long as broad (Fig. 45). Median lobe of aedeagus as in Figs. 242–247. – Sichuan, Tibet (Fig. 304). .... *tenebricosus* n. sp.
- 39 Antennomere IV distinctly transverse, at least approximately 1.3 times as broad as long. For the variable *Z. songanus*, a small and slender species from Beijing with very dense non-setiferous punctation in the anterior impressions of tergites III–V, whose antennomere IV is somewhat intermediate, follow this alternative. .... 40
- Antennomere IV oblong, as long as broad, or very weakly transverse. .... 45
- 40 Antenna strongly incrassate and with strongly transverse antennomeres IV–X; antennomeres VI–VIII approximately twice as broad as long, or nearly so (Fig. 42). Rather small (length of forebody 2.4–2.5 mm), glossy, and sparsely punctate species (Figs. 80, 136). Median lobe of aedeagus rather small, only approximately 0.65 mm long (Figs. 119–120). – Qinghai (Fig. 302). .... *dabanicus* n. sp.
- Antenna less strongly incrassate and with less strongly transverse antennomeres IV–X; antennomeres VI–VIII less than twice as broad as long. .... 41
- 41 Antenna massive, but only very weakly incrassate apically; antennomere V nearly as broad as antennomere X (Fig. 20). Elytra with small dark spots in postero-lateral portion (Fig. 67). Median lobe of aedeagus as in Figs. 195–196. – Fujian (Fig. 301). .... *firmicornis* n. sp.
- Antenna less massive and more strongly incrassate; antennomere V distinctly less broad than antennomere X. .... 42
- 42 Anterior impressions of abdominal tergites III–V and anterior portions of tergites VI–VII with very dense non-setiferous punctation. .... 43
- Anterior impressions of abdominal tergites III–V and anterior portions of tergites VI–VII with sparse non-setiferous punctation. .... 44
- 43 Antennomere IV more transverse, approximately 1.5 times as broad as long (Fig. 38). Pronotum broader, approximately 1.2 times as broad as long, and less convex in cross-section (Fig. 77). – Xinjiang. .... *hauserianus* Bernhauer
- Antennomere IV distinctly less than 1.5 times as broad as long (Fig. 54). Pronotum more slender, 1.10–1.15 times as broad as long, and more convex in cross-section (Fig. 111). – Beijing. .... *songanus* Pace
- 44 Antenna longer and more massive; antennomere X barely 1.5 times as broad as long (Figs. 14, 22). Elytra yellowish, with or without a small, weakly defined, and weakly infusate spot in or near postero-lateral angles (Figs. 74, 110). Posterior half of abdominal tergite VII very sparsely punctate (Figs. 130, 140). Posterior margin of tergite VIII distinctly concave in the middle. Median lobe of aedeagus more slender in ventral view, with more slender ventral process in lateral view, and with the crista apicalis more oblique and distinctly separated from base of ventral process (lateral view) (Figs. 199–200, 209–210). – China: Beijing (Fig. 304); Russia: East Siberia; North Korea; Japan. .... *sibiricus* Bernhauer
- Antenna shorter and less massive; antennomere X nearly twice as broad as long (Fig. 37). Elytra with extensively infusate postero-lateral angles (Fig. 76). Posterior half of abdominal tergite VII more densely punctate (Fig. 133). Posterior margin of tergite VIII with or without very indistinct median concavity. Median lobe of aedeagus broader in ventral view, with stouter ventral process in lateral view, and with the crista apicalis less oblique and not distinctly separated from base of ventral process (lateral view) (Figs. 207–208). – China: Qinghai, Gansu; Russia: East Siberia, Far East. .... *inexcisus* n. sp.
- 45 Anterior impressions of abdominal tergites III–V and anterior portion of tergite VI practically without non-setiferous punctation, with few scattered punctures at most. .... 46
- Anterior impressions of abdominal tergites III–V and anterior portion of tergite VI with more or less dense, though often fine, non-setiferous punctation. .... 48
- 46 Species of broad habitus. Pronotum large and rather strongly transverse, approximately 1.25 times as broad as long and 1.4 times as broad as head (Fig. 79). Antennomere XI slightly longer than the combined length of antennomeres IX and X (Fig. 40). Abdomen approximately as broad as elytra (Fig. 135). Median lobe of aedeagus as in Figs. 213–214. – Yunnan (Fig. 301). .... *lativentris* n. sp.

- More slender species. Pronotum relatively smaller and less strongly transverse. Antennomere XI not longer than the combined length of antennomeres IX and X. Abdomen at least slightly narrower than elytra. ....47
- 47 Posterior halves of male abdominal tergites VII and VIII with coarsely granulate punctation (Fig. 134). Antenna less massive (Fig. 39). Median lobe of aedeagus as in Figs. 211–212. – Sichuan (Fig. 301). ....*granapicalis* n. sp.
- Posterior halves of male abdominal tergites VII and VIII with fine and non-granulate punctation (Fig. 124). Antenna more massive (Fig. 17). Median lobe of aedeagus as in Figs. 188–189. – China: Yunnan; Burma (Fig. 303). ....*birmanus* Scheerpeltz
- 48 Pronotum and elytra with coarse and not very dense punctation (Fig. 81). Maxillary palpi dark-brown (Fig. 81). Non-setiferous punctation of anterior impressions of tergites III–V rather coarse (Fig. 137). Median lobe of aedeagus as in Figs. 225–226. – China: Guangxi, Zhejiang; Hong Kong (Fig. 302). ....*notaticornis* Pace
- Pronotum and elytra with distinctly denser and much finer punctation. Maxillary palpi yellowish. Non-setiferous punctation of anterior impressions of tergites III–V fine. ....49
- 49 Posterior halves of abdominal tergites III–IV only with a median pair of punctures and a lateral puncture on either side, and with 2–6 setiferous punctures at posterior margin. Postero-lateral portions of elytra usually more extensively infuscate. ....50
- Posterior halves of abdominal tergites III–IV with several punctures in addition to the median pair of punctures and the lateral puncture on either side, and with more numerous setiferous punctures at the posterior margins. Postero-lateral portions of elytra usually with small, sometimes nearly obsolete, dark spot. ....52
- 50 Larger species (length of forebody 3.2–3.5 mm). Antenna longer (2.5–2.7 mm) and more massive; antennomeres IV–VII as long as broad or even oblong, and VIII–X very weakly transverse (Fig. 7). Anterior impressions of abdominal tergites III–V with denser and more distinct non-setiferous punctation (Fig. 69). Median lobe of aedeagus more robust, larger (approximately 1.0 mm), and with relatively shorter ventral process (Figs. 217–218). – Yunnan (Fig. 303). ....*gilvipalpis* n. sp.
- Slightly smaller species with shorter (2.0–2.4 mm) and less massive antennae; at least antennomeres VI–X distinctly transverse. Anterior impressions of abdominal tergites III–V with sparse and fine non-setiferous punctation. Median lobe of aedeagus more slender, slightly smaller (0.85–0.95 mm), and with relatively longer ventral process. ....51
- 51 Antenna more distinctly incrassate; antennomeres VI–X distinctly transverse, at least approximately 1.5 times as broad as long (Fig. 41). Elytra with sparser and coarser punctation (Fig. 71). Median lobe of aedeagus with much more slender ventral process, particularly in ventral view (Figs. 215–216). – Yunnan (Fig. 302). ....*caloderoides* n. sp.
- Antenna weakly incrassate; antennomeres VI–X weakly transverse, distinctly less than 1.5 times as broad as long (Fig. 18). Elytra with denser and finer punctation (Fig. 65). Ventral process of aedeagus broader in ventral view and stouter in lateral view (Figs. 190–192). – Widespread in China, from the Daba Shan and Qinling Shan to Sichuan; female-based records also from Yunnan (Fig. 302). ....*shaanxiensis* Pace
- 52 Pronotum more convex in cross-section and more slender, approximately 1.3 times as broad as head (Fig. 73). Punc-

tation of pronotum and elytra less dense (Fig. 73). Ventral process of aedeagus apically shorter in ventral view and more slender in lateral view; crista apicalis more oblique (Figs. 97–98). – Sichuan (Fig. 301). ....*subobsoletus* n. sp.

– Pronotum less convex in cross-section and less slender, 1.35–1.40 times as broad as head (Fig. 66). Punctation of pronotum and elytra dense (Fig. 66). Ventral process of aedeagus apically longer in ventral view and less slender in lateral view; crista apicalis less oblique (Figs. 193–194). – Widespread in China: Fujian, Guizhou, Sichuan, Zhejiang (Fig. 306). ....*wei* Pace

### 3.5 The species of China, Taiwan, and Hong Kong, including the border region with Burma

*Zyras (Zyras) malaisei* Scheerpeltz, 1965  
(Figs. 1, 56, 112, 176–177, 201–202, 301)

*Zyras (Zyras) malaisei* SCHEERPELTZ, 1965: 345 ff.

#### Type material examined

Paratypes: 1 ♀: “♀ / N.E. Burma, Kambaiti 7000 ft., 25–27/4 1934, R. MALAISE / Schwedische Indien-Burma Expedition 1934 / ex coll. SCHEERPELTZ / Allotypus / Typus *Zyras Malaisei* O. Scheerpeltz / *Malaisei* Schp. / *Zyras malaisei* Scheerpeltz, det. V. ASSING 2015” (NHMW); 1 ♂: same data, but “19/4 1934 ... *Cotypus Zyras Malaisei* O. Scheerpeltz” (NHMW); 1 ♂ [slightly teneral]: same data, but “23/5-34” (NHMW).

#### Comment

The original description is based on a male holotype and five paratypes from “N.E. Burma, Kambaiti” (SCHEERPELTZ 1965). The type material is deposited in SMNH and NHMW.

#### Redescription

Rather large species; body length 7.5–9.0 mm; length of forebody 3.6–3.9 mm. Coloration: head and pronotum black; elytra reddish-yellow to reddish, with the posterior portion extensively blackish (Fig. 56); abdomen (Fig. 112) with segments III–IV reddish to dark-reddish, V reddish to blackish-brown with reddish anterior and lateral margins, VI–VII blackish, and VIII–X yellowish; legs yellowish to dark-reddish; antennae (Fig. 1) blackish with the apical 2–3 antennomeres pale-yellowish and sometimes with the basal antennomeres reddish-brown; maxillary palpi blackish with the terminal palpomere reddish.

Head (Fig. 56) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions rather coarse and moderately sparse. Eyes noticeably longer than postocular region in dorsal view. Antenna (Fig. 1) approximately 3 mm long and rather slender; antennomeres IV–V weakly oblong; VI–VII approximately as broad as long; VIII–X weakly transverse; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 56) 1.10–1.15 times as broad as long and 1.30–1.33 times as broad as head, posteriorly with a pronounced median impression; punctation of variable density, but generally sparse, irregularly spaced, and of variable size and depth (though generally coarse); midline narrowly impunctate; lateral margins with few long black setae anteriorly and posteriorly.

Elytra (Fig. 56) approximately 0.85 times as long as pronotum; punctation coarse, dense and somewhat asperate in lateral and anterior portions, sparser in posterior portions and near suture. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 112) slightly narrower than elytra, with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with distinct and dense non-setiferous punctation; tergite III with a pair of median punctures, a lateral puncture, and a lateral marginal puncture on either side, otherwise impunctate; tergites IV–V each with a lateral puncture on either side and with four marginal punctures; tergite VI with a lateral puncture on either side and with six marginal punctures posteriorly; tergite VII with sparse punctation arranged in two irregular rows; tergite VIII with moderately dense punctation in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: tergite VIII transverse, posterior margin with distinct median concavity and with a convex lateral projection on either side (Fig. 201); sternite VIII somewhat longer than tergite VIII and convex posteriorly (Fig. 202); median lobe of aedeagus approximately 1.0 mm long and shaped as in Figs. 176–177.

♀: posterior margin of tergite VIII concave in the middle.

#### Comparative notes

*Zyras malaisei* is characterized by the combination of relatively large body size, relatively slender antennae with the apical two to three antennomeres pale-yellowish, irregularly spaced punctation of the pronotum, distinctly bicoloured elytra, yellowish apex of the abdomen, a modified and sexually dimorphic posterior margin of tergite VIII, and by the shape of the median lobe of the aedeagus.

#### Distribution and natural history

*Zyras malaisei* is currently known only from the type locality at the Burmese side of the border between Burma and the Chinese province Yunnan, and from one locality in North Vietnam (ASSING 2015d) (Fig. 301), suggesting that the species is widespread and present also in China. The type specimens were collected at an altitude of approximately 2100 m, the additional specimen was sifted from litter of bushes and trees near a forest margin at an altitude of 2030 m. One of the examined paratypes is slightly teneral.

*Zyras (Zyras) chinkiangensis* Bernhauer, 1939  
(Figs. 2, 57, 178–179, 113, 301)

*Zyras (Zyras) chinkiangensis* BERNHAUER, 1939: 148 f.

#### Type material examined

Lectotypus ♂ [dissected prior to present study; in rather poor condition; right elytron and right antenna missing], present designation: “Nordwestl. [sic] China / Chinkiang, Col. REITTER / chinkiangensis Bernh. Typus. *Zyras / chinkiangensis* Brnh. Typ. / Chicago NHMus, M. BERNHAUER Collection / *Zyras chinkiangensis / Zyras chinkiangensis* Ber., det. R. PACE 1984, Holotypus / Lectotypus ♂ *Zyras chinkiangensis* Bernhauer, desig. V. ASSING 2015 / *Zyras chinkiangensis* Bernhauer, det. V. ASSING 2015” (FMNH).

#### Comment

The original description is based on an unspecified number of syntypes from “Nordwestl. China: Chinkiang”, today Zhenjiang in Jiangsu province, East China (BERNHAEUER 1939). The sole type specimen in the BERNHAUER collection, a male with only one elytron and one antenna, is designated as the lectotype. It had been mis-sexed as a female (“♂ unbekannt”) by BERNHAUER (1939). As can be inferred from the identification label, it had been examined and dissected by R. PACE. The abdominal sternites have the pubescence long and erect, but this may be an artefact previously observed also in many other aleocharines dissected and processed by R. PACE. For remarks on the possible synonymy with *Z. setosipennis* see the comment in the section on that species.

#### Redescription

Rather large species; body length 7.3 mm; length of forebody 3.7 mm. Coloration: head blackish; pronotum blackish-brown; elytra brown; abdomen (Fig. 113) with tergites I–V reddish, VI–VII blackish with the anterior margins reddish, and VIII brown (Fig. 57); legs yellowish with the bases of the meso- and metatibiae slightly darker, the profemora dark-brown, and the protibiae brown; antennae (Fig. 2) blackish, with antennomeres IX–XI pale-yellowish; maxillary palpi dark-brown with palpomere IV yellowish.

Head (Fig. 57) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions rather fine and moderately sparse. Eyes strongly bulging and much longer than postocular region in dorsal view. Antenna (Fig. 2) approximately 3 mm long and slender; antennomere IV distinctly oblong, approximately 1.5 times as long as broad; antennomeres V–VII weakly oblong, VIII approximately as broad as long, and IX–X weakly transverse; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 57) 1.2 times as broad as long and 1.26 times as broad as head; lateral margins sinuate poste-



riorly in dorsal view; anterior angles and lateral margins with numerous long and erect brown setae; punctation rather dense, fine, and nearly regularly spaced.

Elytra long, approximately 0.95 times as long as pronotum; punctation dense and moderately coarse. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 113) broad, with deep anterior impressions on tergites III–V; anterior impressions of tergites III–V with rather fine non-setiferous punctures; tergite III with several lateral punctures on either side and with approximately eight punctures at posterior margin; tergite IV with several lateral punctures on either side and with approximately ten punctures at posterior margin; tergite V with a median pair of punctures, with several lateral punctures on either side and with more than ten punctures at posterior margin; tergite VI anteriorly with non-setiferous punctation on whole disc except near posterior margin, this punctation dense in anterior portion and sparser in median portion, posterior margin with approximately twelve setiferous punctures; tergite VII with non-setiferous punctation in anterior half and with setiferous punctures arranged in two irregular transverse series in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII weakly concave in the middle.

♂: sternite VIII broadly convex; median lobe of aedeagus approximately 1.0 mm long and shaped as in Figs. 178–179; apical lobe of paramere very short.

♀: unknown.

#### Comparative notes

*Zyras chinkiangensis* is characterized particularly by its coloration, rather large size, the sinuate lateral margins of the pronotum, the punctation pattern of the abdomen, and the shape of the median lobe of the aedeagus.

#### Distribution and natural history

This species is currently known only from Zhenjiang, Jiangsu, East China (Fig. 301). Additional data are not available.

*Zyras (Zyras) alboantennatus* Pace, 1986  
(Figs. 3, 60, 117, 180–181, 304)

*Zyras (Zyras) alboantennatus* PACE, 1986a: 460.

*Zyras (Zyras) sichuanorum* PACE, 2012a: 85 f.; **n. syn.**

#### Type material examined

*Z. alboantennatus*: Holotype ♂: “Burma, Anisakan [21°57'N, 96°25'E], 12.I.1981, DE ROUGEMONT / Holotypus *Zyras* (s. str.) *alboantennatus* mihi, det. R. PACE 1982 / *Zyras alboantennatus* n. sp., det. R. PACE 1983” (MCSNV).

*Z. sichuanorum*: Holotype ♂: “China, Sichuan, Qingcheng Shan, 65 km NW Chengdu, 103.33 E, 30.53 N, 18.V/3.–4.VI.1997, 8 km W Taiping, 800–1000 m, leg. A. PÜTZ / Holotypus *Zyras sichuanorum* mihi, det. R. PACE 2009 / *Zyras sichuanorum* n. sp., det. R. PACE 2009” (cPüt). – Paratypes: 2 ♀♀: “China: Prov. Sichuan, Wenjian Distr., Guanxian Co., 65 km NW Chengdu, Qingcheng Shan, 975 m, 30.53.84N, 103.32.80E, 18.VI.1999, leg. A. PÜTZ” (cPüt).

#### Additional material examined

China: 1 ♂, Sichuan, Ya'an Pref., Shimian Co., Daxue Shan, road between Anshunchang and Wanba, ca. 20 km WSW Shimian, ca. 1500 m, 9.VII.1999, leg. WRASE (cAss); 1 ♀, Sichuan, Moxi env., Hailuoguo valley, Gonghe, 29°37'N, 102°06'E, 1715 m, fallows near margin of mixed forest, at light, 17.–21.VI.2014, leg. HÁJEK et al. (NMP).

#### Comment

The original description of *Z. alboantennatus* is based on a single male from “Burma, Anisakan” (PACE 1986a), that of *Z. sichuanorum* on a male holotype and two female paratypes collected in two localities in the Qingcheng Shan, Sichuan (PACE 2012a). An examination of the type material of both names revealed that, regarding their external characters, the specimens are all within the range of intraspecific variation of one and the same species and that the male primary sexual characters are identical. Hence the synonymy proposed above.

#### Redescription

Large species; body length 8.0–9.5 mm; length of forebody 3.4–4.1 mm. Coloration: head black; pronotum bright-reddish; elytra reddish with the postero-lateral portions more or less extensively triangularly infusate (Fig. 60), rarely uniformly reddish; abdomen (Fig. 117) bright-reddish, with the middle of tergites VII and VIII, mostly also of tergite VI, more or less extensively infusate, sometimes leaving only the margins reddish; legs yellowish, with the profemora and protibiae brownish; maxillary palpi dark-brown, with the terminal joint yellowish; antennae (Fig. 3) blackish-brown, with antennomeres VIII–XI, IX–XI, or X–XI pale-yellowish.

Head (Fig. 60) moderately transverse, broadly impunctate in median portion, in lateral portions with rather sparse and fine punctation; interstices broader than diameter of punctures. Eyes strongly bulging, distinctly longer than postocular region in dorsal view. Antenna (Fig. 3) slender, 2.6–2.9 mm long; antennomeres IV distinctly, V–VI weakly oblong; VII–VIII approximately as long as broad; IX–X weakly transverse; XI slightly shorter than the combined length of IX and X.

Pronotum (Fig. 60) 1.15–1.20 times as broad as long and approximately 1.25 times as broad as head; punctation fine, moderately dense, and very shallow; interstices on average broader than diameter of punctures; midline impunctate only in the middle; pubescence long, yellowish, sparse, and suberect.

Elytra (Fig. 60) approximately 0.9 times as long as pronotum; punctation defined, much more so than that of pronotum, moderately fine, and rather dense. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 117) large, nearly as broad as elytra, with moderately deep anterior impressions on tergites III–V; tergites III–V each with a row of rather dense non-setiferous punctures in anterior impressions, with some setiferous punctures bearing long black setae in lateral portions, with a median pair of punctures, and with scattered fine punctures on discs; tergite VI with rather dense punctation in anterior half, some setiferous punctures laterally, scattered fine punctures in posterior half, and with a row of coarser punctures at posterior margin; tergite VII with dense and fine punctation in anterior half, and with coarser and less dense punctation in posterior half; tergite VIII with moderately dense punctation only in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII shallowly concave in the middle.

♂: sternite VIII with strongly convex posterior margin; median lobe of aedeagus approximately 1.1 mm long and shaped as in Figs. 180–181.

♀: general outline of posterior margin of sternite VIII broadly and weakly convex, in the middle with pronounced concavity.

#### Comparative notes

This species is characterized particularly by its large size, the conspicuous coloration, the fine punctation of the pronotum, the punctation pattern of the abdomen, and by the shape of the median lobe of the aedeagus. For characters distinguishing it from the similar *Z. setosipennis* see the comparative notes in the section on that species.

#### Distribution and natural history

Based on examined material, the known distribution includes four localities in Sichuan (Fig. 304), one in Burma, and one in Vietnam (ASSING 2015d). PACE (2012a) recorded the species from the environs of Lijiang, Yunnan.

The non-type male was collected on a stream bank, the female with a light trap placed in fallows near the margin of a mixed forest. The altitudes range from approximately 360 to 1715 m.

*Zyras (Zyras) kambaitiensis* Scheerpeltz, 1965  
(Figs. 5, 59, 115, 182–183, 203–204, 302)

*Zyras (Zyras) kambaitiensis* SCHEERPELTZ, 1965: 347 f.

*Zyras (Zyras) ferrugineiventris* SCHEERPELTZ, 1965: 349 f.; **n. syn.**

*Zyras (Zyras) semiasperatus* SCHEERPELTZ, 1965: 353 f.; **n. syn.**

#### Type material examined

*Z. kambaitiensis*: Paratypes: 1 ♀: “♀ / N. E. Burma, Kambaiti 7000 ft., 22/4 1934, R. MALAISE / Schwedische Indien-Burma Expedition 1934 / ex coll. SCHEERPELTZ / Allotypus / Typus *Zyras kambaitiensis* O. Scheerpeltz / *kambaitiensis* Schp. / *Zyras kambaitiensis* Scheerpeltz, det. V. ASSING 2015” (NHMW); 1 ex.: same data, but “13/5 1934 ... *Cotypus Zyras kambaitiensis* O. Scheerpeltz” (NHMW); 2 exs.: same data, but “28/5.1934, 2000 m” (NHMW); 2 exs.: same data, but “12/5.1934” (NHMW).

*Z. ferrugineiventris*: Holotype ♀: “♀ / N. E. Burma, Kambaiti 7000 ft., 19/4 1934, R. MALAISE / Holotypus / Typus *Zyras ferrugineiventris* O. Scheerpeltz / *Zyras (Zyras) ferrugineiventris* n. sp., det. SCHEERPELTZ 1941 / 3736, E91 + / NHRS-JLKB 000023265 / *Zyras kambaitiensis* Scheerpeltz, det. V. ASSING 2015” (SMNH).

*Z. semiasperatus*: Paratypes: 1 ♀: “♀ / N. E. Burma, Kambaiti 7000 ft., 13/5 1934, R. MALAISE / Schwedische Indien-Burma Expedition 1934 / ex coll. SCHEERPELTZ / Allotypus / Typus *Zyras semiasperatus* O. Scheerpeltz / *semiasperatus* Schp. / *Zyras kambaitiensis* Scheerpeltz, det. V. ASSING 2015” (NHMW); 1 ex.: same data, but “12/5 1934 ... *Cotypus Zyras semiasperatus* O. Scheerpeltz / *Zyras kambaitiensis* Scheerpeltz, det. V. ASSING 2015” (NHMW); 1 ex.: same data, but “1/5 1934” (NHMW).

#### Additional material examined

China: 1 ♂, Yunnan, Nujiang Lisu Aut. Pref., Gaoligong Shan, pass 21 km NW Liuku, 25°58'N, 98°41'E, 3150 m, under stones along road, 9.VI.2007, leg. WRASE (cAss).

#### Comment

The type localities of *Z. kambaitiensis*, *Z. ferrugineiventris*, and *Z. semiasperatus* are identical (“N. E. Burma, Kambaiti”). The original description of *Z. kambaitiensis* is based on 17 type specimens, that of *Z. ferrugineiventris* on a single female, and that of *Z. semiasperatus* on seven type specimens (SCHEERPELTZ 1965). The lengthy descriptions of *Z. ferrugineiventris* and *Z. semiasperatus* do not emphasize any characters distinguishing these species from *Z. kambaitiensis*. The examined type material of *Z. ferrugineiventris* and *Z. semiasperatus* is more or less distinctly teneral, but otherwise (including the male sexual characters) identical to that of *Z. kambaitiensis*, indicating that all three names are synonymous. They were made available in the same article; *Zyras kambaitiensis* is designated as the senior name.

#### Redescription

Body length 6.5–8.0 mm; length of forebody 3.5–4.2 mm. Coloration: body blackish-brown to black (Figs. 59–115), with the abdominal apex (segments VII–X) reddish and occasionally the abdominal segments III or III–IV slightly paler; legs yellowish; antennae (Fig. 5) blackish, sometimes with the basal two antennomeres slightly paler; maxillary palpi yellowish to yellowish-brown.

Head (Fig. 59) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions

rather fine and sparse. Eyes noticeably longer than postocular region in dorsal view. Antenna (Fig. 5) 2.6–3.0 mm long and rather slender; antennomeres IV–V weakly oblong or as long as broad; VI–X weakly transverse; XI slightly shorter than the combined length of IX and X.

Pronotum (Fig. 59) relatively weakly transverse, 1.08–1.12 times as broad as long and 1.30–1.35 times as broad as head, posteriorly with a pronounced median impression; punctation of variable density, moderately sparse, irregularly spaced, and of variable size and depth (mostly moderately coarse); midline narrowly impunctate.

Elytra (Fig. 59) 0.80–0.85 times as long as pronotum; punctation moderately coarse, dense and somewhat asperate in lateral and anterior portions, sparser in posterior portions and near suture. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 115) slightly narrower than elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with very sparse non-setiferous punctation, nearly impunctate; tergites III–V with a lateral puncture on either side and with four punctures at posterior margin, otherwise impunctate; tergite VI with a lateral puncture on either side and with six punctures at posterior margin; tergite VII in posterior portion with two transverse rows composed of only about four punctures each; tergite VIII with few setiferous punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: tergite VIII (Fig. 203) transverse, middle of posterior margin with a pair of tooth-like projections, between these projections concave; sternite VIII (Fig. 204) longer than tergite VIII, approximately as long as broad, and convex posteriorly; median lobe of aedeagus 1.0–1.1 mm long and shaped as in Figs. 182–183.

♀: posterior margin of tergite VIII concave in the middle.

#### Comparative notes

*Zyras kambaitiensis* is characterized particularly by the coloration of the body, the punctation pattern of the abdomen, the modifications of the sexually dimorphic tergite VIII, and by the shape of the aedeagus. It is distinguished from the syntopic and sympatric *Z. malaisei* by the less coarse punctation of the head and pronotum, the different coloration of the antennae, the elytra, the abdomen, and the maxillary palpi, the nearly impunctate anterior portions of the abdominal tergites III–VII, the different modifications of the male tergite VIII, and the differently shaped median lobe of the aedeagus. From the similarly coloured *Z. kraatzi*, *Z. kambaitiensis* differs by larger body size, distinctly longer and more massive antennae, a more transverse and less convex (cross-section) pro-

notum with denser and coarser punctation, much denser, coarser, and partly granulose punctation of the elytra, and a larger median lobe of the aedeagus with a more slender (lateral view) apical portion of the ventral process.

#### Distribution and natural history

*Zyras kambaitiensis* is currently known from two localities, one in northeastern Burma, close to the border with Yunnan, and one in the Gaoligong Shan, western Yunnan, China, from where the species is reported for the first time (Fig. 302). The partly teneral type specimens were collected at an altitude of approximately 2100 m, the additional specimens from under a stone on a road margin at an altitude of 3150 m.

*Zyras (Zyras) rufapicalis* **n. sp.**  
(Figs. 6, 62, 116, 184–185, 301)

*Zyras wei*: PACE (2010a); misidentification.

#### Type material

**Holotype** ♂: “Taiwan, Kaohsiung Hsien, Peinantashan trail 2450 m, 2.V.1995 A. SMETANA [T170] / *Zyras wei* Pace, det. R. PACE 2006 / Holotypus ♂ *Zyras rufapicalis* sp. n. det. V. ASSING 2014” (cSme).

**Paratypes**: 1 ♀: same data as holotype (cSme); 2 ♂♂: “Taiwan, Nantou Hsien, Nenkaoshan ridge, 2850 m, 7.V.1992, A. SMETANA [T118]” (cSme, cAss).

#### Etymology

The specific epithet is composed of the Latin adjectives *rufus* (red) and *apicalis* (apical). It alludes to the conspicuously reddish apex of the abdomen.

#### Description

Large species; body length 8.5–9.5 mm; length of forebody 3.8–4.0 mm. Coloration: body (Figs. 62, 116) black and shiny, with the abdominal apex (segments VIII–X and posterior half of VII) reddish; legs with the femora blackish, the tibiae brownish, and the tarsi reddish; maxillary palpi yellowish-red to reddish-brown; antennae (Fig. 6) reddish-brown to brown, with blackish-brown antennomere I.

Head (Fig. 62) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions sparse; interstices distinctly broader than diameter of punctures. Eyes distinctly longer than postocular region in dorsal view. Antenna (Fig. 6) 2.7–2.8 mm long, moderately massive; antennomere IV approximately as long as broad; V–VI as long as broad or weakly transverse; VII–X gradually and weakly increasing in width; X weakly transverse, much less than 1.5 times as broad as long; XI shorter than the combined length of IX and X.

Pronotum (Fig. 62) 1.14–1.20 times as broad as long and 1.34–1.38 times as broad as head; punctation moderately



sparse; interstices on average broader than diameter of punctures; midline narrowly impunctate; lateral margins and antero-lateral portion with some long black setae.

Elytra (Fig. 62) 0.85–0.90 times as long as pronotum; punctation defined and moderately dense (denser in anterior portion), interstices on average broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV, or nearly so.

Abdomen (Fig. 116) approximately 0.95 times as broad as elytra and with moderately deep anterior impressions on tergites III–V; posterior margins of tergites III–VII with fine punctation; anterior impressions of tergites III–V and anterior margin of tergite VI with sparse non-setiferous micropunctation; discs of tergites III–VI each with a median pair of setiferous punctures (individual punctures may be missing) and with some lateral punctures on either side; tergite VII with fine punctures near anterior margin and with two transverse rows each composed of approximately 8 setiferous punctures in posterior half; tergite VIII with a few setiferous punctures in posterior fourth, impunctate in anterior three-fourths; integument without microsculpture and very glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII concave in the middle, this concavity delimited by a tooth-like process on either side; sternite VIII somewhat longer than tergite VIII, its posterior margin truncate in the middle; median lobe of aedeagus approximately 0.95–1.02 mm long and shaped as in Figs. 184–185.

♀: posterior margin of tergite VIII weakly concave in the middle; posterior margin of sternite VIII weakly concave.

#### Comparative notes and comment

This distinctive species is readily identified based on its large size and conspicuous coloration alone. In addition, it is characterized by the punctation pattern of the abdomen and by the morphology of the aedeagus. It differs from *Z. kambaitiensis* (Yunnan, northeastern Burma), the only species of similar size and coloration known from China, by the broader and more densely punctate pronotum, the denser punctation of the head, the much darker legs (*Z. kambaitiensis*: legs pale-yellowish), and by the more slender median lobe of the aedeagus with a straight (lateral view) and relatively longer ventral process.

The type material was erroneously reported from Taiwan as *Z. wei* by PACE (2010a).

#### Distribution and natural history

The known distribution is confined to two localities in Taiwan (Fig. 301). The specimens were collected at altitudes of 2450 and 2850 m.

### *Zyras (Zyras) rufoterminalis* n. sp. (Figs. 16, 61, 118, 186–187, 301)

*Zyras songanus*: PACE (2012a); misidentification.

#### Type material

**H o l o t y p e** ♂: “China: W-Hubei daba [sic] Shan pass E of Mt. Da Shennongjia 12 km / NW Muyuping 31°30'N, 110°21'E 1950 m, A SMETANA [C117] / *Zyras songanus* Pace, det. R. PACE 2005 / Holotypus ♂ *Zyras rufoterminalis* sp. n. det. V. ASSING 2014” (cAss).

**P a r a t y p e s**: 2 ♂♂, 3 ♀♀: “China – NW Sichuan, 20 km NW Maowen, 2150 m, Jiuding Shan, coniferous wood, 7–28.VI.2004, leg. R. FABBRI” (cSch, cAss); 1 ♀: “China – NW Sichuan, between Shangliusuo–Luhua, 5 km E of Luhua, 2400 m, shrubs, 7–28.VI.2004, leg. R. FABBRI” (cSch); 1 ♂: “China (W-Hubei) Daba Shan, pass E Mt. Da Shennongjia, 12 km NW Muyuping 31°30'N, 110°21'E, 1950 m (dry creek vall., mix. decid. forest), 16.–22.VII.2001 WRASE [13]” (cAss).

#### Etymology

The specific epithet is composed of the Latin adjectives *rufus* (red) and *terminalis* (terminal). It alludes to the conspicuously reddish apex of the abdomen.

#### Description

Large species; body length 8.0–10.0 mm; length of forebody 4.0–4.6 mm. Coloration: head and pronotum (Fig. 61) blackish-brown to blackish; elytra yellowish, with the postero-lateral portions extensively triangularly blackish; abdomen (Fig. 118) blackish, with the posterior margins of segments III–VI and all of segments VII–X bright-reddish; legs yellowish; antennae (Fig. 16) blackish-brown, with antennomeres I–II sometimes indistinctly paler and with antennomere XI dark-reddish.

Head (Fig. 61) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions rather sparse; interstices on average broader than diameter of punctures. Eyes as long as, or slightly longer than postocular region in dorsal view. Antenna (Fig. 16) very long (3.2–3.4 mm), slender, and moderately massive; antennomeres IV–VI weakly transverse to weakly oblong, VII–X as long as broad to weakly transverse, and XI usually shorter than, more rarely as long as the combined length of IX and X.

Pronotum (Fig. 61) approximately 1.15 times as broad as long and 1.34–1.38 times as broad as head, rather weakly convex in cross-section; punctation moderately dense; interstices on average as broad as, or slightly narrower than diameter of punctures; midline narrowly impunctate; lateral margins and antero-lateral portion with some long black setae.

Elytra (Fig. 61) approximately 0.85 times as long as pronotum; punctation defined, coarser and distinctly denser than that of pronotum, interstices on average narrower than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV, or nearly so.

Abdomen (Fig. 118) slightly narrower than elytra and with shallow anterior impressions on tergites III–V; posterior margins of tergites III–VI each with a row of rather dense setiferous punctures bearing long yellowish setae; remainder of surfaces of tergites III–VI, including anterior portions, with few scattered punctures, occasionally nearly impunctate; tergite VII with moderately dense punctation in anterior fourth and very scattered punctures in posterior three-fourths; tergite VIII with some setiferous punctures bearing long black setae in posterior portion; integument without microsculpture and very glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII concave in the middle.

♂: posterior concavity of tergite VIII delimited by a more or less pronounced tooth-like process on either side; sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus approximately 1.1 mm long and shaped as in Figs. 186–187.

♀: posterior margin of tergite VIII not dentate on either side of median concavity; posterior margin of sternite VIII weakly concave in the middle.

#### Comparative notes and comment

This distinctive species is characterized by its conspicuous coloration (of the *shaanxiensis* type, but with reddish abdominal apex), large body size, very long antennae (longer than in any of the other species recorded from China), the very sparse punctation of the abdomen, and by the morphology of the aedeagus.

Remarkably, the holotype had been identified as *Z. songanus* Pace, 1993, a species known only from Beijing, by R. PACE. This species, however, is much smaller (5.6–6.3 mm), of different coloration, and much more densely punctate on the abdomen.

#### Distribution and natural history

The species was discovered in three localities in north-western Sichuan and western Hubei (Fig. 301). The specimens were collected in a coniferous forest, in a shrub habitat, and in a mixed deciduous forest at altitudes of 1900–2400 m.

*Zyras (Zyras) birmanus* Scheerpeltz, 1965  
(Figs. 17, 64, 124, 188–189, 303)

*Zyras (Zyras) birmanus* SCHEERPELTZ, 1965: 350 f.

*Zyras (Zyras) pseudobirmanus* SCHEERPELTZ, 1965: 351 f.; **n. syn.**

#### Type material examined

*Z. birmanus*: Paratypes: 1 ♀: “♀ / N.E. Burma, Kambaiti, 2000 m, 14/5.1934, MALAISE / Schwedische Indien-Burma Expedition 1934 / ex coll. SCHEERPELTZ / Allotypus / Typus *Zyras birmanus* O. Scheerpeltz / *birmanus* Schp. / *Zyras birmanus* Scheerpeltz, det. V. ASSING 2015” (NHMW); 3 exs.: same data, but “7–9/6.1934 ... Cotypus *Zyras birmanus* O. Scheerpeltz”

(NHMW); 1 ex.: same data, but “12/5 1934, 7000 ft.” (NHMW); 1 ex.: same data, but “25–27/4 1934” (NHMW).

*Z. pseudobirmanus*: Holotype ♀: “N.E. Burma, Kambaiti 7000 ft., 12/5 1934, R. MALAISE / Holotypus / Typus *Zyras pseudobirmanus* O. Scheerpeltz / *Zyras (Zyras) pseudobirmanus* n. sp., det. SCHEERPELTZ 1941 / 3812, E91 + / NHRS-JLKB 000023267 / *Zyras birmanus* Scheerpeltz, det. V. ASSING 2015” (SMNH).

#### Additional material examined

China: Yunnan: 3 ♂♂, 3 ♀♀, Dali Bai Aut. Pref., Zhemo Shan, 7 km SW Xiaguan, 25°32–33'N, 100°10–11'E, 2870–2970 m, shrubs with bamboo, oak, and rhododendron, litter sifted, 18.IX.2009, leg. SCHÜLKE & WRASE (cSch, cAss); 1 ♂, 2 ♀♀, 1 ex., Dali Bai Aut. Pref., Jizu Shan, summit plateau, 37 km NE Dali, 25°59'N, 100°22'E, 3150, mixed forest, litter and moss sifted, 5.IX.2009, leg. SCHÜLKE & WRASE (cSch, cAss); 1 ♂, Dali Bai Aut. Pref., Jizu Shan, path to cable car, 37 km NE Dali, 25°58'N, 100°23'E, 2450 m, mixed forest, sifted from litter, moss and pine apples, 5.IX.2009, leg. SCHÜLKE (cSch); 1 ♀, Dali Bai Aut. Pref., mountain range E Weishan, 12 km NE Weishan, 25°17'N, 100°22'E, 2630–2660 m, shrubs with pine and bamboo, litter sifted, 15.IX.2009, leg. WRASE (cAss); 1 ♂, 2 ♀♀, Dali Bai Aut. Pref., Diancang Shan W Dali, 25°42'N, 100°06'E, 2970 m, sifted at rock edges and under small shrubs, 28.V.2007, leg. SCHÜLKE (cSch, cAss); 1 ♂, Dali Bai Aut. Pref., Diancang Shan, 3 km W Dali old town, pine forest at “Cloud Road”, right upper chairlift station, 25°41'N, 100°07'E, 2750 m, vinegar trap, 17–23.VI.2005, leg. WRASE (cSch); 1 ♂, 1 ♀, 1 ex., Lijiang Naxi Aut. Co., E Yulongxue Shan, 30 km N Lijiang, 27°09'N, 100°15'E, 2800–2900 m, creek valley, secondary mixed forest, 13.VIII.2003, leg. SCHÜLKE (cSch, cAss); 1 ♀, same data, but leg. SMETANA [labelled “*Zyras songanus* Pace, det. R. PACE 2005”] (cSme); 1 ♂, 1 ♀, Baoshan Pref., Gaoligong Shan, near Xiaoheshan N.R., 35 m SE Tengchong, 24°50'N, 98°46'E, 2110 m, primary deciduous forest, litter sifted, 30.V. and 4.VI.2007, leg. WRASE (cSch, cAss); 1 ♀, Baoshan Pref., 10 km SE Kambaiti pass, 45 km NW Tengchong, 25°21'N, 98°14'E, 1700–1800 m, primary forest, litter and mushrooms sifted, 29.VIII.2009, leg. SCHÜLKE (cSch); 1 ♂, Baoshan Pref., Gaoligong Shan, 33 km SE Tengchong, 24°51'N, 98°46'E, 2150 m, degraded primary deciduous forest, litter, wood, mushrooms sifted, leg. SCHÜLKE (cSch).

#### Comment

The type localities of *Z. birmanus* and *Z. pseudobirmanus* are identical (“N.E. Burma, Kambaiti”). The original description of the former is based on 16 specimens, that of the latter on a single female holotype (SCHEERPELTZ 1965). According to the original description of *Z. pseudobirmanus*, this species is distinguished from *Z. birmanus* by slight differences in coloration, proportions, and punctation. A comparison of the holotype with the type material of *Z. birmanus* and with the additional material listed above, however, yielded no evidence whatsoever that it should represent a distinct species. All the distinguishing characters indicated by SCHEERPELTZ (1965) are well within the range of intraspecific variation of *Z. birmanus*. Both *Z. birmanus* and *Z. pseudobirmanus* were described in the same article; the former is designated as the senior name.

One of the females listed as additional material above had been identified by PACE as *Z. songanus*.

## Redescription

Body length 6.5–8.0 mm; length of forebody 2.8–3.2 mm. Coloration: head and pronotum black; elytra dark-yellowish, with the postero-lateral portions extensively black (Fig. 64); abdomen (Fig. 124) blackish, with the posterior margins of tergites III–VIII and the paratergites bright reddish-yellow and paratergites V–VI weakly infusate in the middle; legs and maxillary palpi dark-yellowish; antennae (Fig. 17) blackish-brown, with the basal 2–3 antennomeres and antennomere XI reddish.

Head (Fig. 64) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions sparse; interstices on average distinctly broader than diameter of punctures. Eyes longer than postocular region in dorsal view. Antenna (Fig. 17) 2.4–2.5 mm long and moderately massive; antennomere IV as long as broad or even oblong; V–X gradually and weakly increasing in width; X rather weakly transverse; XI distinctly shorter than the combined length of IX and X.

Pronotum (Fig. 64) usually 1.14–1.18 times as broad as long and 1.30–1.35 times as broad as head; punctation similar to that of head; interstices on average distinctly broader than diameter of punctures; midline narrowly impunctate; lateral margins with few long setae.

Elytra (Fig. 64) 0.80–0.83 times as long as pronotum; punctation denser and coarser than that of pronotum, but interstices still broader than diameter of punctures. Hind wings fully developed. Metatarsomere I as long as, or longer than the combined length of II–IV.

Abdomen (Fig. 124) 0.90–0.96 times as broad as elytra, with rather shallow anterior impressions on tergites III–V, and with conspicuously sparse non-setiferous punctation; anterior impressions of tergites III–V impunctate or with few fine punctures, discs of these tergites practically impunctate aside from few scattered punctures laterally and a row of sparse setiferous punctures bearing long dark setae at posterior margins; posterior margin of tergite III impunctate; tergite VI anteriorly with few fine non-setiferous punctures, with a row of sparse setiferous punctures at posterior margin, and with or without a pair of setiferous punctures on disc; tergite VII anteriorly with a transverse band of moderately dense fine non-setiferous punctures, a row of sparse setiferous punctures at posterior margin, and with scattered punctures on disc; tergite VIII with sparse punctation anteriorly and posteriorly; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin truncate to weakly convex in the middle; median lobe of aedeagus 0.80–0.87 mm long and shaped as in Figs. 188–189.

♀: posterior margin of tergite VIII weakly concave in the middle.

## Intraspecific variation

Aside from the usual variability of body size, this species is subject to some variation of antennal morphology, the coloration of the antennae (antennomere III reddish or infusate), the coloration of the abdominal tergite VIII (completely reddish to blackish with reddish margins), and even the shape of the pronotum. In one female from the Yulongxue Shan the pronotum is distinctly larger than in the other specimens examined. Moreover, the apex of the ventral process of the aedeagus is somewhat stouter in the type material than in the additional material from Yunnan.

## Comparative notes

Among the species with a similar coloration pattern and of similar size, *Z. birmanus* is characterized by the relatively sparse punctation of the forebody, the conspicuously sparsely punctate, partly impunctate abdomen, as well as by the morphology of the aedeagus.

## Distribution and natural history

Originally described from northeastern Burma, *Z. birmanus* is also widespread and evidently rather common in western Yunnan (Fig. 303). It was collected in various kinds of forest and shrubland habitats, mostly by sifting litter and moss, at altitudes between approximately 1750 and 3150 m. One specimen was collected with a vinegar trap.

*Zyras (Zyras) shaanxiensis* Pace, 1998  
(Figs. 18, 65, 125, 190–192, 302)

*Zyras (Zyras) shaanxiensis* PACE, 1998: 971.

## Type material examined

Holotype ♂: “China – Shaanxi, Nanwutai, 17-IX-95, ROUGEMONT / Holotypus *Zyras shaanxiensis* m., det. R. PACE 1996 / *Zyras shaanxiensis* sp. n., det. R. PACE 1996 / *Zyras shaanxiensis* Pace, det. V. ASSING 2015” (MHNG).

## Additional material examined

China: Shaanxi: 1 ex., Daba Shan, 22 km NW Zhenping, SE pass, 32°00'N, 109°21'E, 1930 m, 11.VII.2001, leg. SCHÜLKE (cSch); 1 ex., Daba Shan, 20 km NW Zhenping, creek valley SE pass, 31°59'N, 109°22'E, 1680 m, 11.VII.2001, leg. SCHÜLKE (cSch); 1 ex., Daba Shan, Ten'ja village, 31°55'N, 109°05'E, 2200–2600 m, 18.–27.VI.2004, leg. PLUTENKO (cSch); 1 ex., Qinling Shan, pass on road Zhouzhi–Foping, 33°46'N, 107°58'E, 1700 m, stream valley, mixed deciduous forest, moss sifted, 3.VII.2001, leg. SCHÜLKE (cAss); 1 ex., same data, but 1700–1990 m, 2.–4.VII.2001, leg. WRASE (cSch); 1 ex., 118 km E Xian, Qinling Shan, Hua Shan, 34°27'N, 110°06'E, 1200–1400 m, deciduous forest, 18.–20.VIII.1995, leg. WRASE (cSch). – Gansu: 10 exs., N Chengxian, W-Qinling Shan, 34°08'N, 105°47'E, 1760 m, N-slope, secondary deciduous forest margin, sifted, 28.VII.2012, leg. ASSING & SCHÜLKE (cAss, cSch); 12 exs., N Chengxian, W-Qinling Shan, 34°10'N, 105°43'E, 1850 m, mixed



secondary forest margin, litter sifted, 29.VII.2012, leg. ASSING, SCHÜLKE & WRASE (cAss, cSch); 14 exs., N Chengxian, W-Qinling Shan, 34°10'N, 105°42'E, 1830 m, stream valley with secondary deciduous forest, moist litter sifted, 29.VII.2012, leg. ASSING, SCHÜLKE & WRASE (cAss, cSch); 5 exs., mountains SE Longnan, 33°11'N, 105°14'E, 2030 m, N-slope with scree, moss, fern roots, and moist litter sifted, 31.VII.2012, leg. ASSING & SCHÜLKE (cAss, cSch); 4 exs., mountains SE Longnan, 33°11'N, 105°14'E, 2060 m, N-slope with scree, shrub litter and moss sifted, 7.VIII.2012, leg. ASSING & WRASE (cAss, cSch); 1 ex., W-Qinling Shan, NW Longnan, 34°03'N, 104°10'E, 2200 m, SW-slope with shrubs, litter sifted, 1.VIII.2012, leg. WRASE (cSch); 1 ex., W-Qinling Shan, NW Longnan, Lazikou pass, S-side, Laolong valley, 34°08'N, 103°52'E, 2300 m, S-slope with pine and spruce forest, litter sifted, 3.VIII.2012, leg. WRASE (cSch); 1 ex., S Longnan, Min Shan, 33°03'N, 104°41'E, 2200 m, secondary pine forest with hazelnut, moist litter and roots sifted, 6.VIII.2012, leg. ASSING (cAss); 1 ex., Min Shan, 60 km NW Wudu, 10.–20.VI.2005, leg. PATRIKEEV (cSch). – Shaanxi/Hubei/Chongqing: 1 ex., Daba Shan, pass 20 km SSE Zhenping, 31°44'N, 109°35'E, 1700–1800 m, stream valley, young mixed forest, litter and moss sifted, 9.–12.VII.2001, leg. WRASE (cSch). – Sichuan: 4 exs., 20 km NW Maowen, Jiuding Shan, 2150 m, coniferous forest, 7.–28.VI.2004, leg. FABBRI (cSch, cAss); 1 ex., between Shangliusuo and Luhua, 5 km E Luhua, 2400 m, shrubs, 7.–28.VI.2004, leg. FABBRI (cAss). – Yunnan: 1 ♀, mountains W Dongchuan, Sedan Snow Mountain Scenic Resort, 26°06'N, 102°55'E, 2620 m, secondary pine forest, litter, moss, and roots sifted, 14.VIII.2014, leg. SCHÜLKE (cSch); 1 ♀, Dali Bai Aut. Pref., 1 km W Dali old town, stream valley at foothill of Diancang Shan, 25°42'N, 100°08'E, 2170 m, fallow, 28.VIII.–3.IX.2003, leg. WRASE (cAss).

#### Comment

The original description is based on a unique male holotype from “Shaanxi, Nanwutai” deposited in MHNG (PACE 1998).

#### Redescription

Body length 5.6–7.2 mm; length of forebody 2.8–3.4 mm. Coloration: head and pronotum blackish; elytra reddish-yellow with more or less extensively blackish postero-lateral portions (Fig. 65); abdomen (Fig. 125) with reddish-yellow paratergites (often with middle of paratergites V and VII weakly infusate); tergite III uniformly pale-reddish, occasionally brownish in the middle; tergites IV–VIII dark-brown to blackish, with the posterior margins sharply and broadly reddish-yellow; legs yellow; antennae (Fig. 18) dark-brown to blackish-brown with antennomeres I–II, (base of) III, and XI reddish; maxillary palpi yellowish.

Head (Fig. 65) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions moderately coarse and moderately sparse to moderately dense. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 18) 2.2–2.5 mm long and rather massive; antennomere IV approximately as long as broad or weakly transverse; antennomeres V–X weakly transverse and of gradually increasing width; X less than 1.5 times as

broad as long; XI approximately as long as the combined length of IX and X, or nearly so.

Pronotum (Fig. 65) weakly transverse, 1.09–1.13 times as broad as long and usually 1.35–1.40 times as broad as head; punctation moderately coarse, moderately dense, and nearly equally distributed; midline narrowly impunctate.

Elytra (Fig. 65) 0.75–0.80 times as long as pronotum; punctation moderately coarse and dense. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 125) slightly narrower than elytra, with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V usually with sparse, more rarely with denser non-setiferous punctures; tergite III with a median pair of punctures at or near posterior margin, with a lateral puncture on either side, and with scattered very fine punctures at posterior margin; tergite IV with a pair of median punctures, with a lateral puncture on either side, and with 8–10 punctures at posterior margin; tergite V with a pair of median punctures, with one, sometimes several lateral punctures on either side, and with approximately 10 punctures at posterior margin; tergite VI with a transverse row of non-setiferous punctures near anterior margin, with a transverse row of usually six punctures in posterior half, and with approximately 10 punctures at posterior margin; tergite VII with moderately dense non-setiferous punctures in anterior portion and with moderately dense setiferous punctures usually not arranged in distinct transverse series in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with shallow concavity in the middle.

♂: sternite VIII longer than tergite VIII, its posterior margin nearly truncate in the middle; median lobe of aedeagus approximately 0.8–0.9 mm long and shaped as in Figs. 190–192; apical lobe of paramere rather long and slender.

♀: posterior margin of tergite VIII broadly and shallowly concave in the middle.

#### Intraspecific variation

The female from the Diancang Shan in Yunnan differs from other specimens examined by darker coloration (elytra more extensively blackish, yellowish only near anterior margins and in humeral portion; posterior margins of abdominal tergites III–VIII more narrowly and more darkly reddish; maxillary palpi brown with yellowish terminal palpomere), but otherwise no evidence was found suggesting that it should represent a different species.

#### Comparative notes

Among the consubgenera of similar size and coloration known from China, *Zyras shaanxiensis* is characterized

particularly by the moderately massive antennae, the large (in relation to head) but rather weakly transverse pronotum, the punctuation pattern of the abdomen, the shape of the median lobe of the aedeagus, and the relatively long apical lobe of the paramere.

#### Distribution and natural history

This species is widespread and apparently common in the Qinling Shan and adjacent mountain ranges (Shaanxi, Gansu) and present also in the Daba Shan, eastwards to the border region between Shaanxi, Hubei, and Chongqing, and in Sichuan (Fig. 302). The above records from Yunnan are based exclusively on females and consequently not absolutely reliable. PACE (2012a) recorded the species from the Emei Shan in Sichuan. The examined specimens were sifted from litter in various forest, shrub, and ruderal habitats at altitudes between 1680 and 2620 m. Two specimens collected in July and August are teneral.

*Zyras (Zyras) wei* Pace, 1993  
(Figs. 19, 66, 126, 193–194, 306)

*Zyras (Zyras) wei* PACE, 1993: 114.

*Zyras (Zyras) qingchengensis* PACE, 2012a: 85; **n. syn.**

#### Type material examined

*Z. wei*: Holotype ♀: “China X.1986, Guizhou: Huaxi, G. DE ROUGEMONT / Holotypus *Zyras wei* m., det. R. PACE 1987 / *Zyras wei* sp. n., det. R. PACE 1987” (cRou).

*Z. qingchengensis*: Holotype ♂: “China, Sichuan, Qingcheng Shan, 65 km NW Chengdu, 103.33 E, 30.53 N, 18.V/3.–4.VI.1997, 8 km W Taiping, 800–1000 m, leg. A. PÜTZ / Holotypus *Zyras qingchengensis* mihi, det. R. PACE 2009 / *Zyras qingchengensis* n. sp., det. R. PACE 2009 / *Zyras wei* Pace, det. V. ASSING 2015” (cPüt). – Paratypes: 2 ♀♀: same data as holotype (cPüt); 1 ♂: “China: Sichuan, Ganzi Pref., Daxue Shan, 101.57 E, 30.02 N, N Kangding, 2600–2700 m, 22./24.V.1997, leg. A. PÜTZ / Paratypus *Zyras qingchengensis* mihi, det. R. PACE 2009 / *Zyras qingchengensis* n. sp., det. R. PACE 2009 / *Zyras* sp. prope *athetoides*, det. V. ASSING 2015” (cPüt).

#### Additional material examined

China: 1 ♂, Fujian, Wuyi Shan Nat. Res., Sangang env., 900 m, 30.V.–12.VI.2001, leg. HLAVÁČ & COOTER (cAss); 1 ♀, Zhejiang, Tianmu Shan, pass 25 km NNW Linan, 30°26'N, 119°36'E, 620–820 m, stream valley with mixed forest and bamboo, litter sifted, 16.VI.2007, leg. WRASE (cSch); 1 ♂, Sichuan, Wenjiang Distr., Dujiangyan Co., 56 km NW Chengdu, Qingcheng Shan, 30°54'N, 103°33'E, 975 m, 18.VI.1999, leg. SCHÜLKE (cAss).

#### Comment

The original description of *Z. wei* is based on a single female from “Guizhou, Huaxi” (PACE 1993), that of *Z. qingchengensis* on five specimens collected in the Qingcheng Shan and near Kangding in Sichuan (PACE 2012a). An examination of the type material of both

names revealed that the type series of *Z. qingchengensis* is undoubtedly composed of two species, but yielded no evidence whatsoever that the holotype and the paratypes of *Z. qingchengensis* from the Qingcheng Shan, the holotype of *Z. wei*, and the additional material listed above should represent different species. Consequently, *Z. qingchengensis* is placed in synonymy with the senior name *Z. wei*. The examined paratype from the region to the north of Kangding, evidently a nanistic specimen, is distinguished from *Z. wei* by numerous characters, particularly the different punctuation, the much sparser punctuation of the forebody and the abdomen, and the different morphology of the antennae. Among the described *Zyras* species known from China, it is most similar to *Z. athetoides*.

#### Redescription

Body length 6.2–7.5 mm; length of forebody 2.5–2.9 mm. Coloration: head and pronotum blackish-brown; elytra with yellow posterior margin, otherwise variable: blackish brown with humeral portion extensively reddish, or yellowish-red with lateral spot and scutellar region more or less extensively infusate (Fig. 66); abdomen (Fig. 126) blackish brown, with the paratergites and the posterior margins of the segments yellowish-red to red; legs yellowish; antennae (Fig. 19) dark-reddish to blackish-brown, with antennomeres I–II and base of III yellowish-red to red, and with apex of XI reddish-brown to brown.

Head (Fig. 66) distinctly transverse, narrowly to broadly impunctate along middle; punctuation in lateral dorsal portions moderately dense; interstices on average approximately as broad as punctures. Eyes noticeably longer than postocular region in dorsal view. Antenna (Fig. 19) 2.0–2.3 mm long and moderately massive; antennomeres IV–V as long as broad or weakly transverse; V–X gradually increasing in width; X weakly transverse; XI as long as, or slightly shorter than the combined length of IX and X.

Pronotum (Fig. 66) 1.15–1.20 times as broad as long and 1.33–1.40 times as broad as head; punctuation dense and very defined; midline narrowly impunctate; lateral margins with few long black setae.

Elytra (Fig. 66) approximately 0.75–0.80 times as long as pronotum; punctuation coarse and dense; interstices distinctly narrower than diameter of punctures. Hind wings fully developed. Metatarsomere I as long as, or slightly longer than the combined length of II–IV.

Abdomen (Fig. 126) slightly narrower than elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with distinct and dense non-setiferous punctuation; posterior margins of tergites III–VI each with a row of setiferous punctures; discs of tergites III–VIII with sparse irregular punctuation usually not arranged in distinct transverse rows (rarely, irregular transverse

series may be present on tergites VI–VII); tergite VIII with rather dense punctation in posterior portion, fine and sparse punctation in antero-lateral portions, and impunctate in antero-median portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII truncate or weakly concave in the middle; sternite VIII somewhat longer than tergite VIII and convex posteriorly; median lobe of aedeagus 0.72–0.80 mm long and shaped as in Figs. 193–194.

♀: posterior margin of tergite VIII truncate in the middle; posterior margin of sternite VIII weakly concave in the middle.

#### Comparative notes and comment

Among the species with a similar coloration pattern and of similar size, *Z. wei* is characterized by the dense, defined, and rather coarse punctation of the forebody (especially of the elytra), the punctation pattern of the abdomen (especially the usually irregular punctation on tergites III–VII), by the posteriorly truncate tergite VIII, and by the morphology of the aedeagus.

#### Distribution and natural history

Confirmed records are known only from the type locality in Guizhou, the Tianmu Shan in Zhejiang, the Wuyi Shan in Fujian, and the Qingcheng Shan in Sichuan, China (Fig. 306). PACE (2010a, 2012a) reported the species also from several other localities in Hubei, Shaanxi, Sichuan, Yunnan, and Taiwan. However, an examination of additional material identified by R. PACE as *Z. wei* revealed that it was composed of at least five [sic] different species and in fact not a single specimen was conspecific with the holotype of *Z. wei*, suggesting that most likely all other previous records from various localities in China and Taiwan (PACE 2010a, 2012a) are based on misidentifications.

*Zyras (Zyras) firmicornis* n. sp.  
(Figs. 20, 67, 127, 195–196, 301)

#### Type material

Holotype ♂: “China: Fujian prov., Wuyi Shan Nat. Res., Sangan env. (900 m), 30.V.–12.VI.2001, HLAVÁČ & COOTER lgt. / Holotypus ♂ *Zyras firmicornis* sp. n. det. V. ASSING 2014” (cAss).

#### Etymology

The specific epithet (Latin, adjective) alludes to the massive antennae, one of the characters distinguishing this species from the similar syntopic *Z. wei*.

#### Description

Body length 6.7 mm; length of forebody 2.9 mm. Coloration: head and pronotum blackish-brown; elytra yellowish, with a relatively small dark spot in postero-lateral

angles (Fig. 67); abdomen (Fig. 127) blackish-brown with the posterior margins of the segments and the paratergites (except for the middle of paratergites VI and VII) dark-yellowish; legs and maxillary palpi yellowish; antennae (Fig. 20) blackish-brown with antennomeres I–II pale-red-dish and XI slightly paler than X.

Head (Fig. 67) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions moderately dense; interstices on average approximately as broad as diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 20) approximately 2.2 mm long and massive; antennomere IV distinctly transverse; V–X gradually increasing in width; X moderately transverse, slightly less than 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 67) large, 1.22 times as broad as long and 1.37 times as broad as head; punctation moderately dense; interstices on average slightly broader than diameter of punctures; midline narrowly impunctate; lateral margins with few long black setae.

Elytra (Fig. 67) 0.76 times as long as pronotum; punctation similar to that of pronotum. Hind wings fully developed. Metatarsomere I as long as the combined length of II–IV.

Abdomen (Fig. 127) nearly as broad as elytra, with shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with fine and moderately sparse non-setiferous punctation; posterior margins of tergites III–VI each with row of sparse setiferous punctures bearing long setae, posterior margin of tergite VII with numerous punctures bearing short setae; disc of tergite III with transverse row of 4 setiferous punctures; discs of tergites IV–V each with 6 setiferous punctures; disc of tergite VI with transverse series of approximately 8 setiferous punctures; tergite VII anteriorly with rather numerous oblong non-setiferous punctures, in posterior half with numerous setiferous punctures arranged in three irregular transverse rows; tergite VIII with sparse setiferous punctures in posterior fourth, and with few scattered punctures in anterior three-fourths; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII truncate in the middle; sternite VIII somewhat longer than tergite VIII and strongly convex posteriorly; median lobe of aedeagus approximately 0.9 mm long and shaped as in Figs. 195–196.

♀: unknown.

#### Comparative notes

*Zyras firmicornis* is distinguished from the similar and syntopic *Z. wei* by the more massive antennae, the different punctation pattern of the abdomen, and by the distinctly larger and differently shaped median lobe of the aedeagus.



### Distribution and natural history

The type locality is situated in the Wuyi Shan, Fujian province (Fig. 301), at an altitude of 900 m.

*Zyras (Zyras) subobsoletus* n. sp.  
(Figs. 21, 73, 129, 197–198, 301)

### Type material

**Holotype** ♂: “China S.Sichuan (Ya’an Pref., Shimian Co.), Xiaoxiang Ling, side-valley above Nanya Cun nr. Caluo, 11 km S Shimian, ca. 1250 m, 12.VII.1999 D. W. WRASE / Holotypus ♂ *Zyras subobsoletus* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 2 ♀♀: “China: S-Sichuan 1999, Ya’an Prefecture, Shimian Co., Xiaoxiang Ling, Pass zw. Shimian u. Ganluo, 27 km SE Shimian, 29°03’N, 102°31’E, 2450 m, Quellsumpf, Bachufer, 8.VII., leg. M. SCHÜLKE” (cSch).

### Etymology

The specific epithet (Latin, adjective) alludes to the almost obsolete black markings of the elytra.

### Description

Body length 6.5–7.0 mm; length of forebody 2.7–3.0 mm. Coloration: head and pronotum black; elytra yellowish, with more or less reduced dark spots in or near postero-lateral angles (Fig. 73) (in holotype reduced to small, diffuse, and indistinct spot at lateral margin); abdomen (Fig. 129) blackish-brown to black, with the posterior margins of the segments reddish; legs yellowish; antennae (Fig. 21) dark-brown with antennomeres I–II and XI reddish to brown.

Head (Fig. 73) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions moderately sparse; interstices on average broader than punctures. Eyes noticeably longer than postocular region in dorsal view. Antenna (Fig. 21) 2.2–2.4 mm long and moderately massive; antennomeres IV–X weakly transverse, gradually and weakly increasing in width; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 73) approximately 1.16–1.22 times as broad as long and 1.3 times as broad as head; punctation rather sparse and fine; interstices on average broader than diameter of punctures; midline narrowly impunctate; lateral margins with few long thin brownish setae.

Elytra (Fig. 73) 0.75–0.80 times as long as pronotum; punctation similar to that of pronotum. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 129) broad, nearly as broad as elytra, with shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with fine and moderately dense to sparse non-setiferous punctation; posterior margins of tergites III–VII each with a row of setiferous punctures; discs of tergites III–IV sparsely punctate to nearly impunctate,

with or without an additional pair of coarser punctures; discs of tergites V–VI with a more or less distinct transverse row of setiferous punctures posteriorly and with scattered additional fine punctures; tergite VII in posterior half with sparse punctation occasionally arranged in indistinct transverse series; tergite VIII with moderately dense punctation in posterior third; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with shallow concavity in the middle, without evident sexual dimorphism.

♂: sternite VIII slightly longer than tergite VIII and convex posteriorly; median lobe of aedeagus 0.75 mm long and shaped as in Figs. 197–198.

♀: posterior margin of sternite VIII truncate in the middle.

### Comparative notes

Regarding its coloration (*shaanxiensis* type, but with reduced elytral spots), *Z. subobsoletus* is most similar to *Z. sibiricus* and *Z. firmicornis*. It differs from both particularly by the more slender antennomere III, the punctation pattern of the abdomen, and by the shape of the median lobe of the aedeagus, from *Z. sibiricus* additionally by the sparser punctation of the pronotum and the elytra, as well as by the darker coloration of the pronotum. Regarding antennal morphology, habitus, the punctation pattern of the abdomen, and the shape of the median lobe of the aedeagus, *Z. subobsoletus* is most similar to *Z. wei*, from which it differs by the less dense punctation of the pronotum and the elytra, the less transverse pronotum, and by the morphology of the aedeagus (crista apicalis more oblique; ventral process apically more slender in lateral view and shorter in ventral view). More material would be required to assess whether these differences are constant and indeed an expression of interspecific variation. The possibility that they are within the range of intraspecific variation can, at present, not be ruled out with certainty.

### Distribution and natural history

The known distribution is confined to two localities in the Xiaoxiang Ling, southern Sichuan (Fig. 301). The specimens were collected at 1250 and 2450 m, the two paratypes in a swampy habitat.

*Zyras (Zyras) sibiricus* Bernhauer, 1914  
(Figs. 14, 22, 74, 110, 130, 140, 199–200, 209–210, 304)

*Zyras sibiricus* BERNHAUER, 1914: 68.

### Material examined

China: 2 ♂♂, 1 ♀, Beijing distr., Yan Shan, Dongling Mountains, Xiaolongmen, 1400 m, 15.–16.VI.2001, leg. HLAVÁČ & COOTER (cAss, cHla).

## Comment

The original description is based on “ein einziges Weibchen” from “Ost-Sibirien (Schipka-Gora)” (BERNHAEUER 1914). A high-resolution photograph of this specimen was made available to me by MUNETOSHI MARUYAMA. The redescription below is based on the examined material from China.

## Redescription

Body length 5.7–7.2 mm; length of forebody 2.8–3.1 mm. Coloration: head blackish-brown; pronotum dark-brown; elytra yellowish, with or without a small, weakly defined, and weakly infusate spot in or near postero-lateral angles (Fig. 74); abdomen (Fig. 130) brown with the anterior margins and the broad posterior margins of the segments and the paratergites dark-yellowish; legs yellowish; antennae (Figs. 14, 22) reddish to dark-reddish, with antennomeres I–II and XI paler red.

Head (Figs. 74, 110) distinctly transverse, broadly impunctate along middle; punctuation in lateral dorsal portions moderately dense; interstices on average approximately as broad as punctures. Eyes noticeably longer than postocular region in dorsal view. Antenna (Figs. 14, 22) approximately 2.3 mm long and rather massive; antennomere IV as long as broad or weakly transverse; V–X gradually increasing in width; X rather weakly transverse; XI shorter than the combined length of IX and X.

Pronotum (Figs. 74, 110) approximately 1.18 times as broad as long and 1.3 times as broad as head; punctuation similar to that of head, but slightly coarser on average; midline narrowly impunctate; lateral margins without long setae.

Elytra (Figs. 74, 110) approximately 0.85 times as long as pronotum; punctuation similar to that of pronotum. Hind wings fully developed. Metatarsomere I as long as, or slightly longer than the combined length of II–IV.

Abdomen (Figs. 130, 140) approximately 0.9 times as broad as elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with fine and moderately distinct non-setiferous punctuation; posterior margins of tergites III–VII each with a row of setiferous punctures; discs of tergites III–V each with two irregular transverse rows of punctures; disc of tergite VI with moderately sparse, that of tergite VII with very sparse irregular punctuation; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII weakly concave in the middle; sternite VIII somewhat longer than tergite VIII and convex posteriorly; median lobe of aedeagus (Figs. 199–200, 209–210) 0.67–0.73 mm long and with slender ventral process in lateral view.

♀: posterior margin of tergite VIII weakly concave in the middle; posterior margin of sternite VIII truncate in the middle.

## Intraspecific variation

The specimens from Beijing (Figs. 22, 74, 130, 199–200) differ from material examined from Hokkaido (Figs. 14, 110, 140, 209–210) by slightly finer punctuation of the anterior abdominal tergites, a slightly more convex pronotum (cross-section), and the slightly different shape and orientation of the crista apicalis of the aedeagus. However, these differences are not very pronounced and tentatively interpreted as intraspecific variation.

## Comparative notes

Among the Chinese species with a similar coloration pattern and of similar size, *Z. sibiricus* somewhat resembles *Z. shaanxiensis*, but differs by the absent or indistinctly infusate posterior spots on the elytra, the paler antennomeres IV–X, the punctuation of the abdomen (*Z. shaanxiensis*: anterior impressions of tergites III–V and anterior portion of tergite VI very sparsely punctate; discs of tergites III–VI with very sparse punctures not arranged in transverse rows; tergite VII with denser punctuation), and by the morphology of the median lobe of the aedeagus. *Zyras sibiricus* is also similar to *Z. optatus* (one female from Honshu examined), but distinguished by the less extensive and less distinct postero-lateral spots on the elytra, the slightly longer antennae (*Z. optatus*: 2.1 mm), the less dense non-setiferous punctuation of the anterior impressions of tergites III–V and of the anterior portions of tergites VI–VII, as well as by the more extensive and denser setiferous punctuation of the posterior portions of tergites III–V.

## Distribution and natural history

*Zyras sibiricus* is widespread in the East Palearctic region and had been reported from East Siberia and North Korea (HLAVÁČ et al. 2011, SMETANA 2004). The examined material includes specimens from North Japan (Hokkaido) and one locality in China (Beijing) (Fig. 304). The partly slightly teneral specimens from Beijing were collected at an altitude of 1400 m.

*Zyras (Zyras) bangmaicus* n. sp.  
(Figs. 23, 75, 131, 205–206, 301)

## Type material

**Holotype** ♂: “China: Yunnan, Lincang Pref., Bang-ma Shan, 33 km SSW Lincang, 2150 m, 23°35'41"N, 100°00'27"E, decid. forest remnant, N-slope, litter and dead wood sifted, 11.IX.2000, leg. M. SCHÜLKE [CH09-42] / Holotypus ♂ *Zyras bangmaicus* sp. n. det. V. ASSING 2014” (cAss).

## Etymology

The specific epithet is an adjective derived from the name of the mountain where this species was discovered.

## Description

Body length 7.5 mm; length of forebody 3.1 mm. Coloration: head and pronotum blackish; elytra yellowish, with the posterior two-fifths, except for the yellowish suture, extensively blackish (Fig. 75); abdomen (Fig. 131) reddish, with a transverse median spot on tergite IV and most of the discs of tergites V–VII blackish-brown; legs and maxillary palpi yellowish; antennae (Fig. 23) blackish-brown, with antennomeres I–III yellowish-red and XI dark-reddish.

Head (Fig. 75) distinctly transverse, broadly impunctate along middle in posterior half; punctation in lateral and anterior dorsal portions sparse; interstices distinctly broader than diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 23) 2.5 mm long and not particularly massive, moderately incrassate apically; antennomeres IV–V weakly oblong; VI approximately as long as broad; VII–X gradually increasing in width and increasingly transverse; X approximately 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 75) 1.12 times as broad as long and 1.21 times as broad as head; punctation rather coarse, irregularly spaced, and sparse, particularly in antero-lateral portions of disc; interstices on average broader than diameter of punctures; midline narrowly impunctate; lateral margins without long setae.

Elytra (Fig. 75) rather long, 0.95 times as long as pronotum; punctation rather coarse, defined, and moderately dense; interstices on average slightly broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 131) distinctly narrower than elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portion of tergite VI each with a transverse row of non-setiferous punctures; discs of tergites III–VI nearly impunctate, except for some punctures in lateral portions and a median pair of setiferous punctures on tergite III; posterior margin of tergite III impunctate; posterior margins of tergites IV–VI each with four setiferous punctures bearing long dark setae; tergite VII with some partly granulate setiferous punctures in posterior half of disc and a row of dense fine punctures at posterior margin; tergite VIII with moderately dense setiferous punctures bearing long dark setae in posterior portion, in postero-median portion smoothly elevated; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII concave in the middle, on either side of this concavity dentate; sternite VIII longer than tergite VIII, its posterior margin strongly convex in the middle; median lobe of aedeagus 0.9 mm long and shaped as in Figs. 205–206.

♀: unknown.

## Comparative notes

Among the species with a similar coloration pattern of the forebody, *Z. bangmaicus* is characterized by the coloration of the forebody, the morphology of the antennae, the relatively slender pronotum with sparse and irregularly spaced punctation, the rather long elytra, the punctation pattern of the abdomen, the smoothly elevated postero-median portion of tergite VIII, and by the shape of the median lobe of the aedeagus.

## Distribution and natural history

The type locality is situated in the Bangma Shan in western Yunnan (Fig. 301). The holotype was sifted from leaf litter in a deciduous forest remnant at an altitude of 2150 m.

*Zyras (Zyras) inexcisus* n. sp.  
(Figs. 37, 76, 133, 207–208)

## Type material

**Holotype** ♂: “China: Qinghai Prov. [CH11-9e], Daban Shan, 62 km NNW Honggu, creek valley, *Picea*, *Populus*, *Betula* forest, 36°51'15–28"N, 102°36'34"–37°07"E, 2236–2350 m, creek valley, litter, dead wood & moss sifted, 10.VII.2011, leg. M. SCHÜLKE / Holotypus ♂ *Zyras inexcisus* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 1 ♂: same data as holotype (cSch); 3 exs.: “China Qinghai: [09B] Daban Shan, 62 km NNW Honggu 2240 m, 36°51'28"N, 102°37'07.6"E, creek valley, *Picea-Populus*-, *Betula* forest, pitfall traps, vinegar, 11.–15.VII.2011, D. W. WRASE” (cSch); 2 exs.: “China (Qinghai Prov.), Daban Shan, 62 km NNW Honggu, 36°51'26.8"N, 102°36'50.2"E, 2275 m (creek valley, *Picea-Populus-Betula* forest, litter sifted), 26. & 29.VI.2011 D. W. WRASE [09E]” (cAss); 1 ex.: “China (Qinghai Prov.), Daban Shan, 6 km NW Honggu, 36°49'10.7"N, 102°31'22.8"E, 2366–2400 m (mixed forest: *Betula*, *Populus*, *Picea*, pitfall traps, vinegar), 11.–15.VII.2011 D. W. WRASE [08C]” (cSch); 1 ex.: “China: Qinghai Prov. [CH11-19], road 301 km 180, 43 km ESE Men Yuan, 37°09'32.6"N, 102°02'06.0"E, 2704 m, creek valley with *Picea*, *Salix*, *Populus*, *Betula*, litter and moss sifted, 5.VII.2011, leg. M. SCHÜLKE” (cSch); 1 ♀: “China: Gansu Prov. [CH11-27], Lenglong Ling Mts., 60 km NNW Honggu, Jin Sha Gorge, mixed forest (*Picea*, *Populus*, *Betula*), 36°51'06.9"N, 102°38'55.3"E, litter, moss, mushrooms sifted, 12.VII.2011, leg. M. SCHÜLKE” (cAss); 1 ♂ [teneral]: “Baikal. Trinkun [?], Sajjan. BANG-HAAS / *optatus* Shp., BANG-HAAS. det. BERNH. / Chicago NHMus, M. BERNHAUER Collection” (FMNH); 1 ♂: “*optata* Shp., Baikalsee, ded. REITTER. / Chicago NHMus, M. BERNHAUER Collection” (FMNH); 1 ♀: “Quellgeb. Irkut. LEDER. ded. REITTER / *optatus* Sharp Ostsibirien, determ. BERNH. / Chicago NHMus, M. BERNHAUER Collection” (FMNH); 2 ♀♀: “Rußland: Primorie (S9), Schutzgebiet Sichote-Alin, Kordon Kabaniy [45°05'N, 135°05'E], 7.–13.VII.1998, leg. J. SUNDUKOV” (cSch, cAss).

## Etymology

The specific epithet (Latin, adjective) alludes to the absence of a median concavity of the posterior margin of the male tergite VIII.



### Description

Body length 6.0–7.0 mm; length of forebody 2.7–3.0 mm. Coloration: head and pronotum blackish-brown; elytra dark-yellowish, with the postero-lateral portions extensively blackish-brown (Fig. 76); abdomen (Fig. 133) blackish-brown, with the posterior margins of tergites III–VIII and the paratergites yellowish-brown; legs and maxillary palpi dark-yellowish; antennae (Fig. 37) usually blackish-brown, rarely reddish-brown, with antennomeres I–II and XI paler, reddish to brown.

Head (Fig. 76) distinctly transverse, broadly impunctate along middle in posterior half; punctation in lateral and anterior dorsal portions moderately dense; interstices on average as broad as, or slightly narrower than punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 37) 1.9–2.1 mm long and not particularly massive; antennomere IV distinctly transverse; V–X gradually increasing in width; X approximately 1.5 times as broad as long; XI slightly shorter than the combined length of IX and X.

Pronotum (Fig. 76) 1.08–1.13 times as broad as long and 1.25–1.27 times as broad as head; punctation similar to that of head, but denser; midline very narrowly impunctate; lateral margins with few moderately long setae.

Elytra (Fig. 76) 0.81–0.82 times as long as pronotum; punctation dense, denser and coarser than that of pronotum. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 133) 0.94–0.98 times as broad as elytra, with moderately deep anterior impressions on tergites III–V; non-setiferous punctation of anterior impressions of tergites III–V fine and rather sparse, that of anterior portion of tergite VI moderately sparse to rather dense, and that of anterior portion of tergite VII dense; posterior margins of tergites III–VII each with row of numerous setiferous punctures; discs of tergites III–VIII with moderately dense punctation not arranged in transverse rows; tergite VIII posteriorly rather densely punctate and anteriorly almost impunctate; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII smoothly convex, usually without, rarely with very shallow median concavity.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin truncate to weakly convex in the middle; median lobe of aedeagus 0.72–0.75 mm long and shaped as in Figs. 207–208.

♀: sternite VIII with broadly and weakly convex posterior margin.

### Comparative notes

Among the species with a similar coloration pattern and of similar size, *Z. inexcisus* is characterized by relatively short and not particularly massive antennae with

distinctly transverse antennomeres IV–X, the rather dense punctation of the body (particularly of the elytra), the smoothly convex posterior margin of the male tergite VIII, and by the morphology of the aedeagus. The species is distinguished from *Z. optatus* (Sharp, 1888) from Japan (one female from Honshu examined), with which it had been confounded by BERNHAUER, by the less convex pronotum in cross-section, the darker antennae with more transverse antennomeres IV–X, the distinctly denser punctation of the forebody, and the more extensive and denser punctation of the abdomen. It differs from the sympatric *Z. sibiricus* by the slightly darker and shorter antennae with more transverse antennomeres IV–X, more extensive and more distinct punctation particularly of tergites VI–VIII, and by a relatively shorter, less slender (lateral view), and broader (ventral view) ventral process of the aedeagus. Regarding its antennal morphology, the shape of the pronotum, and the general punctation pattern, *Z. inexcisus* is similar to *Z. hauserianus*, a species described based on one female from the Tian Shan in the extreme northwest of China. For remarks on distinguishing characters see the comment in the section on *Z. hauserianus*. For characters separating *Z. inexcisus* from the similar *Z. illecebrosus* see the section on that species.

### Distribution and natural history

The species is currently known from several localities in the Chinese provinces Qinghai and Gansu, as well as from East Siberia and the Russian Far East. The specimens from China were sifted from leaf litter and moss and collected with pitfall traps baited with vinegar in mixed forests. The altitudes range from approximately 2240 to 2700 m.

### *Zyras (Zyras) granapicalis* n. sp. (Figs. 39, 78, 134, 211–212, 301)

#### Type material

**Holotype** ♂ [somewhat damaged: left elytron, right hindleg, left mid- and hindlegs missing]: “Ch – S Sichuan, 7.VII.1998, 27.38N, 102.48E, 10 km SW Butuo, cultural steppe, JAROSLAV TURNA leg. / Holotypus ♂ *Zyras granapicalis* sp. n. det. V. ASSING 2014” (cAss).

**Paratype** ♀ [hindlegs missing]: “Ch – S Sichuan, 28.–29.VI.1998, 27.45N, 101.13E, pass 20 km S Muli (Bowa), mixed forest, ca 3500 m, JAROSLAV TURNA leg.” (cAss).

#### Etymology

The specific epithet is composed of the Latin noun *granum* and the Latin adjective *apicalis*. It alludes to the granulate punctation of tergite VIII.

### Description

Body length 6.1–7.1 mm; length of forebody 2.8–3.1 mm. Coloration: head and pronotum blackish; elytra yellowish, with the postero-lateral portions sharply and

extensively blackish, black markings not reaching suture (Fig. 78); abdomen (Fig. 134) black, with the posterior margins of segments III–VI narrowly and posterior margin of segment VII slightly more broadly yellowish; legs and maxillary palpi yellowish; antennae (Fig. 39) dark-brown, with antennomeres I–II, base of III, and XI dark-reddish.

Head (Fig. 78) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions very sparse; interstices much broader than diameter of punctures. Eyes distinctly longer than postocular region in dorsal view. Antenna (Fig. 39) 2.1–2.3 mm long and moderately massive; antennomeres IV–X weakly transverse; XI slightly shorter than the combined length of IX and X.

Pronotum (Fig. 78) 1.1–1.2 times as broad as long and 1.28–1.30 times as broad as head; punctation rather fine and sparse; interstices broader than diameter of punctures; midline moderately broadly impunctate.

Elytra (Fig. 78) approximately 0.8 times as long as pronotum; punctation similar to that of pronotum, interstices distinctly broader than diameter of punctures. Hind wings fully developed.

Abdomen (Fig. 134) approximately as broad as elytra, with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portion of tergite VI impunctate; posterior margins of tergites III–VI each with a row rather dense setiferous punctures bearing yellowish setae; discs of tergites III–VI with a median pair of punctures in posterior portion and with very few lateral punctures, otherwise impunctate; tergite VII with few fine punctures anteriorly and with very sparse punctures arranged in irregular transverse rows in posterior portion; tergite VIII with granulose punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII with a distinct concavity in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus nearly 0.9 mm long and shaped as in Figs. 211–212.

♀: tergite VIII similar to that of male, but with less pronounced posterior concavity.

#### Comparative notes

In size, coloration, and punctation, *Z. granapicalis* is most similar to *Z. birmanus* and *Z. lativentris*, from which it is distinguished particularly by the pale setae at the posterior margins of tergites III–VI (dark in *Z. birmanus* and *Z. lativentris*), by the distinctly granulose punctation in the posterior portion of tergite VIII, as well as by the differently shaped aedeagus.

#### Distribution and natural history

The specimens were collected in two localities in southern Sichuan (Fig. 301), one in dry arable land and one in a mixed forest at an altitude of approximately 3500 m.

### *Zyras (Zyras) lativentris* n. sp. (Figs. 40, 79, 135, 213–214, 301)

#### Type material

**H o l o t y p e** ♂ [slightly teneral]: “China: Yunnan, Baoshan Pref., mount. range 25 km S Tengchong, 1900 m, 24°48′21″N, 98°32′05″E, cleft with devast. primary forest, litter & mushr. sifted, 30.VIII.2009, leg. M. SCHÜLKE [CHG09-18] / Holotypus ♂ *Zyras lativentris* sp. n. det. V. ASSING 2014” (cAss).

#### Etymology

The specific epithet (Latin, adjective) alludes to the relatively broad abdomen.

#### Description

Body length 6.1 mm; length of forebody 2.8 mm. Coloration: head and pronotum blackish-brown; elytra yellowish, with the postero-lateral portions extensively blackish (Fig. 79); abdomen (Fig. 135) blackish-brown, with the posterior margins of tergites III–VIII and the paratergites dark-yellowish; legs and maxillary palpi yellowish; antennae (Fig. 40) dark-brown, with antennomeres I–II and base of III reddish-yellow, and XI dark-reddish.

Head (Fig. 79) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions very sparse; interstices much broader than diameter of punctures. Eyes distinctly longer than postocular region in dorsal view. Antenna (Fig. 40) 2.2 mm long and moderately massive; antennomere IV as long as broad; V–X gradually and weakly increasing in width; X rather weakly transverse; XI slightly shorter than the combined length of IX and X.

Pronotum (Fig. 79) large and rather strongly transverse, approximately 1.25 times as broad as long and 1.4 times as broad as head; punctation similar to that of head; interstices much broader than diameter of punctures; midline narrowly impunctate; lateral margins with few long setae.

Elytra (Fig. 79) 0.79 times as long as pronotum; punctation similar to that of pronotum, interstices distinctly broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 135) approximately as broad as elytra, with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V with few scattered non-setiferous punctures; tergites IV–VI with row of moderately numerous setiferous punctures at posterior margin; tergites III–V with a pair of setiferous punctures on disc and laterally with few scattered punctures, otherwise impunctate; tergite VI with a transverse row of 8 setiferous punctures on disc; tergite VII with moderately sparse setiferous punctures not arranged in distinct rows; tergite VIII with moderately dense setiferous punctures posteriorly; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII very weakly concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin weakly convex in the middle; median lobe of aedeagus 0.73 mm long and shaped as in Figs. 213–214.

♀: unknown.

#### Comparative notes

Among the species with a similar coloration pattern and of similar size, *Z. lativentris* is characterized by the sparse punctation of the forebody, the punctation pattern of the abdomen, as well as particularly by the robust habitus (broad pronotum and abdomen) and by the morphology of the aedeagus.

#### Distribution and natural history

The type locality is situated in a mountain range to the south of Tengchong, western Yunnan (Fig. 301). The holotype was sifted from leaf litter in a degraded primary forest at an altitude of 1900 m.

*Zyras (Zyras) caloderoides* n. sp.  
(Figs. 41, 71, 128, 215–216, 302)

#### Type material

**Holotype** ♂: “China [4] – Yunnan, NE Kunming, 25°09′07″N, 102°53′46″E, 2280 m, sec. pine for. with alder 11.VIII.2014, V. ASSING / Holotypus ♂ *Zyras caloderoides* sp. n. det. V. ASSING 2015” (cAss).

**Paratypes**: 1 ♀: same data as holotype (cAss); 1 ♀: same data, but leg. SCHÜLKE (cSch); 1 ♀: “China [2a] – Yunnan, mts NE Dongchuan, 2670 m, 26°14′10″N, 103°12′31″E, bushes, 9.VIII.2014, V. ASSING” (cAss); 1 ♂, 2 ♀♀: “China [9b] – Yunnan, mt. W Xundian, 2300 m mixed for., 25°34′58″N, 103°08′42″E, sifted 16.VIII.2014, V. ASSING” (cAss); 1 ♂, 1 ♀: “China [10] – Yunnan, mt. NW Wuding, mixed forest, 25°36′53″N, 102°18′59″E, 2190 m, 17.VIII.2014, V. ASSING” (cAss); 2 ♀♀: “China: Yunnan, mountain WNW Wuding, 25°38′45″N, 102°06′55″E, 2390 m, mixed forest margin with alder and pine, litter sifted, 1.IX.2014, SCHÜLKE [CH14-12a]” (cSch); 1 ♂: “China: Yunnan, NE Kunming, 25°08′35″N, 102°53′49″E, 2320 m, mixed forest with alder, oak, and pine, litter and mushrooms sifted, 13.VIII.2014, SCHÜLKE [CH14-06]” (cAss).

#### Etymology

The specific epithet (adjective) alludes to the morphology of the antennae, which somewhat resemble those of some species of the genus *Calodera* Mannerheim, 1830.

#### Description

Body length 6.0–7.0 mm; length of forebody 2.6–3.1 mm. Coloration: head and pronotum blackish; elytra yellowish, with the postero-lateral angles extensively blackish (Fig. 71); abdomen (Fig. 128) blackish, with the posterior margins of the segments very narrowly dark-

reddish; legs pale-yellowish; antennae (Fig. 41) blackish, with antennomeres I–II reddish to blackish-brown and XI reddish to reddish-brown; maxillary palpi brown to dark-brown, with the terminal palpomere reddish-yellow.

Head (Fig. 71) distinctly transverse, moderately broadly impunctate along middle; punctation in lateral dorsal portions moderately dense and moderately coarse. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 41) 1.9–2.2 mm long; antennomere IV weakly transverse; antennomeres V–X gradually increasing in width and increasingly transverse; X slightly less than 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 71) distinctly transverse, 1.20–1.24 times as broad as long and approximately 1.3 times as broad as head; punctation moderately coarse and moderately dense, more or less equally distributed; interstices as broad as, or slightly broader than diameter of punctures; midline narrowly impunctate; lateral and anterior margins without conspicuous long setae.

Elytra (Fig. 71) approximately 0.8 times as long as pronotum; punctation rather coarse and dense, somewhat sparser in postero-sutural portion. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 128) as broad as, or slightly narrower than elytra, with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–IV practically impunctate, that of tergite V with scattered fine non-setiferous punctures; disc of tergite III with a median pair of punctures near posterior margin, with a lateral puncture and with a lateral marginal puncture on either side; tergites IV and V with a median pair of punctures, with a lateral puncture on either side, and with six punctures at posterior margin; tergite VI with a transverse band of rather fine non-setiferous punctures near anterior margin, with an irregular transverse row of 6–8 punctures, and with approximately 10 punctures at posterior margin; tergite VII with a transverse band of dense, rather fine non-setiferous punctures anteriorly, with two transverse rows of punctures in posterior portion, and with a variable number of additional sparse punctures posteriorly; tergite VIII in posterior portion with asperate setiferous punctation; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with shallow median concavity.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin strongly convex; median lobe of aedeagus 0.87–0.93 mm long and shaped as in Figs. 215–216.

#### Comparative notes

Among the species with the *Z. shaanxiensis* coloration pattern and of similar size, *Z. caloderoides* is characterized by the combination of rather massive antennae with at



least slightly transverse antennomeres IV–X, equally distributed punctation on the pronotum, rather coarse punctation of the elytra, a blackish abdomen with a distinctive punctation pattern, asperate punctation in the posterior portion of tergite VIII, and a rather large median lobe of the aedeagus with a long ventral process. The species is distinguished from the similar *Z. shaanxiensis* by the shorter and more distinctly incrassate antennae with more transverse antennomeres IV–X, by the sparser punctation of the forebody, and by the more slender apex of the ventral process of the aedeagus.

#### Distribution and natural history

The known distribution is confined to several localities in East Yunnan (Fig. 302). The specimens were sifted from leaf litter in various mixed forests and in bush habitats at altitudes of 2190–2670 m, in one locality together with *Z. gilvipalpis*.

#### *Zyras (Zyras) gilvipalpis* n. sp. (Figs. 7, 72, 122, 217–218, 303)

##### Type material

**Holotype** ♂: “China [6] – Yunnan, NE Kunming, 25°08'35"N, 102°53'49"E, 2320 m, mixed forest, sifted, 13.VIII.2014, V. ASSING / Holotypus ♂ *Zyras gilvipalpis* sp. n. det. V. ASSING 2015” (cAss).

**Paratypes**: 3 ♂♂, 2 ♀♀: “China [11] – Yunnan, Wuding, Lion Mountain, 2200 m, 25°31'59"N, 102°22'36"E, sifted, 17.VIII.2014, V. ASSING” (cAss).

##### Etymology

The specific epithet (adjective) alludes to the yellowish maxillary palpi, one of the characters distinguishing this species from the similar and sympatric *Z. caloderoides*.

##### Description

Rather large species; body length 7.0–8.0 mm; length of forebody 3.2–3.5 mm. Coloration: head and pronotum blackish; elytra reddish-yellow, with the postero-lateral angles extensively blackish (Fig. 72); abdomen (Fig. 122) blackish, with the paratergites and the posterior margins of segments III–VI narrowly, those of segments VII and VIII more broadly reddish; legs and maxillary palpi yellowish; antennae (Fig. 7) dark-brown, with the basal 2–3 antennomeres pale-reddish and antennomere XI reddish to dark-reddish.

Head (Fig. 72) distinctly transverse, usually broadly impunctate along middle; punctation in lateral dorsal portions moderately dense and rather fine. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 7) rather massive and 2.5–2.7 mm long; antennomeres IV–VII as long as broad or weakly oblong, VIII–X very weakly transverse, X much less than 1.5 times as

broad as long, and XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 72) rather large in relation to head, distinctly transverse, 1.15–1.20 times as broad as long, and approximately 1.4 times as broad as head; punctation rather fine and rather dense, more or less equally distributed; interstices on average approximately as broad as diameter of punctures; midline narrowly impunctate; lateral and anterior margins without conspicuous long setae.

Elytra (Fig. 72) 0.75–0.80 times as long as pronotum; punctation dense and not very coarse, slightly sparser in postero-sutural portion. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 122) approximately as broad as elytra or nearly so, with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–IV with sparse and fine non-setiferous punctures, that of tergite V with more numerous fine non-setiferous punctures; disc of tergite III with a lateral puncture on either side and with four punctures at posterior margin; tergite IV with a lateral marginal puncture on either side, with a median pair of punctures, and with usually four punctures at posterior margin; tergite V with a lateral puncture on either side, with a median pair of punctures, and with more numerous punctures at posterior margin; tergite VI with a transverse band of numerous non-setiferous punctures near anterior margin, with a lateral puncture on either side, with a median pair of punctures, and with approximately 10 punctures at posterior margin; tergite VII with a transverse band of dense, rather fine punctures anteriorly and with numerous punctures not arranged in distinct series in posterior portion; tergite VIII in posterior portion with punctation bearing long black setae; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII truncate or weakly concave in the middle.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin strongly convex; median lobe of aedeagus 1.00–1.05 mm long and shaped as in Figs. 217–218.

##### Comparative notes

Among the species with the *Z. shaanxiensis* coloration pattern, *Z. gilvipalpis* is characterized by the combination of rather large body size, long and massive antennae with weakly transverse preapical antennomeres, rather fine punctation on the head and pronotum, equally distributed punctation on the pronotum, dense punctation of the elytra, a blackish abdomen with a distinctive punctation pattern, and a rather large median lobe of the aedeagus. It is distinguished from the similar sympatric and syntopic *Z. caloderoides* by larger body size, much longer antennae with distinctly less transverse preapical antennomeres, a larger pronotum (in relation to the head), finer punctation

of the pronotum, finer and denser punctation of the elytra, the punctation pattern of the abdomen (particularly the more numerous non-setiferous punctures in the anterior impressions of tergites III–V), the simple (non-asperate) punctation on tergite VIII, and by the distinctly larger median lobe of the aedeagus with a relatively shorter and stouter ventral process. This species differs from the similar *Z. shaanxiensis* by the longer antennae with oblong or less transverse antennomeres IV–X and a distinctly longer antennomere XI, the relatively larger and more transverse pronotum, the convex posterior margin of the male sternite VIII, and by the morphology of the median lobe of the aedeagus (on the whole larger; ventral process more slender; crista apicalis of different orientation).

#### Distribution and natural history

*Zyras gilvipalpis* was collected in two localities to the northeast of Kunming and near Wuding, East Yunnan (Fig. 303). The specimens were sifted from leaf litter in a mixed forest with alder, oak, and pine, together with *Z. caloderoides*, and from moist leaf litter in a stream valley with deciduous forest at altitudes of 2320 and 2200 m, respectively.

#### *Zyras (Zyras) dabanicus* n. sp. (Figs. 42, 80, 136, 219–220, 302)

##### Type material

**Holotype** ♂: “China (Qinghai Prov.), Daban Shan, 62 km NNW Honggu, 36°51'26.8"N, 102°36'50.2"E, 2275 m (creek valley, *Picea-Populus-Betula* forest, litter sifted), 26. & 29.VI.2011 D. W. WRASE [09E] / Holotypus ♂ *Zyras dabanicus* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 2 ♂♂ [slightly teneral]: same data as holotype (cSch, cAss); 1 ♀: “China: Qinghai Prov. [CH11-08b], Daban Shan, 60 km NW Honggu, 36°49'10.7"N, 102°31'22.8"E, 2366–2400 m, mixed forest (*Betula*, *Populus*, *Picea*) mushrooms sifted, 11.VII.2011, leg. M. SCHÜLKE” (cSch).

##### Etymology

The specific epithet (adjective) is derived from the name of the mountain range where the species was discovered.

##### Description

Relatively small species; body length 5.4–6.0 mm; length of forebody 2.4–2.5 mm. Coloration: head and pronotum blackish; elytra with the anterior half yellowish and the posterior half, except for the yellowish suture, blackish (Fig. 80); abdomen (Fig. 136) blackish-brown to blackish, with the anterior and the posterior margins of the segments yellowish; legs and maxillary palpi yellowish; antennae (Fig. 42) dark-brown, with antennomeres I–III and XI pale-reddish.

Head (Fig. 80) moderately transverse, broadly impunctate along middle; punctation in lateral dorsal portions

sparse; interstices broader than diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 42) rather short and distinctly incrassate apically, 1.5–1.7 mm long; antennomeres IV–X all distinctly transverse, gradually and distinctly increasing in width; X more than 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 80) moderately transverse, 1.10–1.15 times as broad as long and approximately 1.3 times as broad as head; punctation relatively fine and moderately sparse; interstices broader than diameter of punctures; midline narrowly impunctate; lateral and anterior margins without long setae.

Elytra (Fig. 80) approximately 0.85 times as long as pronotum; punctation rather fine and moderately sparse, interstices on average slightly to distinctly broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 136) approximately 0.9 times as broad as elytra, with rather shallow anterior impressions on tergites III–V; tergites III–VI, including anterior portions, with moderately sparse and irregular fine punctation, each with a row of dense punctures bearing short yellowish setae at posterior margin; tergite VII with rather dense punctation near anterior margin and moderately sparse punctation on remainder of disc; tergite VIII with moderately sparse to rather dense punctation in posterior half; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII without sexual dimorphism, with or without shallow median concavity in both sexes.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus rather small, approximately 0.65 mm long; ventral process with long apical portion in lateral view (Figs. 119–120).

##### Comparative notes

Among the species with the *Z. shaanxiensis* coloration pattern and of similar size, *Z. dabanicus* is characterized by the short and apically strongly incrassate antennae with distinctly transverse antennomeres IV–X, the relatively sparse and fine punctation of the forebody, the moderately transverse pronotum, the punctation pattern of the pronotum, as well as by the morphology of the aedeagus. The species additionally differs from the similarly coloured *Z. shaanxiensis* by smaller body size and the posteriorly more extensively blackish elytra (*Z. shaanxiensis*: posterior blackish spots usually not reaching suture and of more triangular shape). It is distinguished from *Z. hauserianus* by the distinctly less transverse and more convex (cross-section) pronotum, and the much sparser punctation of the abdomen (especially of tergites VI and VII).

### Distribution and natural history

The species is known from two localities in the Daban Shan, Qinghai province (Fig. 302). The specimens were sifted from leaf litter and mushrooms in mixed forests at altitudes of 2275–2400 m.

*Zyras (Zyras) notaticornis* Pace, 1998  
(Figs. 24, 81, 137, 225–226, 302)

*Zyras (Zyras) notaticornis* PACE, 1998: 971.

### Type material examined

Holotype ♂: “KARC [= Kadoori Agricultural Research Centre] F.I.T., 19–31.V.96 / Holotypus *Zyras notaticornis* m., det. R. PACE 1996 / *Zyras notaticornis* sp. n., det. R. PACE 1996 / *Zyras notaticornis* Pace, det. V. ASSING 2015” (MHNG). – Paratype ♀ [heavily damaged; elytra and parts of antennae missing]: “Hong Kong, KARC [= Kadoori Agricultural Research Centre] 31.V.1996, G. DE ROUGEMONT / Flight interception trap / Paratypus *Zyras notaticornis* m., det. R. PACE 1996 / *Zyras notaticornis* Pace, det. V. ASSING 2015” (cRou).

### Additional material examined

China: 1 ♂, Guangxi A.R., Longsheng Hot Spring, 25°53.6'N, 110°12.4'E, 360 m, forested river valley, 11.–14.IV.2013, leg. FIKÁČEK, HÁJEK & RŮŽIČKA (NMP); 1 ♂, Guangxi, Diding, 1200 m, 8.VII.1999, leg. FELLOWES (cAss).

Hong Kong: 1 ♀, Hong Kong, III–IV.1997, leg. ROUGEMONT (cRou).

### Comment

The original description is based on a male holotype and four paratypes of unspecified sex from “Hong Kong, Kadoorie Agricultural Research Centre” and a male paratype from “Zhejiang Prov., Anji County, ca. 480 m, Long Wan Shan N.R.” (PACE 1998). According to the description, antennomere XI is yellowish and the length of the body is 5.4 mm, whereas in the examined material antennomere XI is pale-reddish to dark-brown and body length is somewhat greater (holotype: 6.0 mm). Note that the illustrations of the median lobe of the aedeagus provided by PACE (1998) are not quite accurate (orientation of the crista apicalis; shape of apex of ventral process in ventral view).

### Redescription

Body length 6.0–7.6 mm; length of forebody 2.5–3.0 mm. Forebody conspicuously glossy. Coloration: head and pronotum black; elytra black, with the humeral portions and the suture reddish-yellow (Fig. 81); abdomen (Fig. 137) black, with the posterior margins of the tergites more or less narrowly reddish; legs yellowish; antennae (Fig. 24) black, with antennomere XI pale-reddish to dark-brown; maxillary palpi dark-brown to blackish, with the terminal palpomere yellowish.

Head (Fig. 81) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions

rather coarse and rather sparse. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 24) 2.3–2.4 mm long; antennomere IV weakly oblong; antennomeres V–VI weakly oblong or as broad as long; VII approximately as broad as long or weakly transverse, VIII–X weakly transverse, X slightly less than 1.5 times as broad as long, and XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 81) moderately transverse, 1.15–1.18 times as broad as long and 1.24–1.26 times as broad as head; punctation rather coarse, rather sparse, and somewhat irregularly spaced, posterior portion nearly impunctate; interstices broader than diameter of punctures; midline rather broadly impunctate.

Elytra (Fig. 81) approximately 0.85 times as long as pronotum; punctation rather coarse, defined, and dense in anterior portion and rather sparse in posterior portion, interstices in posterior half on average distinctly broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 137) nearly as broad as elytra, with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portion of tergite VI with a row of rather ill-defined and not very coarse non-setiferous punctures; tergite III with a pair of median punctures, and with a lateral and a latero-marginal puncture on either side; tergite IV with a pair of median punctures, with a lateral puncture on either side, and with four punctures at posterior margin; tergites V–VI with a pair of median punctures, with a lateral puncture on either side, and with approximately 8 punctures at posterior margin; tergite VII with few scattered non-setiferous punctures in anterior portion and with two irregular transverse series of sparse setiferous punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with distinct median concavity.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus (Figs. 225–226) 0.73–0.83 mm long; ventral process apically slender, straight, and acute in lateral view.

### Comparative notes

This species is distinguished from other Chinese representatives of the subgenus with a similar coloration pattern particularly by the conspicuously glossy body, the rather coarse punctation of the pronotum and elytra, the punctation pattern of the abdomen, and by the shape of the median lobe of the aedeagus.

### Distribution and natural history

*Zyras notaticornis* is currently known from Hong Kong and the Chinese provinces Guangxi and Zhejiang



(Fig. 302). The low altitudes (200–1200 m), at which the species was collected, suggest that it may widespread in South China. The type material was caught with flight interception traps (ROUGEMONT 2001).

*Zyras (Zyras) seminigerrimus* Bernhauer, 1933  
(Figs. 44, 82, 138, 236–237, 302)

*Zyras (Zyras) seminigerrimus* BERNHAUER, 1933b: 54.

#### Type material examined

Lectotype ♂ [dissected prior to present study], present designation: “Tatsienlu, China / –Kiulung, REITTER / *seminigerrimus* Bernh. Typ. un. / *seminigerrimus* Brnh. Typus un., don. EMM. REITTER / Chicago NHMus, M.BERNHAUER Collection / *Zyras (Zyras) seminigerrimus* / Lectotypus ♂ *Zyras seminigerrimus* Bernhauer, desig. V. ASSING 2015 / *Zyras seminigerrimus* Bernhauer, det. V. ASSING 2015” (FMNH).

#### Comment

The original description is based on an unspecified number of syntypes from “Tatsienlu [= Kangding]–Kiulung” (BERNHAEUER 1933b). The examined syntype is apparently unique, as can be inferred from the labels attached to it. Nevertheless, it is designated as the lectotype. The specimen had been dissected prior to the present study. As a result, the abdominal segments VII–X are nearly completely bleached (pale-yellowish) and damaged. Thus, the redescription of the coloration of these segments had to rely on the original description. Also, it was not possible to assess the original body length; according to BERNHAUER (1933b) it is 5.5 mm, but judging from what is left of the specimen, its total length is between 6.5 and 7.0 mm.

#### Redescription

Length of forebody 3.0 mm. Coloration: forebody blackish (Fig. 82); abdomen (Fig. 138) with tergites I–II blackish, III–IV pale-reddish, V–VI dark-brown with reddish margins and paratergites, VII bicoloured, reddish in anterior three-fifths and blackish-brown in posterior two-fifths (tergites VIII–X completely bleached; see comment above); legs yellowish; antennae (Fig. 44) blackish-brown with apical portion of antennomere XI only indistinctly paler and antennomeres I–II and base of III reddish-brown; maxillary palpi reddish, with palpomere IV yellowish.

Head (Fig. 82) distinctly transverse, broadly impunctate along middle; punctuation in lateral dorsal portions rather coarse and very sparse. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 44) 2.2 mm long, moderately slender, and moderately massive; antennomeres IV–V approximately as broad as long, VI–X of gradually increasing width and increasingly transverse; X approximately 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 82) moderately transverse, 1.16 times as broad as long and 1.32 times as broad as head; punctuation very sparse and irregularly spaced, antero-lateral and posterior portions of disc nearly impunctate; midline narrowly impunctate.

Elytra (Fig. 82) 0.82 times as long as pronotum; punctuation moderately coarse, moderately dense anteriorly and very sparse posteriorly, disc in postero-lateral portion extensively nearly impunctate. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 138) slightly narrower than elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V with a row of non-setiferous punctures not reaching lateral margins; tergite III with a median pair of punctures in posterior portion, and with a lateral puncture and a postero-lateral puncture on either side; tergite IV with a lateral puncture on either side and with four punctures at posterior margin; tergite V with a lateral puncture on either side and with six punctures at posterior margin; tergite VI with rather dense non-setiferous punctuation anteriorly, with a lateral puncture on either side, and with 8 punctures at posterior margin (posterior segments damaged in lectotype).

♂: median lobe of aedeagus 0.9 mm long and shaped as in Figs. 236–237; apical lobe of paramere moderately long and slender.

#### Comparative notes

*Zyras seminigerrimus* is characterized particularly by the coloration pattern of the body, the sparse and irregularly spaced punctuation of the pronotum and the elytra, the punctuation pattern of the abdomen, and the shape of the median lobe of the aedeagus.

#### Distribution and natural history

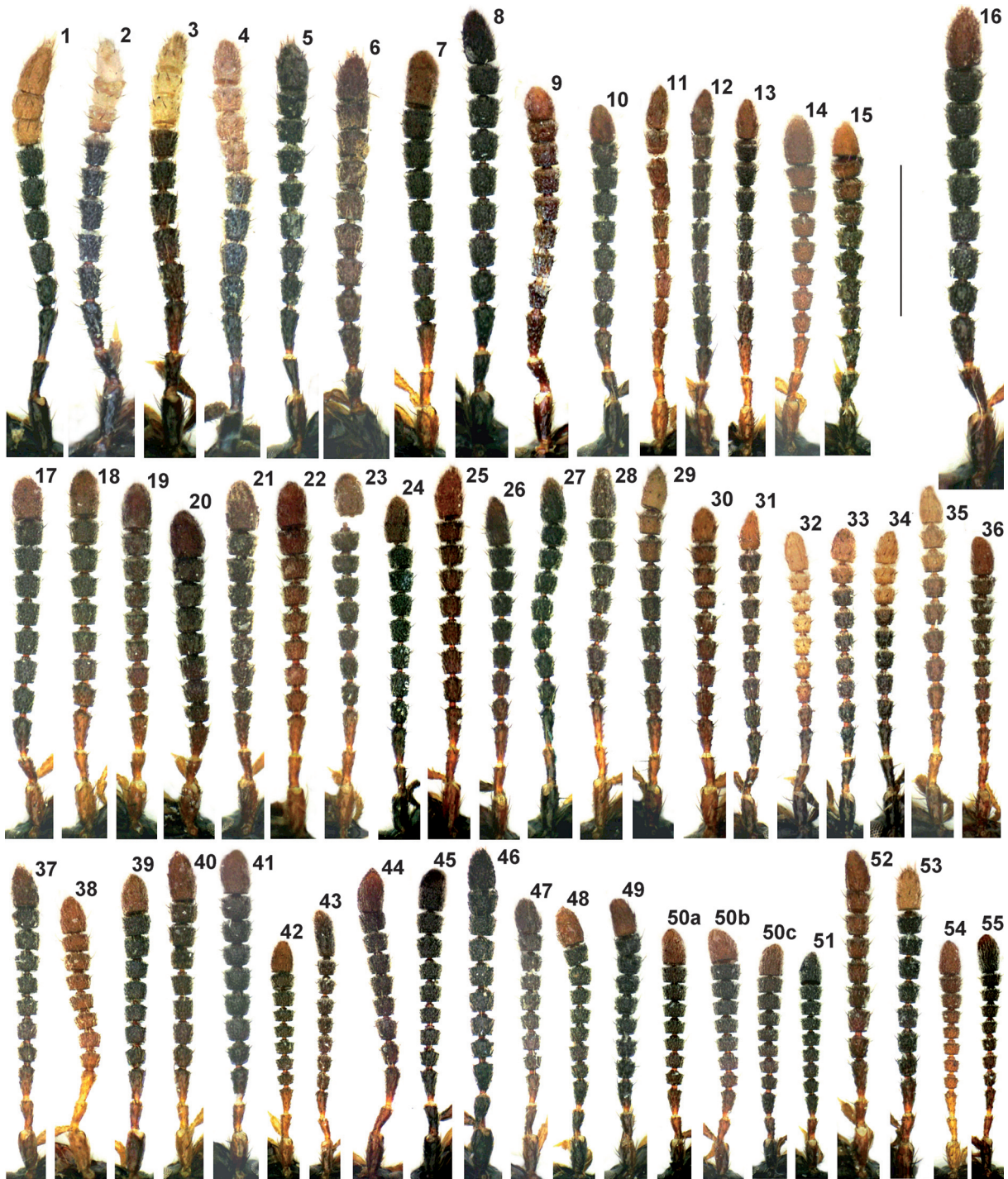
*Zyras seminigerrimus* is currently known only from the type locality near Kangding in the Chinese province Sichuan (Fig. 302). Additional data are not available.

*Zyras (Zyras) maculicollis* n. sp.  
(Figs. 25, 83, 141, 221–222, 305)

#### Type material

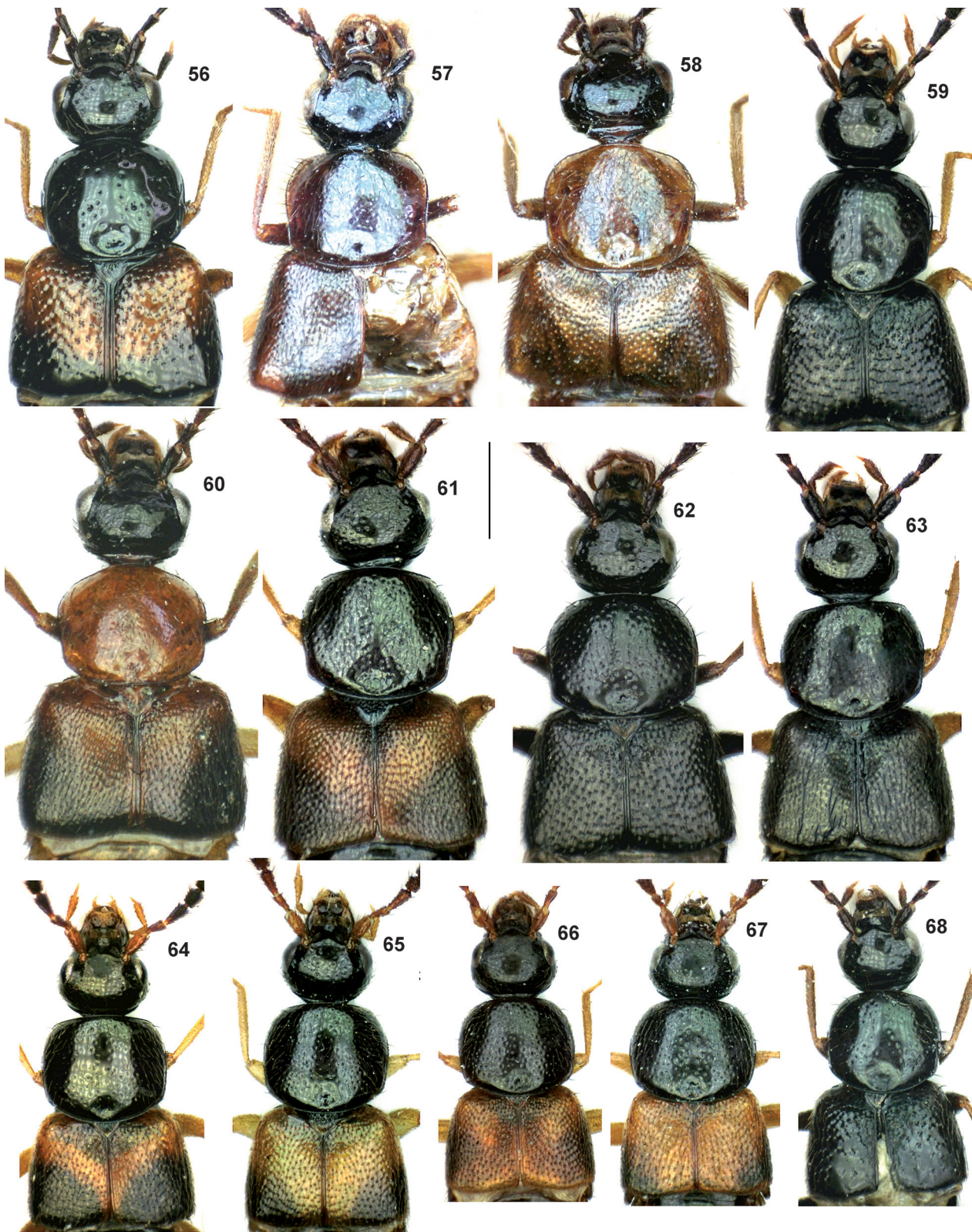
Holotype ♂: “China (W-Hubei) Daba Shan, creek vall. 11 km NW Muyuping, 31°30'N, 110°22'E, 1960 m (creek vall., mix. decid. for., moss, leaves-sift.) 18.VII.2001 WRASE [17] / Holotypus ♂ *Zyras maculicollis* sp. n. det. V. ASSING 2014” (cAss).

Paratypes: 1 ♀: “China: W-Hubei (Daba Shan), creek valley 8 km NW Muyuping, 31°29'N, 110°22'E, 1550–1650 m, 18.VII.2001, leg. M. SCHÜLKE [C01-16A] / creek valley, deciduous forest, moss (sifted) [C01-16A]” (cSch); 1 ♀: “China: Jiangxi prov., Wuyi Shan Nat. Res., Huangganshan [sic], (1800–2050 m), 5.VI.2001, HLAVÁČ & COOTER lgt.” (cHla).



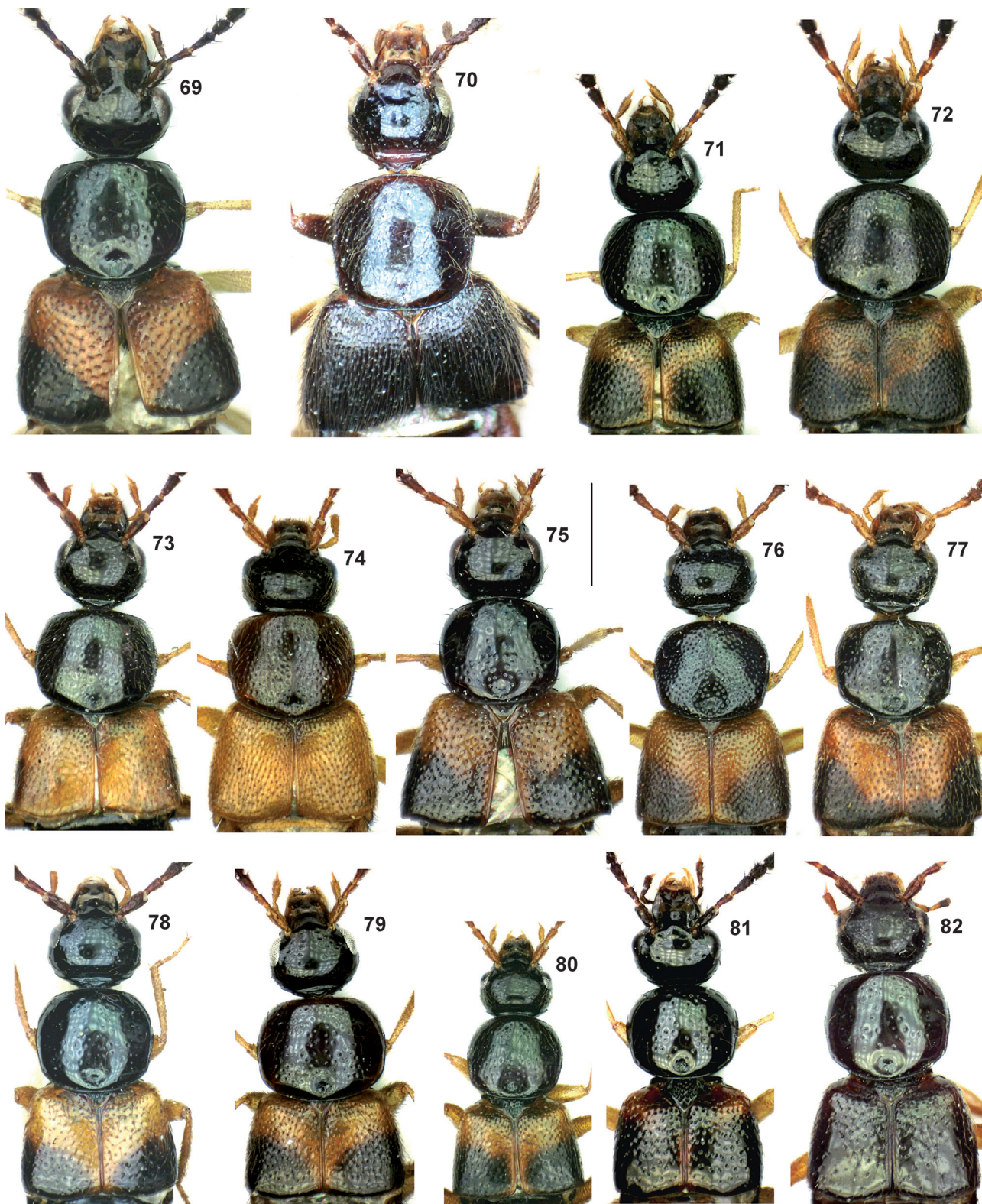
**Figs. 1–55.** Antennae of *Zyras* spp. – 1. *malaisei* (paratype). 2. *chinkiangensis* (lectotype). 3. *alboantennatus*. 4. *setosipennis*, holotype. 5. *kambaitiensis*. 6. *rufapicalis*. 7. *gilvipalpis*. 8. *nigricornis*. 9. *setosivestis*, holotype. 10. *iniquus*. 11. *glabricollis* (holotype). 12. *extensus*. 13. *rectus*. 14. *sibiricus* (Hokkaido). 15. *flexus*. 16. *rufoterminalis*. 17. *birmanus*. 18. *shaanxiensis*. 19. *wei* (Fujian). 20. *firmicornis*. 21. *subobsoletus*. 22. *sibiricus* (Beijing). 23. *bangmaicus*. 24. *notaticornis*. 25. *maculicollis*. 26. *tenuicornis*. 27. *nigrapicalis*. 28. *schuelkei*. 29. *bisinuatus*. 30. *formosanus*. 31. *exspoliatus*. 32. *song*, holotype. 33. *hongkongensis* (Guangxi). 34. *articollis*. 35. *geminus* (paralectotype). 36. *hebes*. 37. *inexcisus*. 38. *hauserianus* (holotype). 39. *granapicalis*. 40. *lativentris*. 41. *caloderoides*. 42. *dabanicus*. 43. *fratrumkadooriorum*, paratype. 44. *seminigerrimus* (lectotype). 45. *tenebricosus*. 46. *tumidicornis*. 47. *athetoides*. 48. *atronitens*. 49. *nigronitens*. 50. *beijingensis* (50a: Gansu; 50b: holotype of *restitutus*; 50c: Zhejiang). 51. *pulcher*. 52. *discolor*. 53. *bicoloricollis*. 54. *songanus*. 55. *volans*. – Scale bar: 1.0 mm.





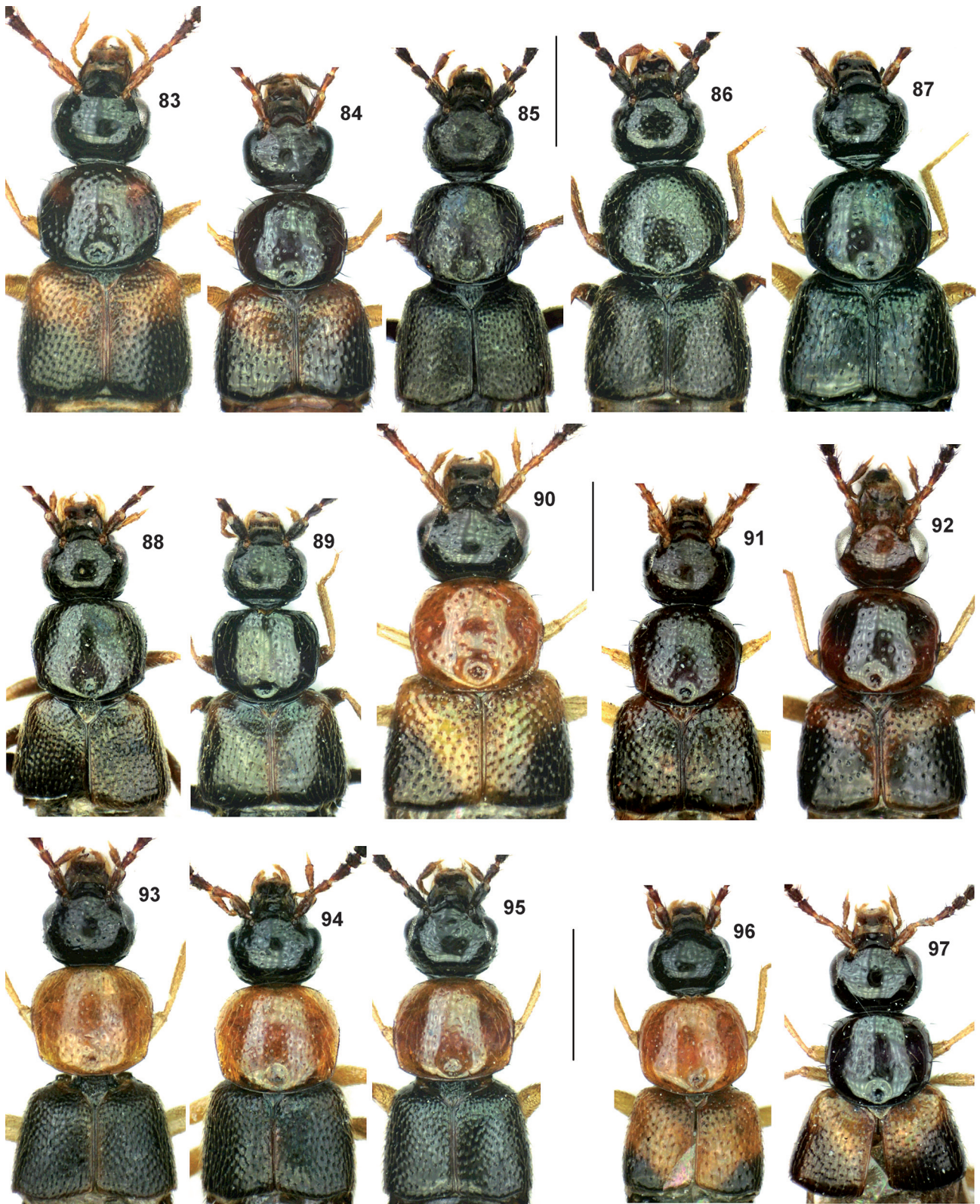
**Figs. 56–68.** Forebodies of *Zyras* spp. – 56. *malaisei* (paratype). 57. *chinkiangensis* (lectotype). 58. *setosipennis* (holotype). 59. *kambaitiensis*. 60. *alboantennatus*. 61. *rufoterminalis*. 62. *rufapicalis*. 63. *nigricornis*. 64. *birmanus*. 65. *shaanxiensis*. 66. *wei* (Fujian). 67. *firmicornis*. 68. *iniquus*. – Scale bar: 1.0 mm.





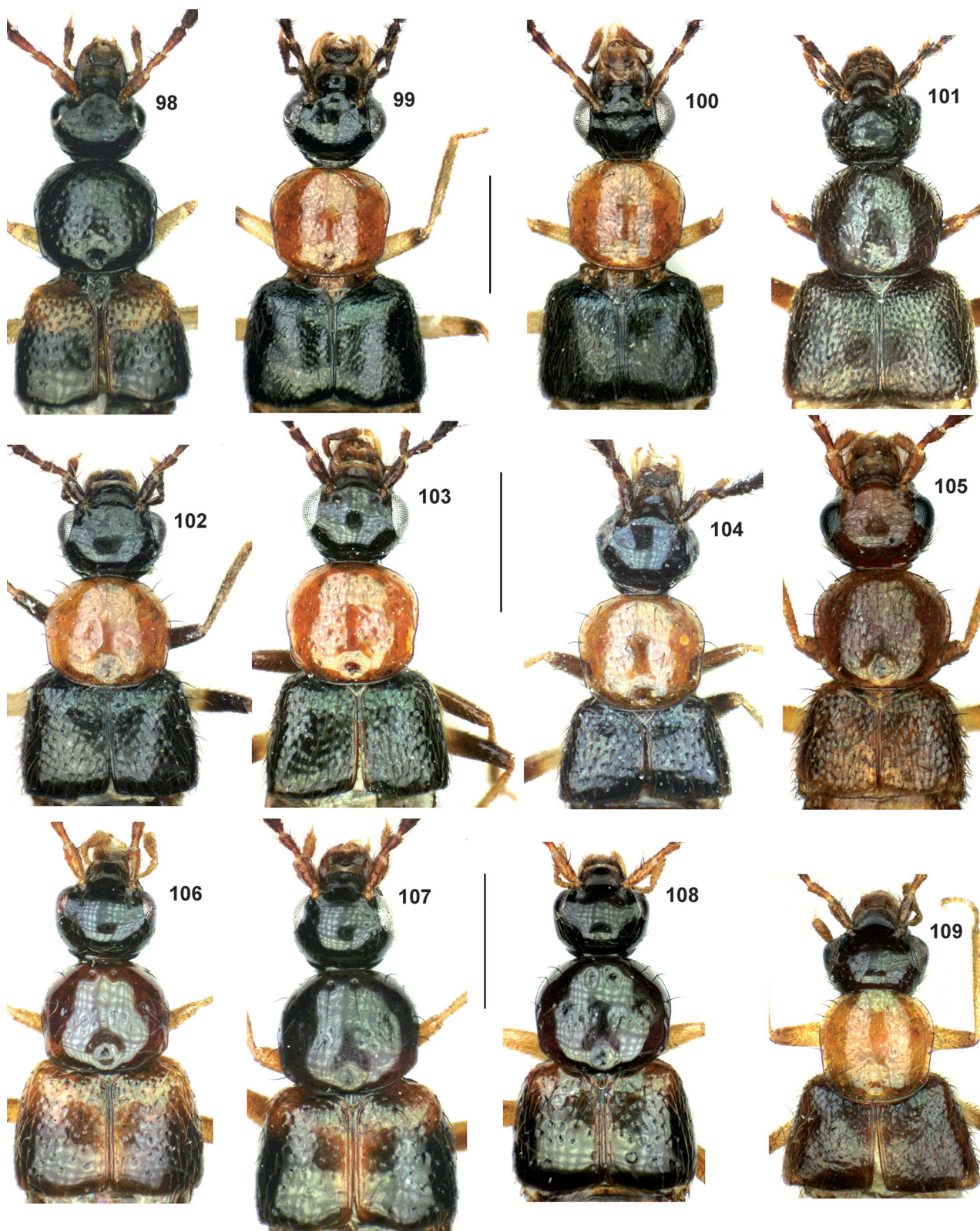
**Figs. 69–82.** Forebodies of *Zyras* spp. – 69. *nigrapicalis*. 70. *setosivestis* (holotype). 71. *caloderoides*. 72. *gilvipalpis*. 73. *subobsoletus*. 74. *sibiricus* (Beijing). 75. *bangmaicus*. 76. *inexcisus*. 77. *hauserianus* (holotype). 78. *granapicalis*. 79. *lativentris*. 80. *dabanicus*. 81. *notaticornis*. 82. *seminigerrimus* (lectotype). – Scale bar: 1.0 mm.





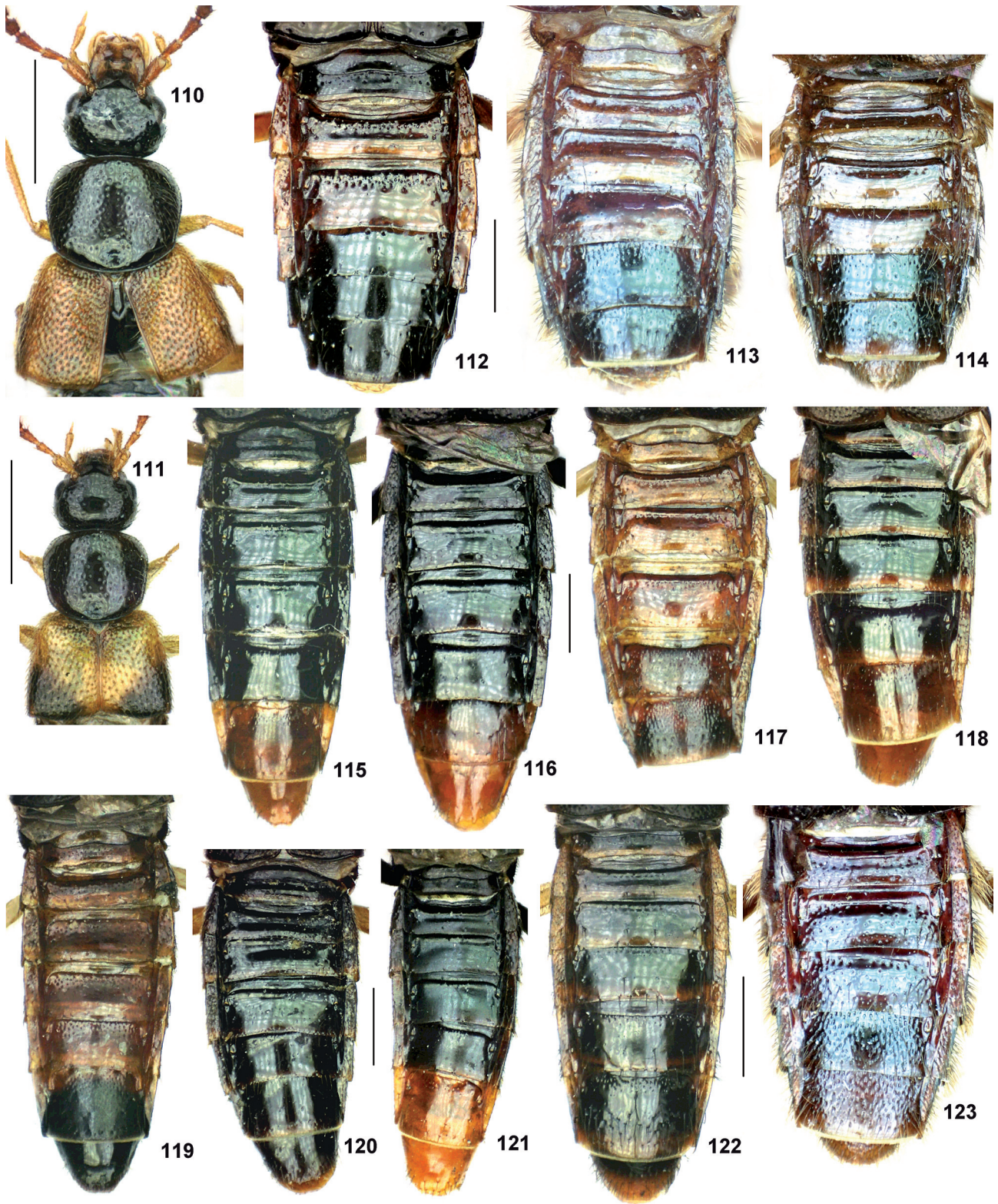
Figs. 83–97. Forebodies of *Zyras* spp. – 83. *maculicollis*. 84. *tenuicornis*. 85. *tenebricosus*. 86. *tumidicornis*. 87. *nigronitens*. 88. *athetoides*. 89. *atronitens*. 90. *schuelkei*. 91. *discolor*. 92. *bicoloricollis*. 93–95. *beijingensis* (93: Gansu; 94: holotype of *restitutus*; 95: Zhejiang). 96. *pulcher*. 97. *fratrumkadooriorum* (paratype). – Scale bars: 1.0 mm.





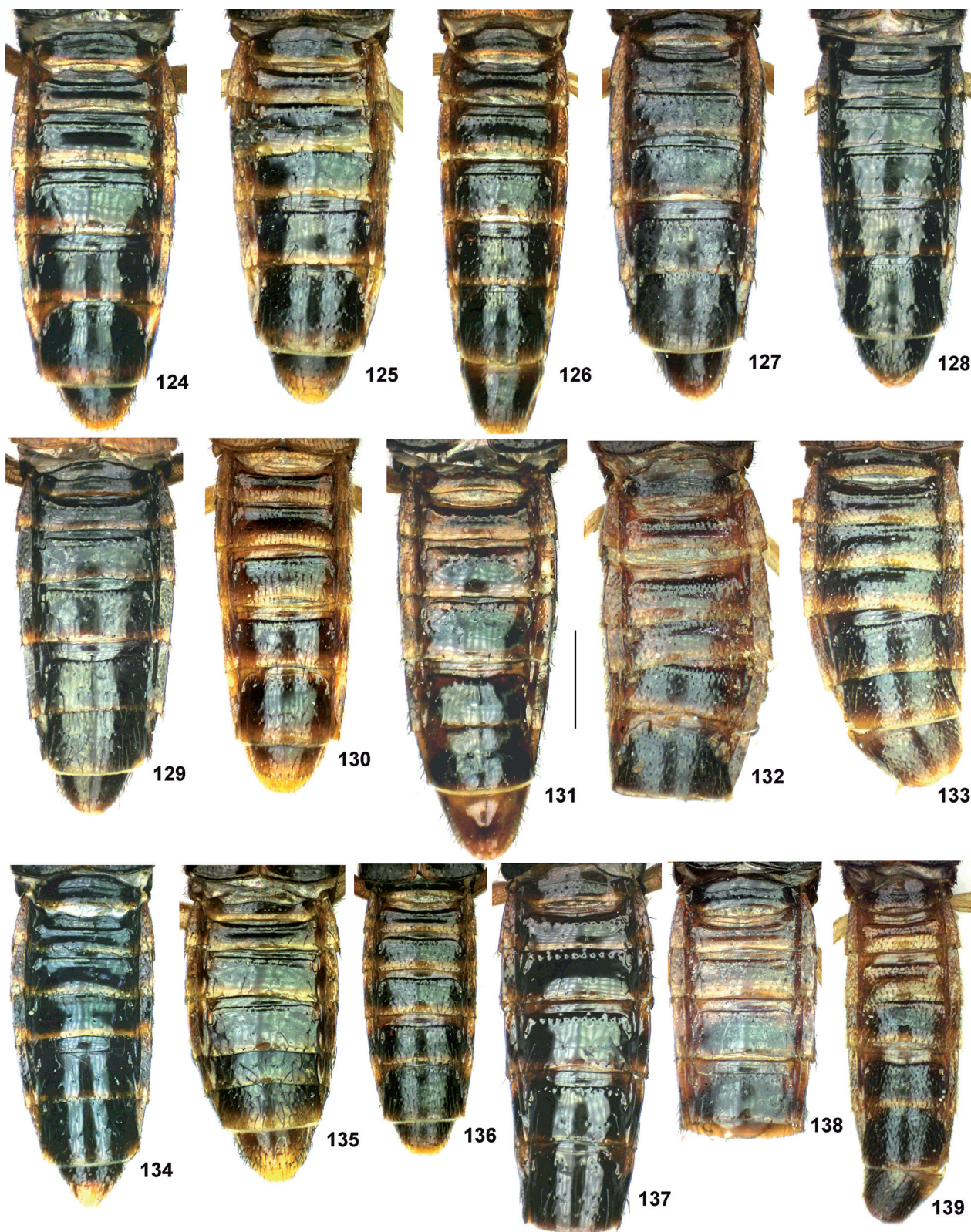
**Figs. 98–109.** Forebodies of *Zyras* spp. – 98. *bisinuatus*. 99. *hongkongensis* (Guangxi). 100. *articollis*. 101. *flexus*. 102. *song* (holotype). 103. *exspoliatus*. 104. *yongshengensis* (holotype). 105. *formosanus*. 106. *glabricollis* (holotype). 107. *extensus*. 108. *rectus*. 109. *geminus* (paralectotype). – Scale bars: 1.0 mm.





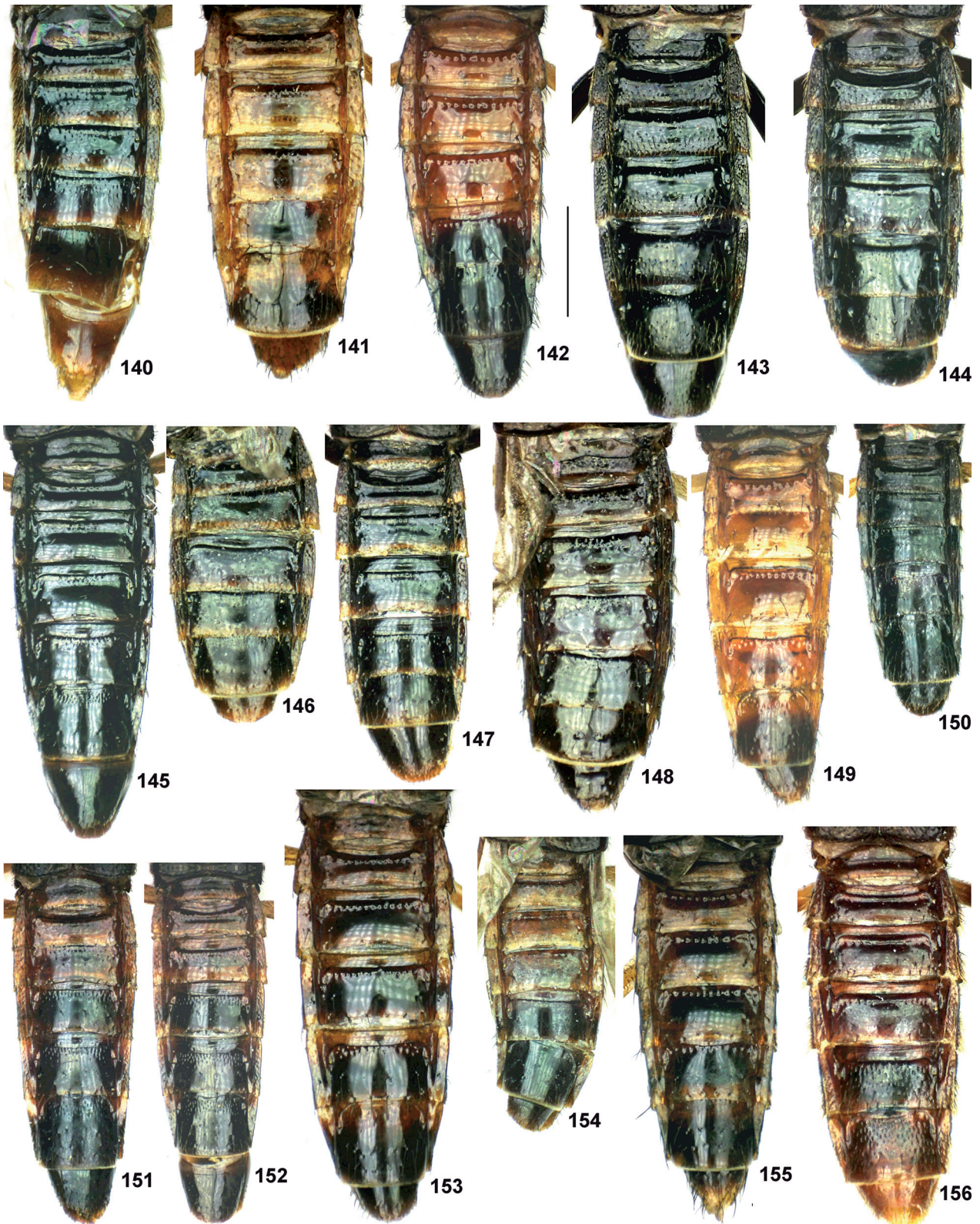
**Figs. 110–123.** Forebodies (110–111) and abdomina (112–123) of *Zyras* spp. – 110. *sibiricus* (Hokkaido). 111. *songanus* (holotype). 112. *malaisei* (paratype). 113. *chinkiangensis* (lectotype). 114. *setosipennis* (holotype). 115. *kambaitiensis*. 116. *rufapicalis*. 117. *alboantennatus*. 118. *rufoterminalis*. 119. *nigrapicalis*. 120. *nigricornis*. 121. *iniquus*. 122. *gilvipalpis*. 123. *setosivestis* (holotype). – Scale bars: 1.0 mm.





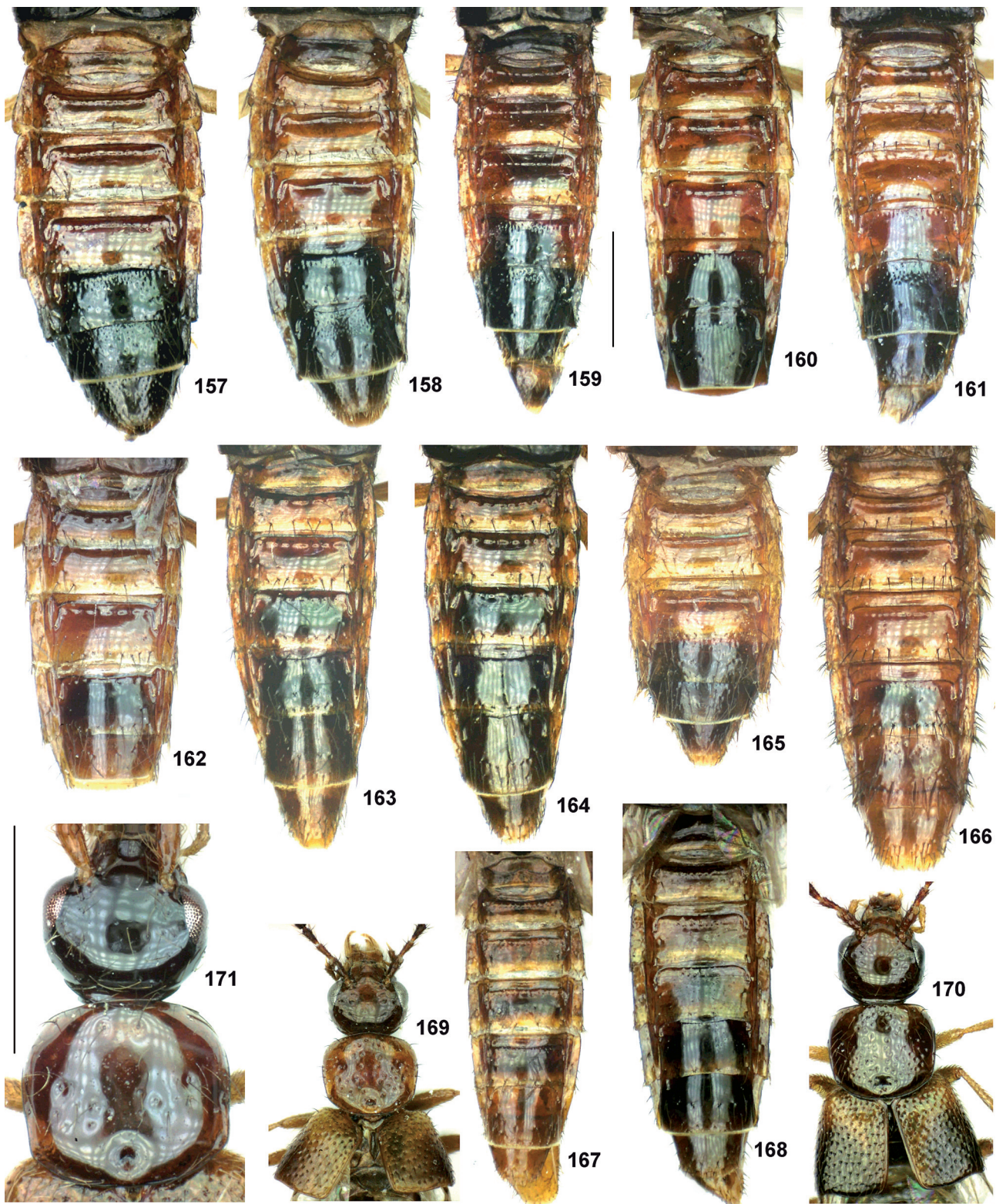
Figs. 124–139. Abdomina of *Zyras* spp. – 124. *birmanus*. 125. *shaanxiensis*. 126. *wei* (Fujian). 127. *firmicornis*. 128. *caloderoides*. 129. *subobsoletus*. 130. *sibiricus* (Beijing). 131. *bangmaicus*. 132. *hauserianus* (holotype). 133. *inexcisus*. 134. *granapicalis*. 135. *lativentris*. 136. *dabanicus*. 137. *notaticornis*. 138. *seminigerrimus* (lectotype). 139. *songanus* (holotype). – Scale bar: 1.0 mm.





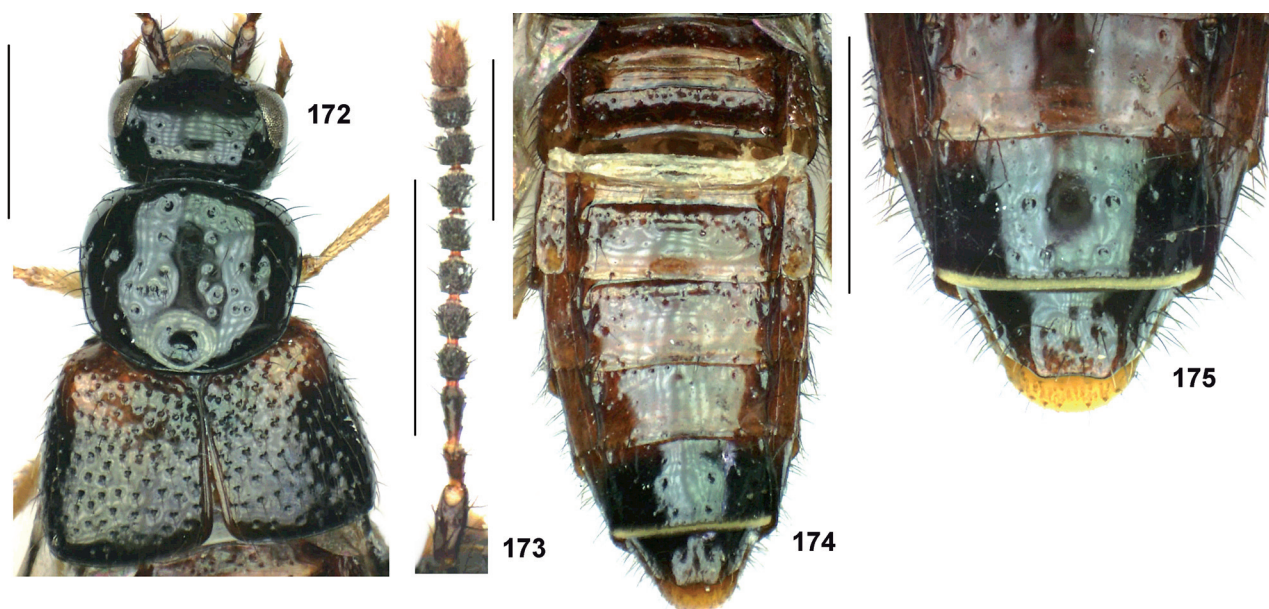
Figs. 140–156. Abdomina of *Zyras* spp. – 140. *sibiricus* (Hokkaido). 141. *maculicollis*. 142. *tenuicornis*. 143. *tenebricosus*. 144. *tumidicornis*. 145. *nigronitens*. 146. *athetoides*. 147. *atronitens*. 148. *schuelkei*. 149. *discolor*. 150. *pulcher*. 151–152. *beijingensis* (151: holotype of *restitutus*; 152: Zhejiang). 153. *bicoloricollis*. 154. *fratrumkadooriorum* (paratype). 155. *bisinuatus*. 156. *flexus*. – Scale bar: 1.0 mm.





**Figs. 157–171.** Abdomina (157–168), forebodies (169–170), and head and pronotum (171) of *Zyras* spp. – 157. *hongkongensis* (Guangxi). 158. *articollis*. 159. *song* (holotype). 160. *exspoliatus*. 161. *yongshengensis* (holotype). 162, 171. *glabricollis* (holotype). 163. *extensus*. 164. *rectus*. 165. *geminus* (paralectotype). 166. *formosanus*. 167, 169. *volans*. 168, 170. *hebes*. – Scale bars: 1.0 mm.





**Figs. 172–175.** *Zyrras atrapicalis*. – 172. Forebody. 173. Antenna. 174. Abdomen. 175. Abdominal segments VI–VIII. – Scale bars: 1.0 mm.

#### Etymology

The specific epithet (Latin, adjective) alludes to the pair of indistinct anterior reddish spots on the pronotum.

#### Description

Body length 6.5–7.4 mm; length of forebody 3.0–3.4 mm. Coloration: head blackish brown to blackish; pronotum blackish-brown to blackish, anteriorly with a sometimes nearly obsolete indistinct and diffusely limited reddish spot on either side of middle; elytra yellowish, with extensively blackish postero-lateral portion reaching, but not including, suture, the blackish coloration extending beyond middle anteriorly (Fig. 83); abdomen (Fig. 141) reddish-yellow, with the middle of tergite VI and the posterior third of tergite VII blackish; legs yellowish; antennae (Fig. 25) dark-brown, with antennomeres I, II, and XI reddish.

Head (Fig. 83) moderately transverse, broadly impunctate along middle; punctation in lateral dorsal portions sparse; interstices much broader than diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 25) 2.4–2.7 mm long and rather slender; antennomeres IV–V weakly oblong; V approximately as long as broad; VI–X gradually and weakly increasing in width; X approximately 1.5 times as broad as long; XI approximately as long as, or slightly longer than the combined length of IX and X.

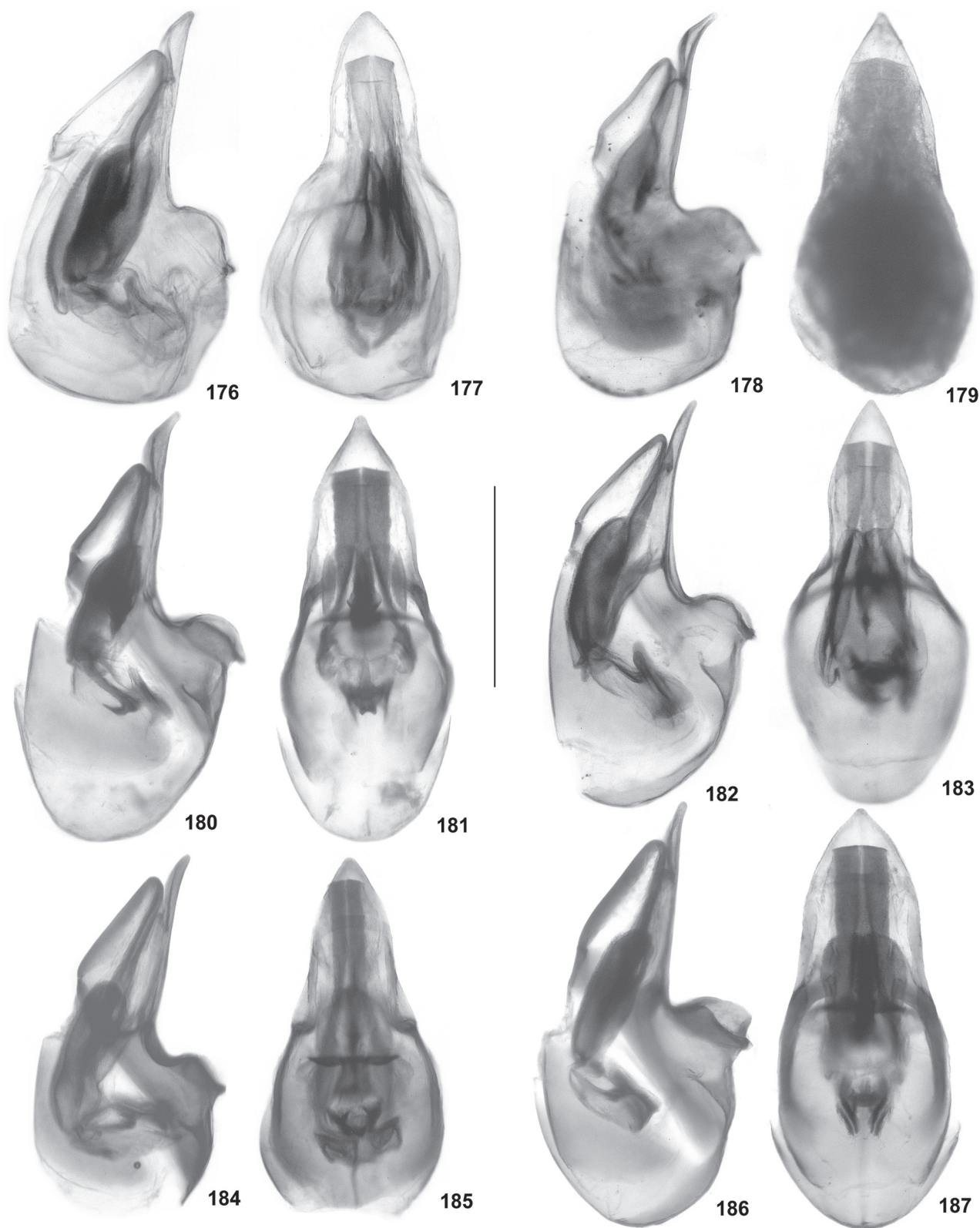
Pronotum (Fig. 83) relatively small in relation to head, 1.14–1.15 times as broad as long and 1.20–1.22 times as broad as head, weakly convex in cross-section; punctation irregularly spaced, as coarse as that of head, irregularly

spaced, antero-laterally, in the middle, and posteriorly with more or less extensive patches without, or with distinctly sparser punctures; interstices on average distinctly broader than diameter of punctures; lateral margins with few long setae.

Elytra (Fig. 83) approximately 0.95 times as long as pronotum; punctation denser than that of pronotum, interstices approximately as broad as diameter of punctures. Hind wings fully developed. Metatarsomere I slightly shorter than the combined length of II–IV.

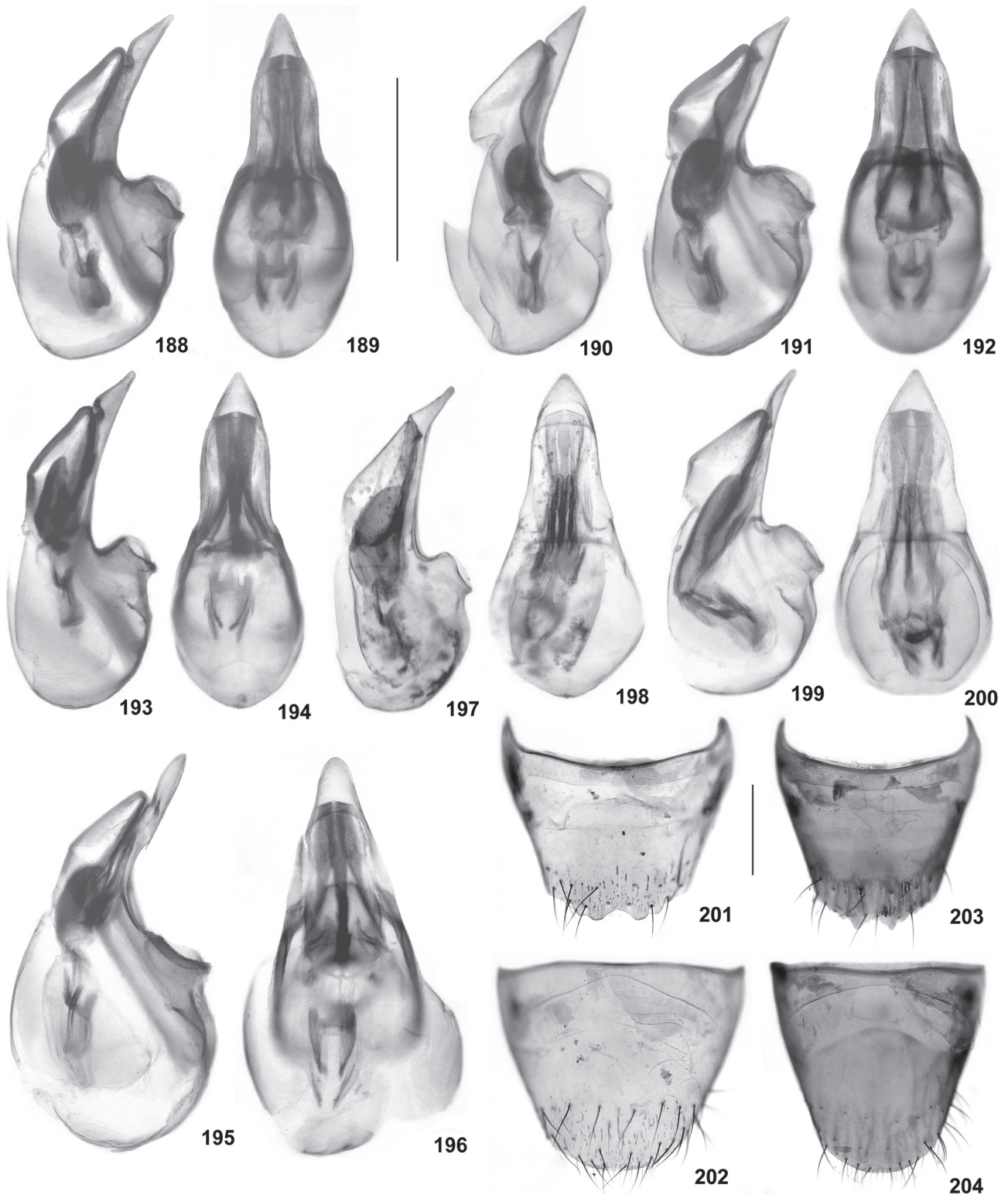
Abdomen (Fig. 141) approximately 0.9 times as broad as elytra, with rather shallow anterior impressions on tergites III–V, and with conspicuously sparse punctation; anterior impressions of tergites III–IV with sparse non-setiferous punctation; anterior impression of tergite V with few fine non-setiferous punctures, discs of tergites III–V practically impunctate aside from few scattered punctures, without median pairs of punctures, laterally and postero-laterally with few setiferous punctures bearing long dark setae; posterior margins of tergites III–V nearly impunctate; tergites VI and VII without non-setiferous punctures anteriorly; tergite VI impunctate, except for a few scattered punctures anteriorly, laterally, and postero-laterally; tergite VII posteriorly with two irregular rows of sparse setiferous punctures, otherwise impunctate; tergite VIII with few sparse setiferous punctures in posterior third; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: tergite VIII with some granulate punctures posteriorly, posterior margin with distinct concavity in the

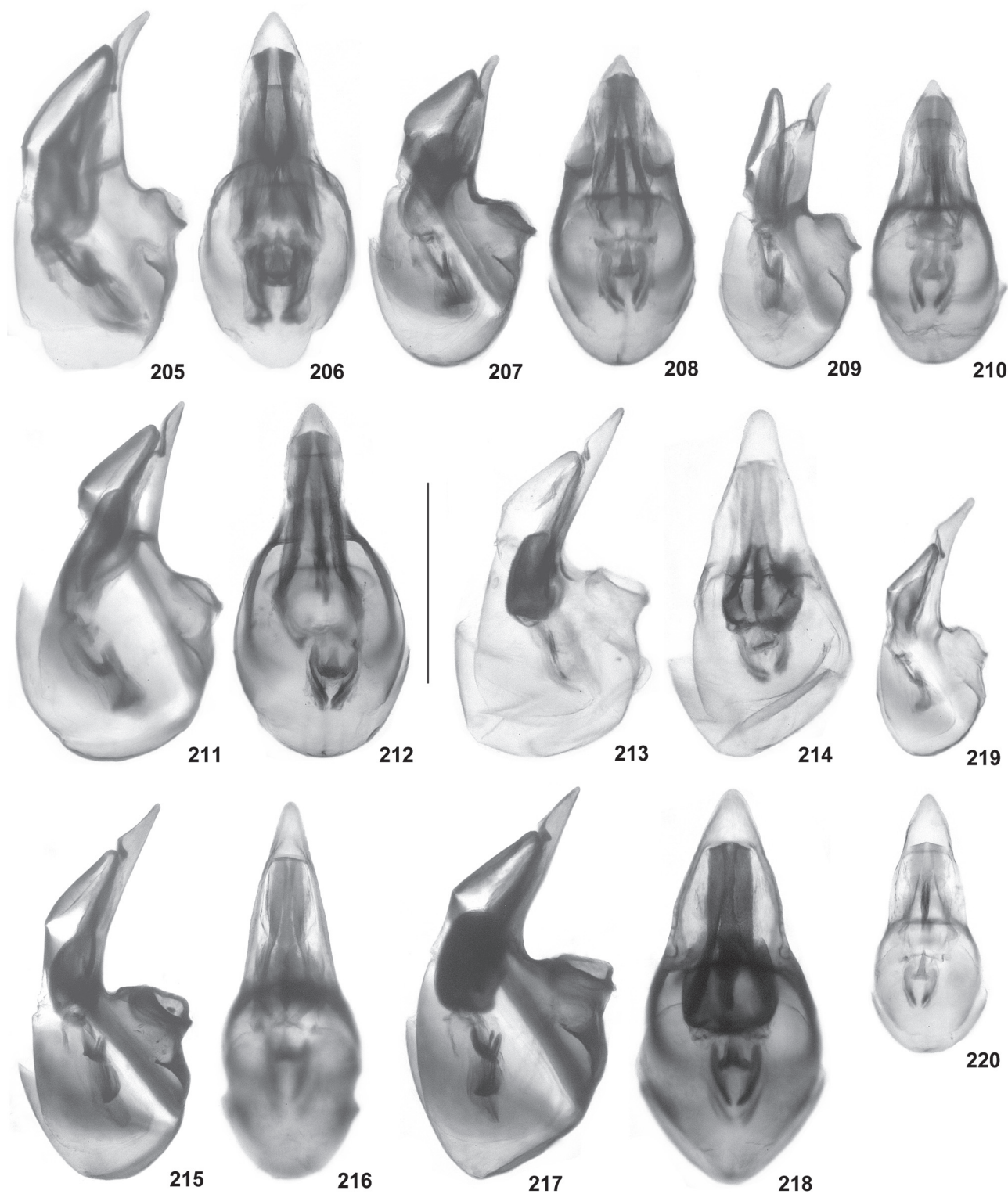


**Figs. 176–187.** Median lobe of aedeagus in lateral and in ventral view of *Zyras* spp. – 176–177. *malaisei* (paratype). 178–179. *chinkiangensis* (lectotype). 180–181. *alboantennatus*. 182–183. *kambaitiensis* (Yunnan). 184–185. *rufapicalis*. 186–187. *rufoterminalis*. – Scale bar: 0.5 mm.



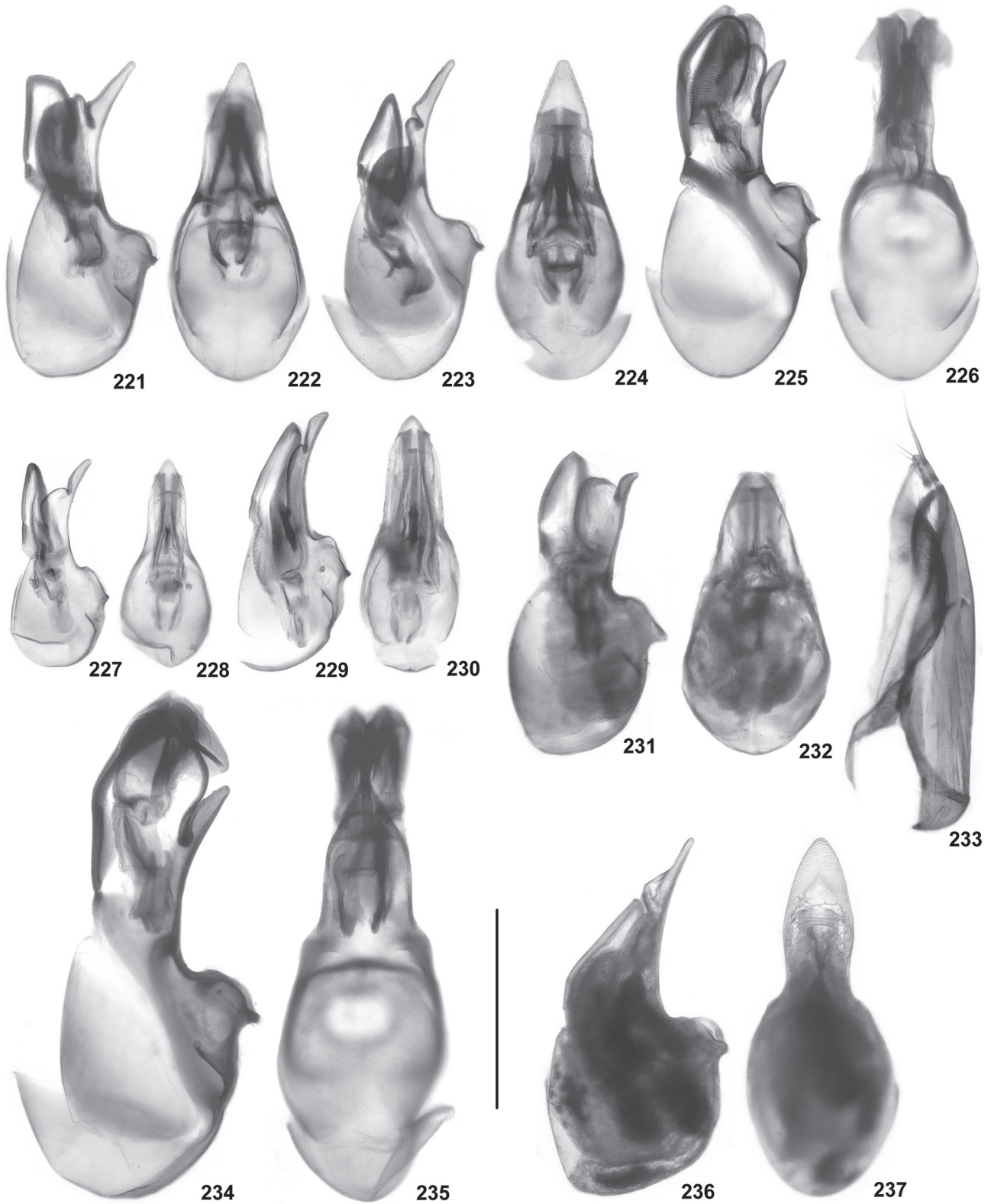


**Figs. 188–204.** Median lobe of aedeagus in lateral and in ventral view (188–200), male tergite VIII (201, 203), and male sternite VIII (202, 204) of *Zyras* spp. – 188–189. *birmanus* (Yunnan). 190–192. *shaanxiensis*. 193–194. *wei* (Fujian). 195–196. *firmicornis*. 197–198. *subobsoletus*. 199–200. *sibiricus* (Beijing). 201–202. *malaisei* (paratype). 203–204. *kambaitiensis* (paratype). – Scale bars: 0.5 mm.



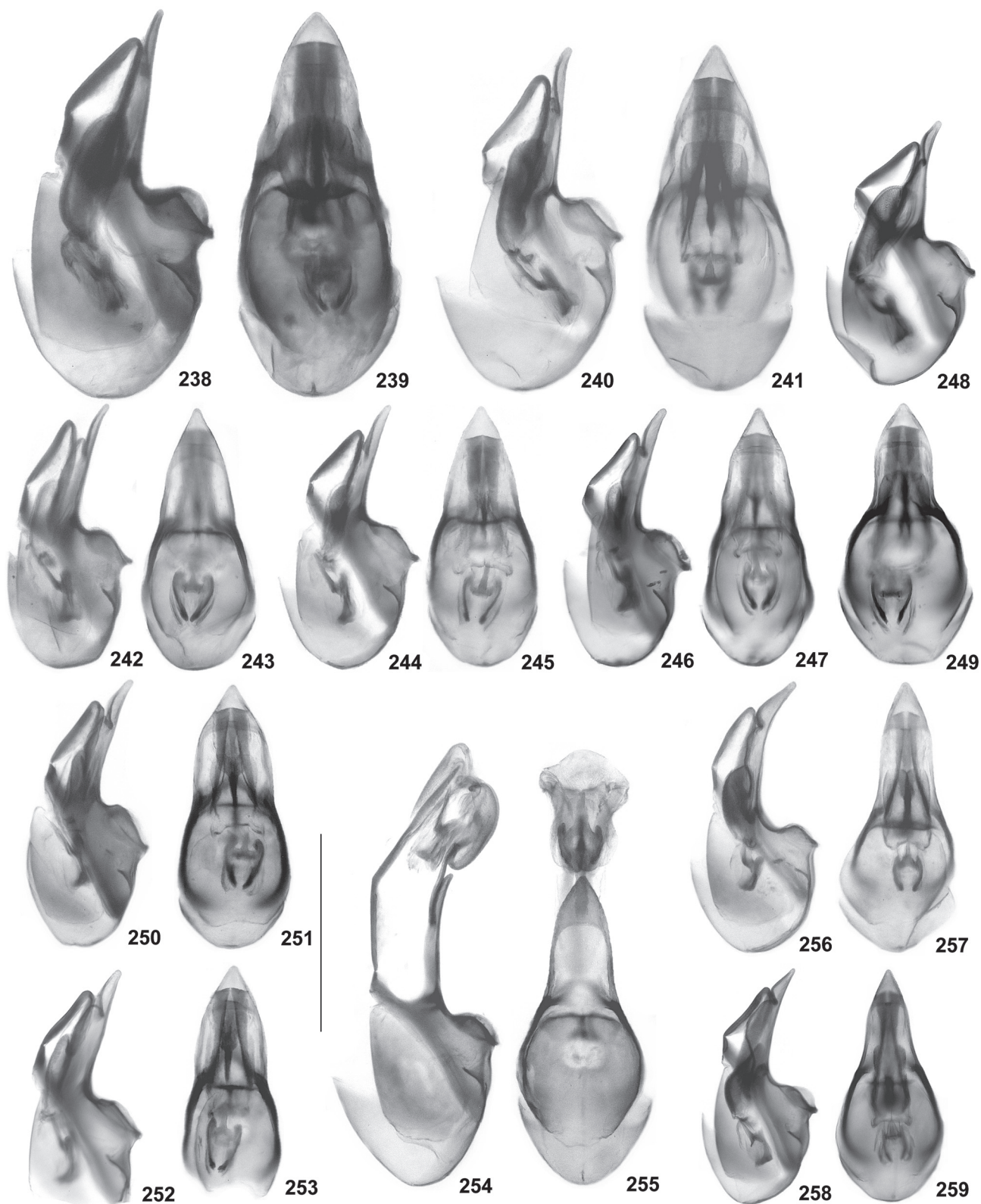
**Figs. 205–220.** Median lobe of aedeagus in lateral and in ventral view of *Zyrras* spp. – 205–206. *bangmaicus*. 207–208. *inexcisus*. 209–210. *sibiricus* (Hokkaido). 211–212. *granapicalis*. 213–214. *lativentris*. 215–216. *caloderoides*. 217–218. *gilvipalpis*. 219–220. *dabanicus*. – Scale bar: 0.5 mm.



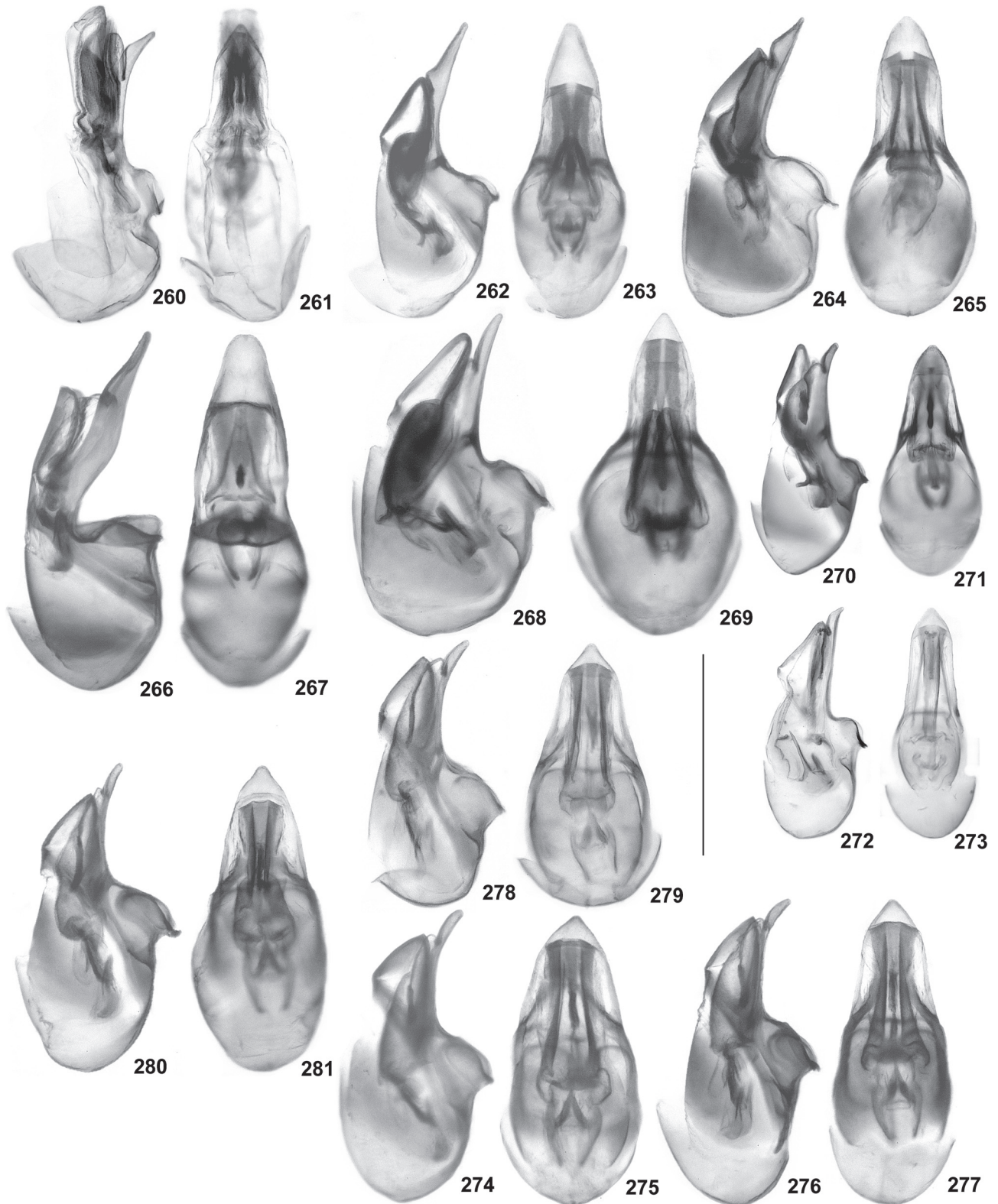


**Figs. 221–237.** Median lobe of aedeagus in lateral and in ventral view (221–232, 234–237) and paramere (233) of *Zyras* spp. – 221–222. *maculicollis*. 223–224. *tenuicornis*. 225–226. *notaticornis*. 227–228. *volans*. 229–230. *hebes*. 231–233. *atrapicalis*. 234–235. *nigrapicalis*. 236–237. *seminigerrimus* (lectotype). – Scale bar: 0.5 mm.



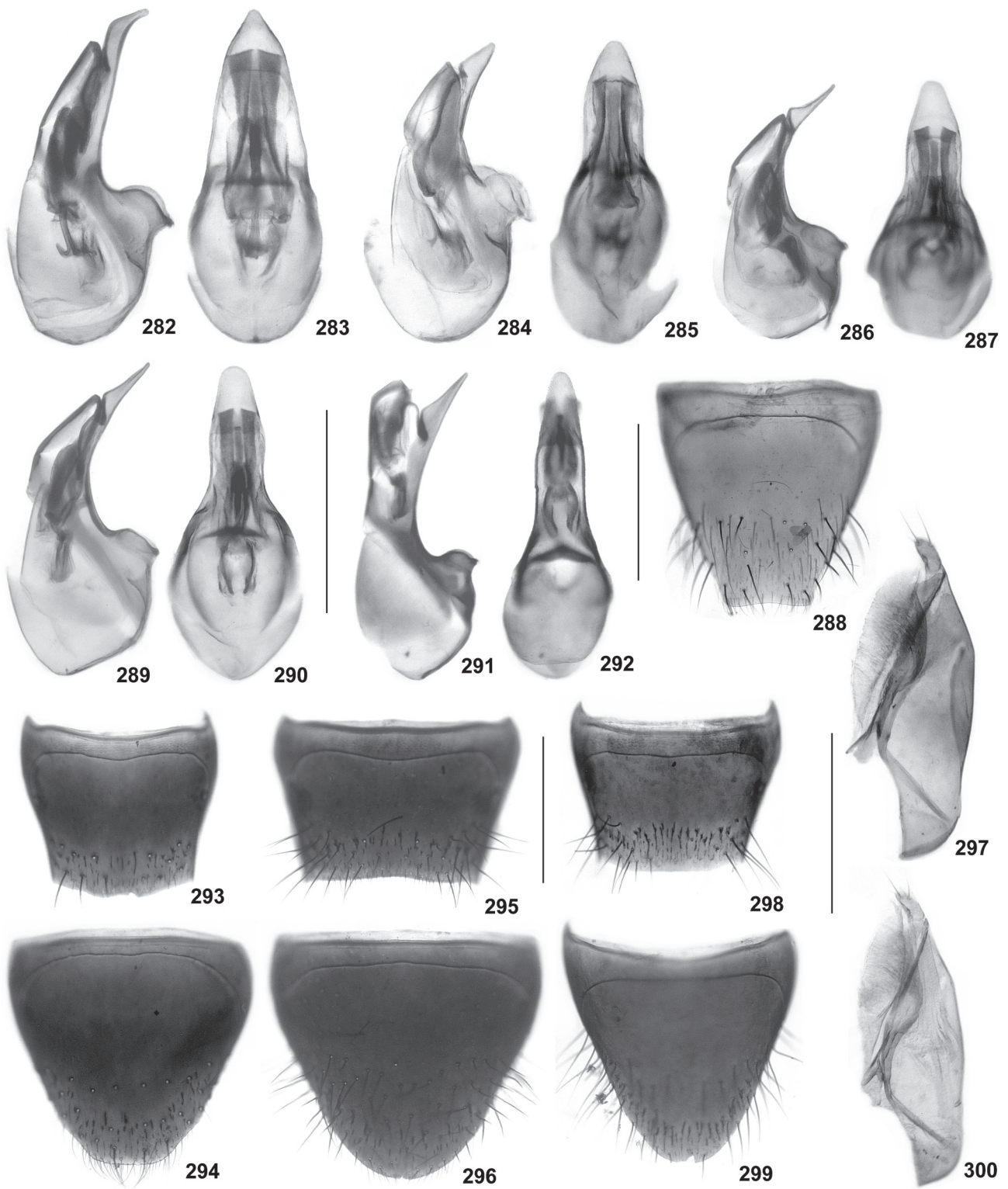


**Figs. 238–259.** Median lobe of aedeagus in lateral and in ventral view of *Zyras* spp. – 238–241. *nigricornis* (238–239: Sichuan; 240–241: Hubei). 242–247. *tenebricosus* (242–243: Songpan env.; 244–245: Pingwu env.; 246–247: Tibet). 248–249. *atronitens*. 250–251. *tumidicornis*. 252–253. *athetoides*. 254–255. *nigronitens*. 256–257. *beijingensis*. 258–259. *pulcher*. – Scale bar: 0.5 mm.



**Figs. 260–281.** Median lobe of aedeagus in lateral and in ventral view of *Zyrras* spp. – 260–261. *schuelkei*. 262–263. *discolor*. 264–265. *exspoliatus*. 266–267. *bisinuatus*. 268–269. *iniquus*. 270–271. *bicoloricollis*. 272–273. *fratrumkadooriorum* (paratype). 274–277. *hongkongensis* (274–275: Guangxi; 276–277: Vietnam). 278–279. *geminus* (paralectotype). 280–281. *articollis*. – Scale bar: 0.5 mm.





**Figs. 282–300.** Median lobe of aedeagus in lateral and in ventral view (282–287, 289–292), male sternite VIII (288, 294, 296, 299), male tergite VIII (293, 295, 298), and paramere (296, 298) of *Zyras* spp. – 282–283. *flexus*. 284–285. *formosanus*. 286–288. *glabri-collis* (holotype). 289–290. *extensus*. 291–292. *rectus*. 293–294. *exspoliatus*. 295–297. *hongkongensis* (Guangxi). 298–300. *geminus* (paralectotype). – Scale bars: 0.5 mm.

middle; sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus 0.83 mm long and shaped as in Figs. 221–222.

♀: tergite VIII with simple punctation, posterior margin convex; posterior margin of sternite VIII weakly concave.

#### Intraspecific variation

The paratype from Jiangxi differs from the two type specimens from Hubei by larger body size, nearly obsolete reddish spots on the pronotum, somewhat denser and coarser punctation of the pronotum, and more extensively blackish elytra. In other respects, however, it is highly similar, suggesting that the differences should be attributed to intra- rather than interspecific variation.

#### Comparative notes

Among the species with a similar coloration pattern and of similar size, *Z. maculicollis* is characterized by the relatively small pronotum, the presence of two indistinct reddish spots near the anterior angles of the pronotum, the coloration and punctation pattern of the abdomen, as well as by the morphology of the median lobe of the aedeagus.

#### Distribution and natural history

The known distribution is confined to two geographically close localities in the Daba Shan, Western Hubei, and one in the Wuyi Shan, Jiangxi (Fig. 305). The specimens from Hubei were sifted from leaf litter and moss in mixed deciduous forests at altitudes between 1550 and 1960 m. The paratype from Jiangxi was collected at an altitude between 1800 and 2050 m.

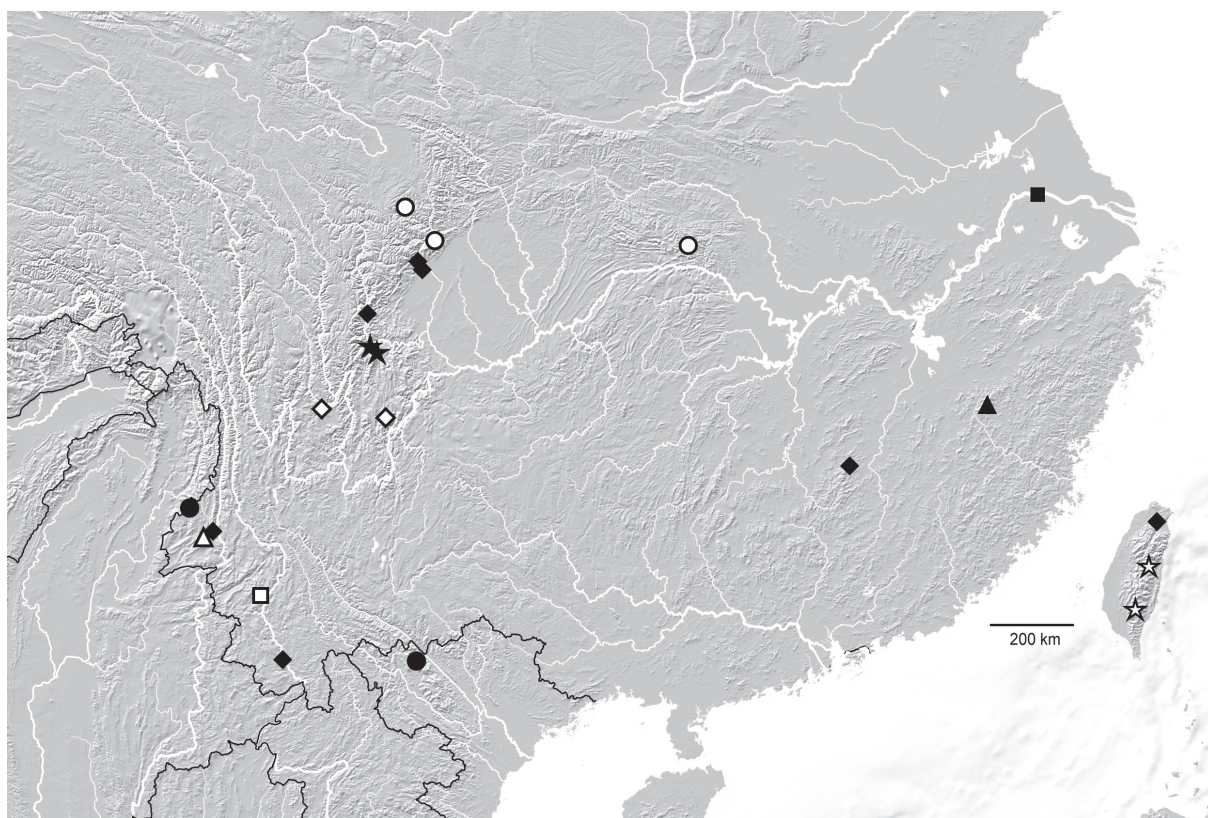
#### *Zyras (Zyras) tenuicornis* n. sp.

(Figs. 26, 84, 142, 223–224, 302)

#### Type material

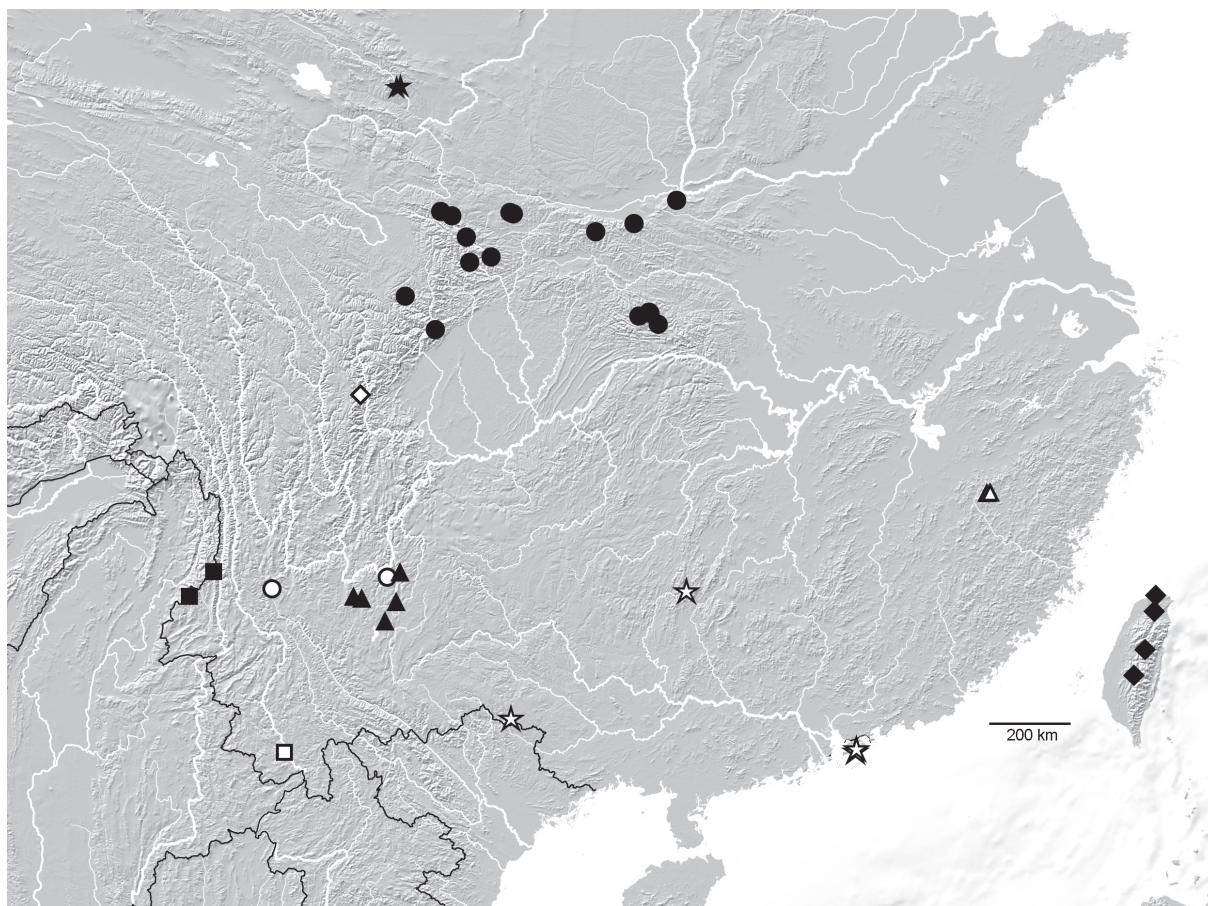
**Holotype** ♂: “Taiwan – Kao-Hsiung Co., Yushan N. P., Road 20, km 117, 1800 m, road sides, slopes, litter, 13.IV.2009, leg. ViT [9] / Holotypus ♂ *Zyras tenuicornis* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 1 ♀ [most of antennae missing]: “Taiwan – Taipei, Yangmingshan, slopes E Mt. Cising, Lenghuiskeng Visitor Centre, 800 m, 25.X. 2007, leg. ViT” (cAss); 1 ♂: “Lushan (Wenchuan), Nantou – Hsien, Taiwan (1200 m), July 29<sup>th</sup>, 1983, Y. SHIBATA leg.” (cMar); 2 ♂♂, 1 ♀: “Szuling, c. 1100 m, Taoyuan Taiwan, 19.XI.2000, HIROSHI SUGAYA leg. (Under dead leaves)” (cMar, cAss).



**Fig. 301.** Distributions of *Zyras* spp. in China and adjacent regions, exclusively based on examined records. – *malaisei* (black circles), *lativentris* (white triangle), *bangmaicus* (white square), *granapicalis* (white diamonds), *nigrapicalis* (black diamonds), *subobsoletus* (black stars), *rufoterminalis* (white circles), *chinkiangensis* (black square), *firmicornis* (black triangle), *rufapicalis* (white stars).





**Fig. 302.** Distributions of *Zyrras* spp. in China and adjacent regions, exclusively based on examined records. – *kambaitiensis* (black squares), *atrapicalis* (white square), *shaanxiensis* (circles; white circles: female-based records), *caloderoides* (black triangles), *seminigerrimus* (white diamond), *dabanicus* (black stars), *notaticornis* (white stars), *flexus* (white triangles), *tenuicornis* (black diamonds).

#### Etymology

The specific epithet (Latin, adjective) alludes to the slender antennae.

#### Description

Body length 6.2–7.0 mm; length of forebody 2.7–3.0 mm. Coloration: head and pronotum blackish-brown; elytra yellowish, with the postero-lateral portions extensively blackish-brown (Fig. 84); abdomen (Fig. 142) bicoloured, with segments III–V reddish and VI–VIII blackish-brown, except for the reddish anterior portions of tergites VI–VII and paratergites VI–VII; legs pale-yellowish; maxillary palpi brown, except for the reddish terminal palpomere; antennae (Fig. 26) blackish brown, with antennomeres I–III dark-reddish and apex of XI brown.

Head (Fig. 84) relatively weakly transverse, 1.13 times as broad as long, broadly impunctate along middle; punctation in lateral dorsal portions very sparse; interstices much broader than diameter of punctures. Eyes distinctly

longer than postocular region in dorsal view. Antenna (Fig. 26) 2.2–2.3 mm long and very slender; antennomeres IV–VI oblong; VII–VIII approximately as long as broad; IX–X weakly transverse; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 84) small in relation to head, 1.10–1.15 times as broad as long and approximately 1.25 times as broad as head; punctation sparse; interstices on average much broader than diameter of punctures; midline rather broadly impunctate; lateral margins with few very long setae.

Elytra (Fig. 84) approximately 0.85 times as long as pronotum; punctation coarse, defined, and not very dense, interstices on average broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 142) distinctly narrower than elytra, broadest at segments III–IV, gradually tapering towards apex, and with rather deep and narrow anterior impressions

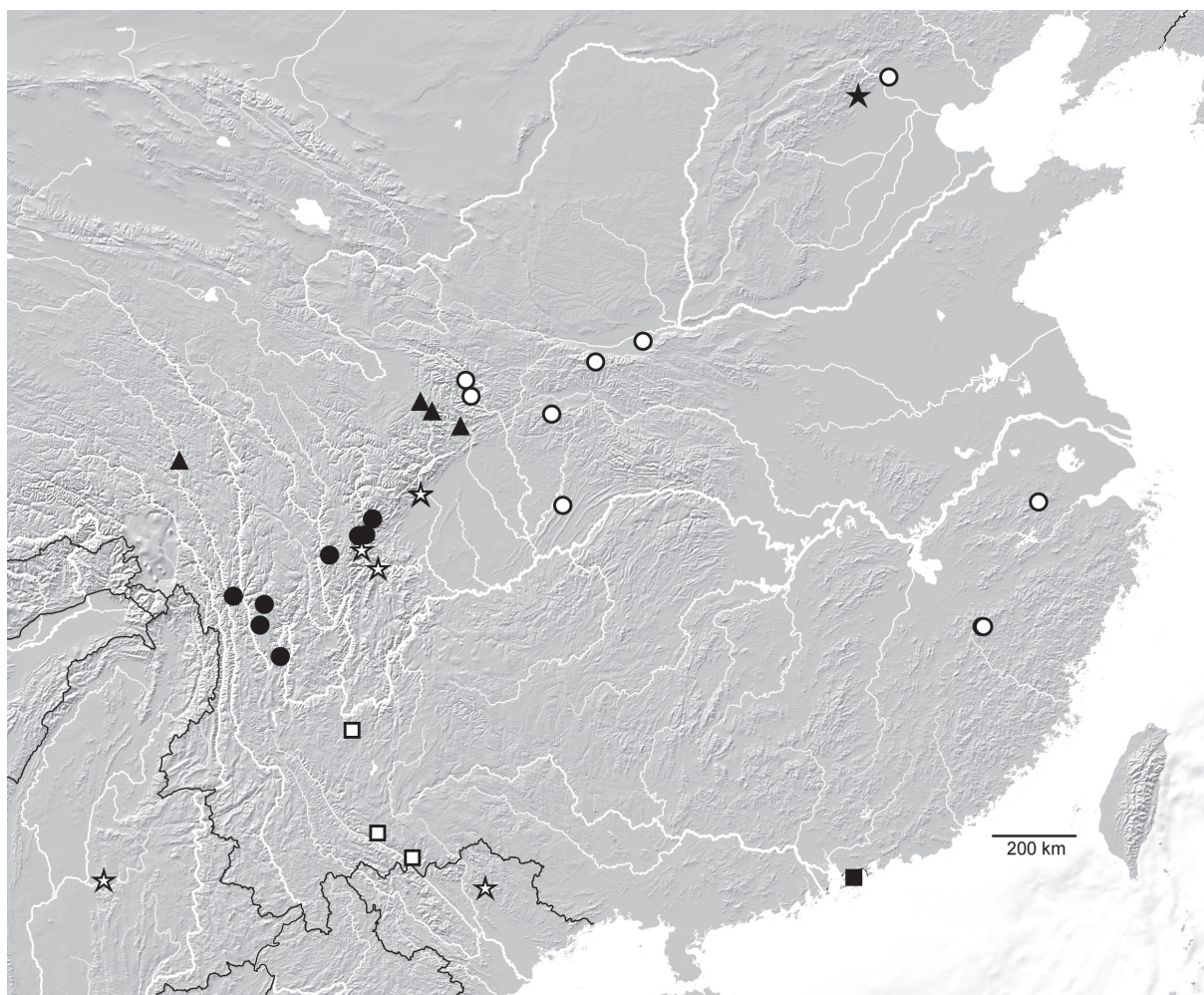
on tergites III–V; anterior impressions of tergites III–V each with a row of dense coarse non-setiferous punctures; tergite III with a pair of setiferous punctures in the middle and two setiferous punctures near paratergites on either side, without punctures at posterior margin; tergite IV with a pair of setiferous punctures in the middle of the otherwise impunctate posterior margin and with two setiferous punctures near paratergites on either side; tergite V with a median pair of punctures, two lateral punctures on either side, and a row of approximately 10 setiferous punctures at posterior margin; tergite VI with a transverse row of coarse punctures near anterior margin, a somewhat irregular transverse row of approximately 8 setiferous punctures in the middle, and a row of approximately 10 punctures at posterior margin; tergite VII with approximately 15–30 non-setiferous punctures anteriorly, and two transverse

rows of setiferous punctures, one behind middle and one near posterior margin; tergite VIII with few scattered punctures near anterior margin and with few setiferous punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII weakly concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin weakly convex in the middle; median lobe of aedeagus (Figs. 223–224) 0.83 mm long, with a ventral process of distinctive shape in lateral view.

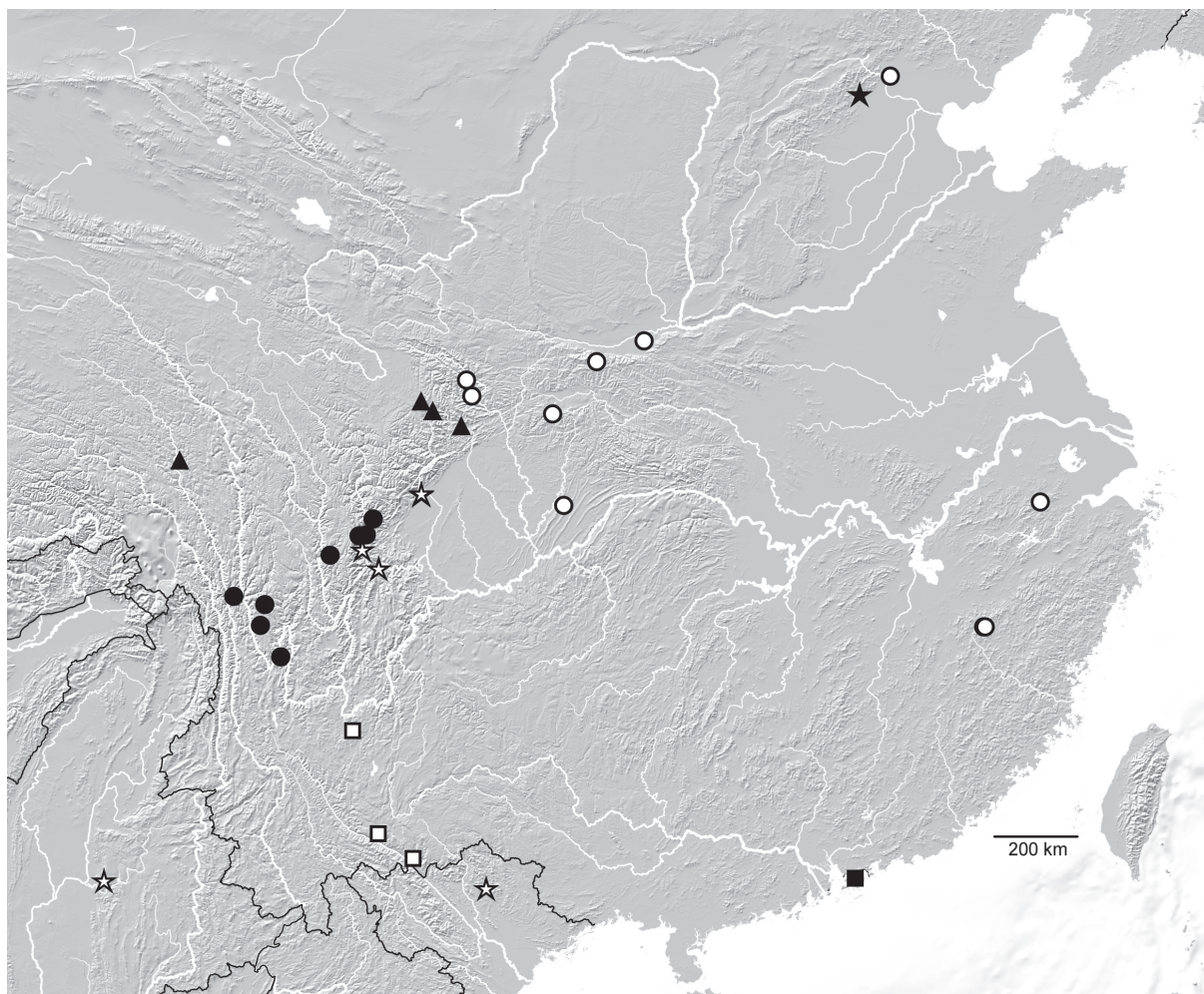
#### Comparative notes

Among the species with a similar coloration pattern and of similar size, *Z. tenuicornis* is characterized by the dark coloration of the maxillary palpi (much darker



**Fig. 303.** Distributions of *Zyras* spp. in China and adjacent regions, exclusively based on examined records. – *nigricornis* (black circles), *atronitens* (white square), *birmanus* (black circles), *nigronitens* (black stars), *gilvipalpis* (black triangles), *discolor* (white triangles).





**Fig. 304.** Distributions of *Zyrras* spp. in China and adjacent regions, exclusively based on examined records. – *tumidicornis* (black circles), *tenebricosus* (black triangles), *beijingensis* (white circles), *alboantennatus* (white stars), *bisinuatus* (white square), *sibiricus* (black triangle; records from other countries omitted), *fratrunkadooriorum* (black square).

than the legs), the sparse punctuation of the forebody, the presence of very long setae at the lateral margins of the pronotum, the punctuation pattern of the abdomen, the rather small and slender pronotum, and particularly by the slender antennae and by the shape of the ventral process of the aedeagus. The median lobe of the aedeagus is very similar to that of *Z. maculicollis*, from which *Z. tenuicornis* differs by the coloration (antennae distinctly darker, abdominal apex much more extensively black), more slender antennae, denser punctuation of the elytra, and the punctuation pattern of the abdomen.

#### Distribution and natural history

The type specimens were collected in four localities in Kaohsiung, Taoyuan, Nantou, and Taipeh Hsien, Taiwan (Fig. 302), by sifting leaf litter at altitudes of 800–1800 m.

#### *Zyrras (Zyrras) volans* n. sp. (Figs. 55, 167, 169, 227–228)

##### Type material

**H o l o t y p e** ♂: “N. Taiwan: Tai Pai Co, 9 k. Nei Tong Logging Road, 850 m NN, 5–9.X.2002 by FIT, Collr. C. I. Li / Holotypus ♂ *Zyrras volans* sp. n. det. V. ASSING 2015” (MNHUB).

##### Etymology

The specific epithet is the present participle of the Latin verb *volare* (to fly) and alludes to the fact that the holotype was collected on the wing.

##### Description

Rather small species; body length 5.3 mm; length of forebody 2.1 mm. Coloration: head dark-brown with paler frons; pronotum brown with the antero-lateral portions

extensively diffusely paler yellowish-brown; elytra dark-yellowish with the postero-lateral portions rather weakly infuscate (Fig. 169); abdomen (Fig. 167) with tergites II–IV pale-reddish, tergites V–VI dark-brown with pale-reddish margins, tergite VII brown with the anterior portion reddish, and tergite VIII dark-reddish; legs dark-yellowish; antennae (Fig. 55) blackish-brown; maxillary palpi brown with yellowish palpomere IV.

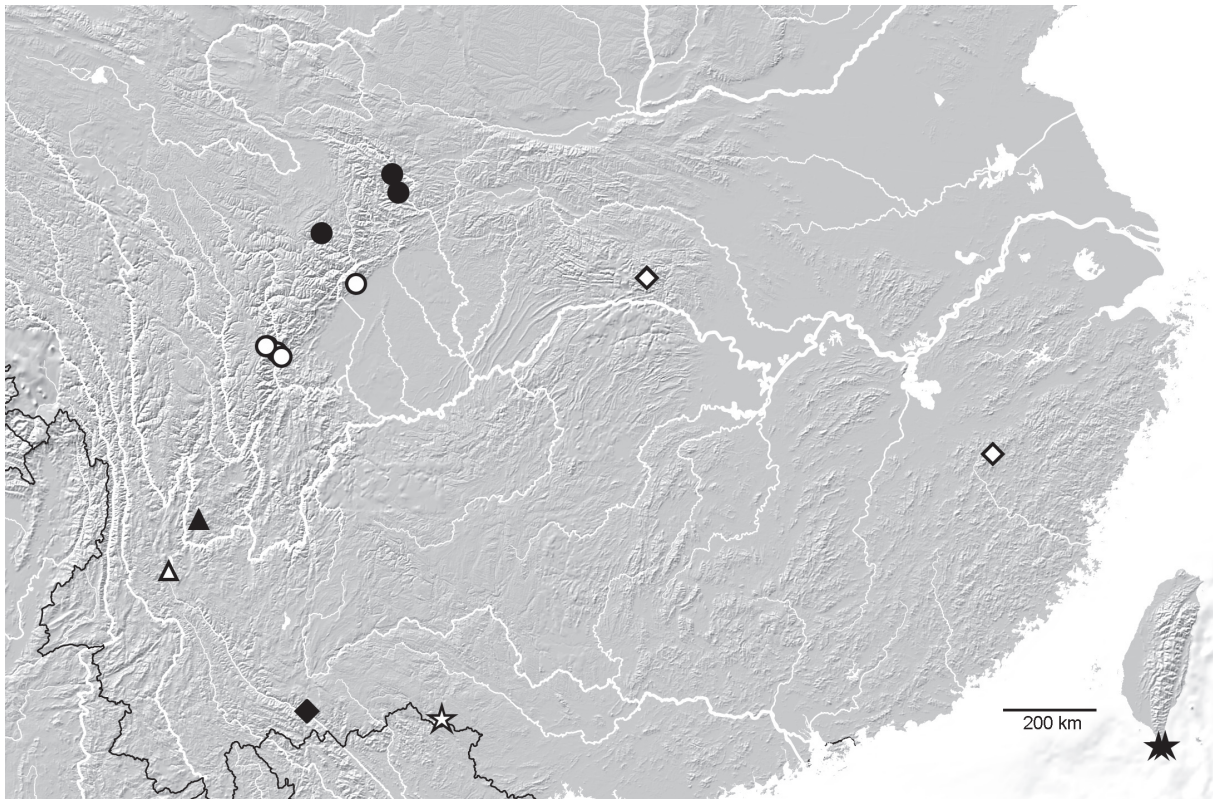
Head (Fig. 169) moderately transverse, broadly impunctate along middle; punctation in lateral dorsal portions coarse and very sparse; interstices much broader than diameter of punctures. Eyes distinctly longer than postocular region in dorsal view. Antenna (Fig. 55) 1.6 mm long; antennomere IV very weakly transverse; antennomeres V–X of gradually increasing width and increasingly transverse; X more than 1.5 times as broad as long; XI of cylindrical shape and approximately as long as the combined length of VIII–X.

Pronotum (Fig. 169) rather small in relation to head, 1.15 times as broad as long and 1.18 times as broad as head, weakly convex in cross-section, and strongly tapering posteriorly; punctation sparse, coarse, and irregularly distributed; antero-lateral portions with extensive impunctate areas; midline rather broadly impunctate; lateral margins each with four long setae.

Elytra (Fig. 169) approximately 0.85 times as long as pronotum; punctation coarse, defined, and not very dense, interstices on average distinctly broader than diameter of punctures. Hind wings fully developed. Metatarsomere I shorter than the combined length of II–IV.

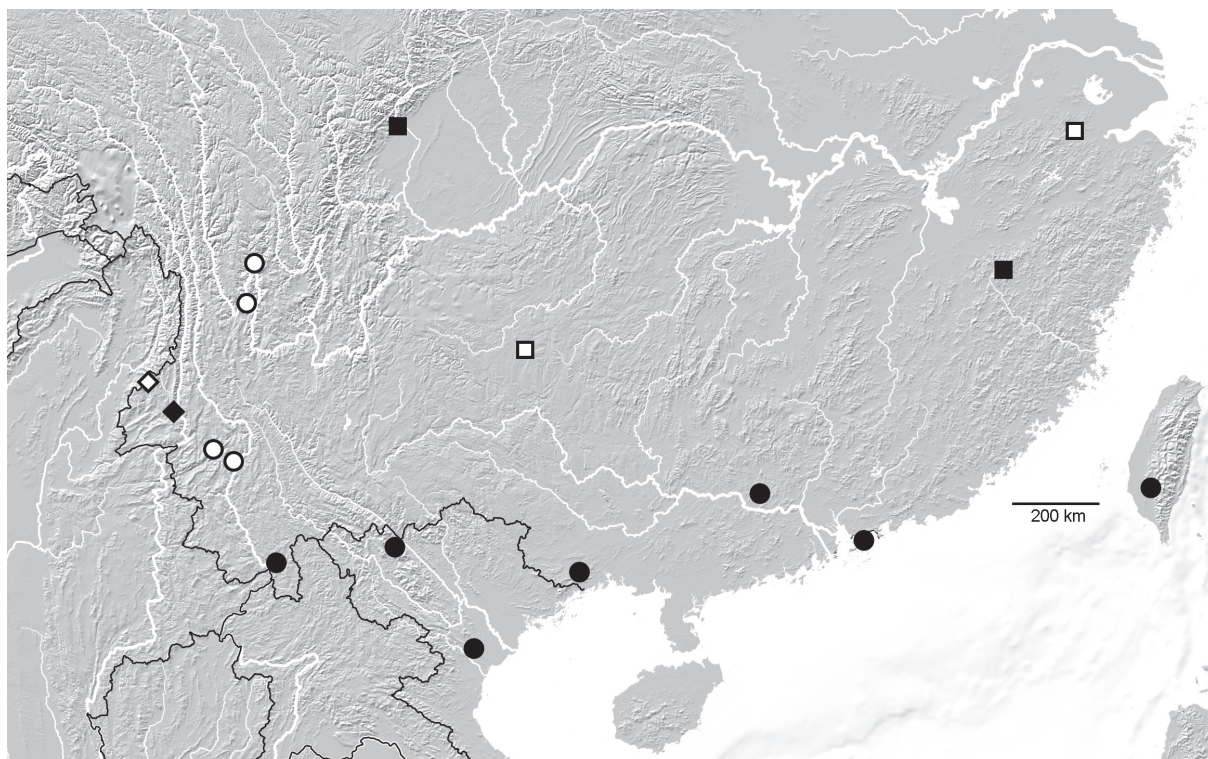
Abdomen (Fig. 167) narrower than elytra and with shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V each with a row of dense non-setiferous punctures; anterior portions of tergites VI and VII without non-setiferous punctures; tergites III–IV with a lateral setiferous puncture on either side and with four setiferous punctures at posterior margin; tergites V–VI with a lateral puncture on either side and with six setiferous punctures at posterior margin; tergite VII with a lateral setiferous puncture on either side and with two partly somewhat irregular transverse rows of setiferous punctures, one of them in posterior portion and one at posterior margin; tergite VIII with sparse punctures bearing long black setae in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII distinctly concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin broadly convex; median lobe of



**Fig. 305.** Distributions of *Zyrras* spp. in China and adjacent regions, exclusively based on examined records. – *pulcher* (black circles), *athetoides* (white circles), *yongshengensis* (black triangle), *song* (white triangle), *maculicollis* (white diamonds), *bicoloricollis* (black diamonds), *exspoliatus* (white star), *formosanus* (black stars).





**Fig. 306.** Distributions of *Zyras* spp. in China and adjacent regions, exclusively based on examined records. – *hongkongensis* (black circles), *extensus* (white circles), *rectus* (black diamond), *glabricollis* (white diamond), *schuelkei* (black squares), *wei* (black and white squares).

aedeagus small, 0.53 mm long, shaped as in Figs. 227–228; apical lobes of parameres moderately long and slender.

#### Comparative notes

This species is characterized particularly by the small pronotum with irregularly spaced punctation, the diffusely bicoloured pronotum, the punctation pattern of the pronotum (non-setiferous punctures present in the anterior impressions of tergites III–V, but absent in the anterior portions of tergites VI–VII), and by the shape of the median lobe of the aedeagus.

#### Distribution and natural history

The type locality is situated in Taipeh Hsien, northern Taiwan. The holotype was collected with a flight interception trap at an altitude of 850 m.

*Zyras (Zyras) hebes* **n. sp.**  
(Figs. 36, 168, 170, 229–230)

#### Type material

**Holotype** ♂: “C. Taiwan: Tai Chung Co., 40 km., 200 Logging Road, alt. ca. 2000 m, collr. C. L. Li by FIT, 26.–

27.VI.2002 / Holotypus ♂ *Zyras hebes* sp. n. det. V. ASSING 2015” (MNHUB).

**Paratypes**: 1 ♀: same data as holotype (cAss); 1 ♂ [damaged, slightly teneral]: “N. E. Taiwan: I Lan [sic] Co., 17 km., 100 Logging Road, alt. ca. 1650 m, 2–4.VII.2003 by FIT, collr. C. L. Li” (cAss); 1 ♀ [teneral]: “N. E. Taiwan: I Lan [sic] Co., 76 km, N. Crossing Highway, 2–4.VII.2003 by FIT, collr. C. L. Li” (MNHUB); 1 ♂ [both elytra missing], 1 ex. [abdominal segments V–X missing]: “Taiwan: Tai, Chung Lo [sic], An Ma Shan, 2 km, 24–26.VI.2003, Flight intercept trap, leg. CHUN LI” (MNHUB).

#### Etymology

The specific epithet (Latin, adjective: blunt, obtuse) alludes to the shape of the apex of the ventral process of the aedeagus in lateral view.

#### Description

Body length 5.5–5.9 mm; length of forebody 2.5 mm. Coloration: head and pronotum brown to dark-brown; elytra dark-yellowish with the postero-lateral portions extensively blackish-brown (Fig. 170); abdomen (Fig. 168) with segments III–V pale-reddish and segments VI–VIII dark-brown with the posterior margin of segment VI reddish; legs yellowish; antennae (Fig. 36) blackish-brown with the basal 2–3 antennomeres reddish to reddish-brown

and antennomeres XI dark-reddish; maxillary palpi yellowish.

Head (Fig. 170) moderately transverse, broadly impunctate along middle; in lateral dorsal portions with few scattered rather coarse punctures; interstices much broader than diameter of punctures. Eyes longer than post-ocular region in dorsal view. Antenna (Fig. 36) 2.0 mm long and moderately slender; antennomere IV weakly oblong or as long as broad; V approximately as long as broad; antennomeres VI–X of gradually increasing width and increasingly transverse; X approximately 1.5 times as broad as long; XI slightly longer than the combined length of IX and X.

Pronotum (Fig. 170) small in relation to head and weakly transverse, 1.05–1.10 times as broad as long and 1.20–1.24 times as broad as head; punctation moderately sparse to moderately dense in posterior half; antero-lateral portions with impunctate areas; midline rather narrowly impunctate; lateral margins each with four long setae.

Elytra (Fig. 170) 0.80–0.85 times as long as pronotum; punctation coarse, defined, and moderately dense, partly arranged in somewhat irregular transverse series. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV, or nearly so.

Abdomen (Fig. 168) slightly narrower than elytra and with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V each with few non-setiferous punctures; anterior portions of tergites VI and VII without non-setiferous punctures; tergites III–IV with a median pair of setiferous punctures and two lateral setiferous punctures on either side; tergites V and VI with a lateral setiferous puncture on either side and with four setiferous punctures at posterior margin; tergite VII with a lateral puncture on either side and with two transverse rows of 6–8 setiferous punctures, one of them in posterior portion and one at posterior margin; tergite VIII with numerous punctures bearing long dark setae only in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII weakly concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus 0.68–0.69 mm long; ventral process weakly curved and apically blunt in lateral view (Figs. 229–230).

#### Comparative notes

*Zyras hebes* is distinguished from the similar and sympatric *Z. volans*, with which it shares several characters such as a rather small and slender body, similar coloration, and the presence of non-setiferous punctures in the anterior impressions of tergites III–V, but absence of such punctures in the anterior portions of tergites VI–VII, by the distinctly longer, more slender and bicoloured anten-

nae with more transverse antennomeres IV–X, a uniformly coloured pronotum, more distinctly and extensively infuscate postero-lateral portions of the elytra, a less transverse pronotum with less irregularly spaced punctation, the presence of median pairs of punctures on tergites III and IV, and the less strongly curved (lateral view) and apically less slender (ventral view) ventral process of the aedeagus.

#### Distribution and natural history

The specimens were collected with flight interception traps in several localities in northern and central Taiwan (Taichung and Ilan Hsien) at altitudes of 1650–2000 m. Three paratypes had no altitude indicated on their labels; two specimens collected in July are teneral.

*Zyras (Zyras) nigrapicalis* n. sp.  
(Figs. 27, 69, 119, 234–235, 301)

#### Type material

**Holotype** ♂: “China (Yunnan) Baoshan Pref., Gaoligong Shan, 29 km ESE Tengchong, 24°55'37"N, 98°45'09"E, 2350 m (devast. decid. forest with clearings and shrubs, litter, wood, sifted), 1.VI.2007 D. W. WRASE [15] / Holotypus ♂ *Zyras nigrapicalis* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 1 ♂: “China: S-Yunnan (Xishuangbanna), 37 km NW Jinghong, vic. Guo Men Shan / N22°14.43'E100°36.12, 1100 m, 8.VII.2008 MF, leg. L. MENG rice fallow” (NME); 1 ♀: “China: W-Sichuan 1999, Ganzi Tibet. Aut. Pref., Luding Co., Nebenfluß des Dadu He, 5 km S Luding, 29°53'N, 102°13'E, 1250 m, 23.VI., leg. M. SCHÜLKE” (cAss); 1 ♀: “China: W-Sichuan 1999, Aba Tibet. Aut. Pref., Weizhou Co., Quionglai [sic] Shan, Wolong Tal, 20 km WNW Dujiangyan, 31°05'N, 103°26'E, 1100 m, Schotter, Blüten, 14.VII., leg. M. SCHÜLKE” (cSch); 1 ♀: “China: C-Sichuan, Wenjiang Distr., Dujiangyan Co., Qingcheng Shan, 975 m, 56 km NW Chengdu, 30°54'N, 103°33'E, Feldrand, Strohhaufen, 13.VII., leg. M. SCHÜLKE” (cSch); 1 ♀: “China, Jiangxi prov., 24.IV.2011, Jinggang Shan Mts., Xiping (stream valley; cow dungs [sic]), 26°33.7'N, 114°12.2'E, 915 m, M. FIKÁČEK & J. HÁJEK leg.” (NMP); 1 ♀: “N.Taiwan: Tai Pai Co, 9 k. Nei Tong Logging Road, 850 m NN, 5–9.X.2002 by FIT, Collr. C.I. Li” (MNHUB).

#### Etymology

The specific epithet is an adjective composed of the Latin adjectives *niger* (black) and *apicalis* (apical). It refers to the black apex of the abdomen, which distinctly contrasts with the reddish anterior portion.

#### Description

Rather large species; body length 7.0–8.3 mm; length of forebody 2.8–3.6 mm. Coloration: head and pronotum black; elytra pale-reddish, with the postero-lateral portions sharply and triangularly black (Fig. 69); abdomen (Fig. 119) bicoloured, with segments III–VI and anterior portion of VII bright-reddish and the apex black; legs pale-yellowish; maxillary palpi dark-brown; antennae (Fig. 27)



dark-brown to black, with antennomere I reddish-brown to black, II reddish to blackish-brown, XI reddish to blackish with slightly paler apex, and occasionally also antennomeres IX–X somewhat paler.

Head (Fig. 69) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions very sparse; interstices much broader than diameter of punctures. Eyes large and bulging, distinctly longer than postocular region in dorsal view. Antenna (Fig. 27) 2.1–2.4 mm long and slender; antennomeres IV–V weakly oblong; VI approximately as long as broad; VII–IX weakly transverse; X moderately transverse, but less than 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 69) 1.14–1.20 times as broad as long and 1.26–1.33 times as broad as head; punctation rather coarse, of variable density, and irregularly spaced, distinctly sparser in antero-lateral and posterior portions; impunctate midline narrow; lateral margins with some moderately long dark setae.

Elytra (Fig. 69) 0.81–0.90 times as long as pronotum; punctation coarse, defined, and moderately dense, interstices on average slightly broader than diameter of punctures. Hind wings fully developed. Legs long and slender; tarsi thin; metatarsus nearly as long as metatibia; metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 119) slightly narrower than elytra and with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with dense and rather fine non-setiferous punctation; posterior margins of tergites IV–VII each with a row of sparse fine punctures, that of tergite III impunctate; posterior portions of tergites III–VII otherwise nearly impunctate; tergite VIII with few punctures only in posterior portion; posterior margin of tergite VII with palisade fringe.

♂: tergite VII with smooth median elevation posteriorly; posterior margin of tergite VIII sharply concave in the middle, on either side of this concavity with a distinct process, anterior to the concavity with some granulose punctures; sternite VIII somewhat longer than tergite VIII, its posterior margin truncate in the middle; median lobe of aedeagus approximately 1.0 mm long, ventral process rather stout in lateral view (Figs. 234–235).

♀: tergite VII without median elevation; tergite VIII with broadly V-shaped posterior excision, anterior to this excision without granulose punctation.

#### Intraspecific variation

The three paratypes from Sichuan differ from the holotype by distinctly paler antennae and a denser punctation of the pronotum; the paratype from Taiwan is distinguished from the holotype by somewhat more extensive

setiferous punctation of the abdomen. Since no additional significant distinguishing characters were found, the observed differences are attributed to intraspecific variation.

#### Comparative notes

*Zyras nigrapicalis* differs from other species recorded from China by its coloration alone. Other species with a similarly coloured abdomen have the pronotum reddish.

#### Distribution and natural history

The type locality is situated in the Gaoligong Shan, Yunnan (Fig. 301), at an altitude of 2350 m. The holotype was sifted from leaf litter in a degraded deciduous forest. The paratypes were collected in one locality in southern Yunnan with a Malaise trap in a rice fallow at an altitude of 1100 m, in three localities in Sichuan from stream gravel and straw heaps at altitudes of 975–1250 m, in one locality in Jiangxi at an altitude of 915 m, and in one locality in Taiwan with a flight interception trap at an altitude of 850 m.

#### *Zyras (Zyras) atrapicalis* n. sp. (Figs. 172–175, 231–233, 302)

#### Type material

**Holotype** ♂: “China: S-Yunnan (Xichuangbanna), EKL, 23 km NW Jinghong, vic. Na Ban (NNNR) / N22°09.49, E100°39.92, 28.VI.2008, 730 m, forest, leg. A. WEIGEL / Holotypus ♂ *Zyras atrapicalis* sp. n. det. V. ASSING 2015” (NME).

**Paratypes**: 1 ♂, 1 ♀: “China: S-Yunnan (Xishuangbanna), 23 km NW Jinghong, vic. Na Ban (NNNR) / N22°09.49 E100°39.92, 10.X.2008, leg. L. MENG, 730 m trans. zone MF1” (NME, cAss); 1 ♀: “China: S-Yunnan (Xishuangbanna), 23 km NW Jinghong, vic. Na Ban (NNNR) / N22°09.49 E100°39.92, 28.VI.2008, leg. A. WEIGEL, 730 m transition zone MF” (cAss).

#### Etymology

The specific epithet is an adjective composed of the Latin adjectives *ater* (black) and *apicalis* (apical). It refers to the black apex of the abdomen, which distinctly contrasts with the reddish anterior portion.

#### Description

Body length 6.5–6.8 mm; length of forebody 2.7–3.1 mm. Coloration: head and pronotum blackish; elytra blackish, with the humeral portions yellowish (Fig. 172); abdomen (Fig. 173) bicoloured, with segments II–VI and anterior margin of VII bright-reddish; remainder of segment VII and all of segment VIII blackish-brown; legs pale-yellowish; maxillary palpi dark-brown with yellowish palpomere IV; antennae (Fig. 173) blackish, with antennomeres I dark-brown, II pale-reddish to brown, and XI reddish to dark-reddish.

Head (Fig. 172) strongly transverse, broadly impunctate along middle; punctation in lateral and posterior dorsal portions sparse and coarse; interstices broader than diameter of punctures. Eyes large and strongly bulging, more than twice as long as postocular region in dorsal view. Antenna (Fig. 173) fine and short in relation to body, 1.8–2.1 mm long; antennomeres IV–V approximately as long as broad or very weakly transverse; VI–X weakly and gradually increasing in width and increasingly transverse, X approximately 1.5 times as broad as long, and XI shorter than the combined length of IX and X.

Pronotum (Fig. 172) approximately 1.15 times as broad as long and 1.14–1.21 times as broad as head, broadest near anterior angles; posteriorly with a pronounced median impression; punctures coarse, of different sizes, sparse, and very irregularly spaced, antero-lateral portions extensively, postero-lateral portions less extensively, and mid-line broadly impunctate; lateral margins with 4–5, anterior margins with 3 long dark setae on either side.

Elytra (Fig. 172) 0.82 times as long as pronotum; punctation coarse, defined, and dense, slightly less dense in posterior than in anterior portions. Hind wings fully developed. Metatarsomere I slightly shorter than the combined length of II–IV.

Abdomen (Fig. 173) narrower than elytra and with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V each with a (partly somewhat irregular) row of rather coarse non-setiferous punctures; anterior portions of tergites VI–VII each with a rather narrow transverse band of scattered non-setiferous punctures; tergite III with a lateral puncture on either side and with six punctures at or near posterior margin, all of them bearing long black setae; tergite IV with a lateral setiferous puncture on either side, with six setiferous punctures at posterior margin, with additional non-setiferous punctures laterally, and with scattered non-setiferous micropunctation on disc; punctation of tergites V and VI similar to that of tergite IV, but posterior margin with 8 setiferous punctures; tergite VII (Fig. 175) with a pair of coarse median punctures, a short transverse row of setiferous punctures near posterior margin, and numerous small setiferous punctures at posterior margin; tergite VIII (Fig. 175) with punctures bearing long black setae in posterior portion; posterior margin of tergite VII with pronounced palisade fringe.

♂: tergite VIII in the middle of posterior portion with a smooth elevation, on either side of this elevation with an impression, posterior margin weakly concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus (Figs. 231–232) 0.75 mm long and of compact shape; paramere (Fig. 233) 0.95 mm long, slender, and with very short apical lobe.

♀: tergite VIII posteriorly without elevation, posterior margin truncate to indistinctly concave in the middle.

## Comparative notes

*Zyras atrapicalis* differs from the similarly coloured *Z. nigrapicalis* by differently coloured and shorter antennae, more extensively blackish elytra, a more transverse head with larger and more bulging eyes, the shape and sparser punctation of the pronotum, the punctation pattern of the abdomen, a smaller aedeagus, and the shape of the ventral process of the aedeagus. In habitus, coloration, and punctation of the forebody, the new species much resembles *Z. inversus* Pace, 2012 from Thailand (male unknown; holotype examined), from which it is distinguished by the much shorter and paler antennomere XI (*Z. inversus*: antennomere XI black and approximately as long as the combined length of antennomeres VIII–X), the shape of the head (*Z. inversus*: head of transversely oval shape), larger eyes, and by the punctation pattern of the abdomen (*Z. inversus*: non-setiferous punctation of anterior portions of tergites III–VI much denser, coarser, and more extensive).

## Distribution and natural history

The type locality is situated in southern Yunnan (Fig. 302). The specimens were collected on the wing in a forest and in transitional habitats at an altitude of 730 m.

## *Zyras (Zyras) nigricornis* n. sp. (Figs. 8, 63, 120, 238–241, 303)

*Zyras shaanxiensis*: PACE (2012a); misidentification.

*Zyras wei*: PACE (2012a); misidentification.

## Type material

**Holotype** ♂: “China – Sechuan, Jitiang [recte: Jintang], 3.7–14.7.2001, lgt. E. KUČERA / coll. FELDMANN, Münster / Holotypus ♂ *Zyras nigricornis* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 2 ♂♂, 1 ♀ [1 teneral]: “China, W Hubei, 21.–24.VI., Da Shennongjia mts., 31.5N 110.3E, 2500–3000 m, JAROSLAV TURNA leg. 2001” (cMar, cAss); 1 ♀: “China (N.Sichuan) 70 km N Songpan, road S 301, above Gan lake, 2700 m, 33°15′26″N, 103°46′03″E, spruce forest with birch, litter, moss, soil sifted), 12.VIII.2012 D. W. WRASE [26]” (cSch); 1 ♀: “China Sichuan, Emei Shan, Leidongping, 2500 m, 18.VII.1996, 29°32′N 103°21′E C65 / collected by A. SMETANA, J. FARKAČ and P. KABÁTEK / *Zyras saanxiensis* [sic] Pace, det. R. PACE 1999” (cAss); 1 ♂, 1 ♀: “China Sichuan, Emei Shan, 3000 m, 29°32′N 103°21′E, 17.VII.1996 C64 / collected by A. SMETANA, J. FARKAČ and P. KABÁTEK / *Zyras saanxiensis* [sic] Pace, det. R. PACE 1999” (cSme); 2 ♂♂: “China: W-Hubei daba [sic] Shan E of Mt. Da Shennongjia, 12 km / NW Muyuping 31°30′N, 110°21′E 1950 m, A SMETANA (C117) / *Zyras wei* Pace, det. R. Pace 2005” (cSme, cAss); 11 exs.: “China: Sichuan, Daxue Shan, 25 km SE Kangding, 3200–3500 m, 13.VI.–4.VII.2009, leg. A. PLUTENKO” (cSch, cAss); 2 ♂♂: “China – NW Sichuan, 20 km NW Maowen, 2150 m, Jiuding Shan, coniferous wood, 7–28.VI.2004, leg. R. FABBRI” (cSch, cAss); 1 ♀: “China (W Sichuan), Daxue Shan, Mu Ge Cuo, NW Kangding 3200–3400 m, 30.11 N, 101.52 E, 21.V.1997 WRASE” (cSch); 1 ♂, 1 ♀: “China – W Sichuan, S Barkam, between Lianghekou–Fubian, 3450–3650 m, *Quercus*



shrubs and mixed wood, 10–30.VI.2004, leg. R. FABBRI” (cSch, cAss); 1 ♂: “China – W Sichuan, 3550–3650 m, Jiajin Shan, Jintang, 18 km E, primary coniferous forest, 1–24.VI.2004, leg. R. FABBRI” (cSch); 1 ♂, 2 ♀♀: “China – NW Sichuan, 25 km E of Barkam, Suo Mo Xian, 2850 m, mixed forest, 9–29.VI.2004, leg. R. FABBRI” (cSch); 1 ♀: “China – W Sichuan, 5.6.2006, West of Zhier, est. 4241 M, N 28°20.886' E 101°28.381' lat. R. SEHNAL & M. TRYZNA” (cSch); 2 ♀♀: “China: S-Gansu, Minshan Mts., 60 km NW Wudu, 2000 m, 10.–20.VI.2005, V. PATRIKKEEV” (cSch); 6 exs.: “China (S-Shaanxi) Daba Shan, mount. range N pass 22 km NW Zhenping, N-slope, 2850 m, 32°01'N, 109°21'E (nr. mount. top, *Abies*, bushes-sifted), 13.VII.2001 WRASE [12]” (cSch, cAss); 1 ex.: same data, but leg. SCHÜLKE (cSch); 4 exs.: “China: S-Shaanxi (Qinling Shan), mountain range W pass on rd. Xi'an–Shagoujie, 45 km SSW Xi'an, 33°52'N, 108°46'E, 2675 m, leg. M. SCHÜLKE [C01-20B] / 25.–26.VII.2001, N-slope, *Abies*, *Betula*, *Larix*, *Rhododendron*, subalpine meadows, pitfall traps (vinegar) [C01-20B]” (cSch, cAss); 3 exs.: “China (W-Hubei) Daba Shan, mountain range NE Muyuping, pass 12 km N Muyuping, 31°32'N, 110°26'E, 2380 m, N pass (N-slope, young decid. for., shrubs, moss) 17.–21.VII.2001 WRASE [15]” (cSch, cAss); 1 ♀: “China (Qinghai Prov.), road 301 km 180, 43 km ESE Men Yuan, 2704 m, 37°09'32.06"N, 102°02'06.0"E (creek valley with *Picea*, *Salix*, *Populus*, *Betula*, litter/moss sifted) 5.VII.2011 D. W. WRASE [19]” (cAss).

#### Etymology

The specific epithet (Latin, adjective) alludes to the uniformly blackish-brown antennae.

#### Description

Relatively large species, but size very variable; body length 5.7–8.2 mm; length of forebody 2.8–3.9 mm. Usual coloration: forebody blackish-brown to black, sometimes with the suture of the elytra slightly paler (Fig. 63); abdomen (Fig. 120) blackish-brown, often with the posterior margins of the segments yellowish-red to red; legs pale-yellowish, rarely darker; maxillary palpi yellowish to yellowish-brown; antennae (Fig. 8) uniformly blackish-brown, basal and apical antennomeres rarely paler.

Head (Fig. 63) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions somewhat variable, moderately dense; interstices broader than, as broad as, or narrower than diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 8) 2.2–3.0 mm long and moderately massive; antennomere IV weakly transverse; V–VIII as long as broad or weakly transverse; IX–X weakly to moderately transverse, less than 1.5 times as broad as long; XI distinctly shorter than the combined length of IX and X.

Pronotum (Fig. 63) approximately 1.13–1.20 times as broad as long and 1.32–1.37 times as broad as head; punctation moderately dense to rather dense; interstices on average slightly broader than, as broad as, or slightly narrower than diameter of punctures; midline narrowly impunctate; lateral margins without long setae.

Elytra (Fig. 63) 0.83–0.88 times as long as pronotum; punctation defined and dense, interstices on aver-

age approximately as broad as, slightly broader, or slightly narrower than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as, or slightly shorter than the combined length of II–IV.

Abdomen (Fig. 120) relatively large, as broad as, or slightly narrower than elytra, with moderately deep anterior impressions on tergites III–V, and with somewhat variable, but always very fine punctation; anterior impressions of tergites III–V impunctate, or nearly so (exceptionally with few non-setiferous micropunctures); posterior margins of tergites III–VII each with row of numerous setiferous punctures; disc of tergite III with irregular transverse row of rather sparse punctures, with scattered punctures, or impunctate, except for a lateral puncture near paratergites on either side; discs of tergites IV–V with two irregular transverse rows of punctures, or with scattered irregular punctures, or impunctate, except for one or two lateral punctures on either side; tergite VI anteriorly with a transverse series with very sparse punctures, disc with three irregular transverse rows of punctures, or with few irregular punctures, or practically impunctate (except for two lateral setiferous punctures near paratergites on either side); posterior half of tergite VII with irregular sparse and fine punctation not arranged in rows; tergite VIII in posterior fourth with rather dense and distinct setiferous punctures, in anterior three-fourths impunctate, or nearly so; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII truncate in the middle, this truncate portion delimited by more or less pronounced tooth-like projection on either side; sternite VIII somewhat longer than tergite VIII, its posterior margin weakly convex or weakly concave in the middle; median lobe of aedeagus of remarkably variable size, 0.82–0.98 mm long and shaped as in Figs. 238–241.

♀: posterior margin of tergite VIII smoothly convex; posterior margin of sternite VIII weakly concave in the middle.

#### Intraspecific variation

This species is subject to enormous intraspecific variation of size, coloration, punctation of the abdomen, and even the size of the aedeagus. Specimens from Sichuan tend to be larger and darker, to have a much more sparsely punctate abdomen (surfaces of anterior tergites often impunctate, or nearly so, except for the row of marginal setiferous punctures) and a larger aedeagus than material from the Daba Shan. These differences, however, are linked by intermediate conditions, so that they are attributed to intra- rather than interspecific variation.

#### Comparative notes

*Zyras nigricornis* is characterized by the usually almost uniformly dark coloration of the body, the usually uni-

formly blackish-brown antennae, the rather broad abdomen, the sparse punctation of the abdomen, the shapes of the male and female tergite VIII, and by the morphology of the aedeagus.

#### Distribution and natural history

This species was found in several mountain ranges in North and West Sichuan, in the Qinling Shan, the Daba Shan eastwards to the Da Shennongjia range, and one locality in Qinghai (Fig. 303). According to HIEKE (2005), Jitiang (type locality) is a misspelling and refers to Jintang (30°18'N, 102°12'E) to the northeast of Kangding, West Sichuan. The altitudes range from 1950 to 4240 m. Most of the specimens were sifted from litter and moss in mixed, coniferous, and deciduous forest or in shrub habitats. One paratype collected in June is teneral.

*Zyras (Zyras) tenebricosus* **n. sp.**  
(Figs. 45, 85, 143, 242–247, 304)

#### Type material

**Holotype** ♂: “China [24] – N-Sichuan, pass NW Songpan, 3600 m, 32°55'32"N, 103°25'56"E, sifted, 11.VIII.2012, V. ASSING / Holotypus ♂ *Zyras tenebricosus* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 1 ♀: same data as holotype (cAss); 1 ♀: “China [23] – N-Sichuan, pass ENE Songpan, 3920 m, 32°44'23"N, 103°44'31"E, sifted, 10.VIII.2012, V. ASSING” (cAss); 1 ♂: “China: N-Sichuan, Pass betw. Pingwu and Juijaigow, 3000 m, 10.–15.VII.2005, V. PATRIKEEV” (cAss); 1 ex.: “China – W Sichuan, 3550–3650 m, Jiabin Shan, Jintang, 18 km E, primary coniferous forest, 11–24.VI.2004, leg. R. FABBRI” (cSch); 1 ♂: “E Tibet, ‘Tamala Shan’ pass, road Qamdo–Toba, 20 km NE Qamdo, 31°16'N, 97°18'E, 4800 m, alpine meadow, 16.VII.1997, JAROSLAV TURNA leg.” (cSch).

#### Etymology

The specific epithet (Latin, adjective: dark) alludes to the black coloration of the whole body.

#### Description

Body length 5.5–6.5 mm; length of forebody 2.7–3.1 mm. Coloration: whole body black (Figs. 85–143); legs blackish, with the tarsi reddish and with the tibial bases and apices narrowly reddish to brown; maxillary palpi greyish-red, with the apical palpomere pale-reddish; antennae (Fig. 45) uniformly black.

Head (Fig. 85) distinctly transverse, broadly impunctate along middle in posterior half; punctation in lateral and anterior dorsal portions moderately dense; interstices on average approximately as broad as diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 45) 1.9–2.0 mm long, not massive; antennomere III nearly twice as long as broad; IV–IX distinctly transverse, gradually and weakly increasing

in width; X weakly transverse and longer than IX; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 85) 1.10–1.15 times as broad as long and 1.25–1.32 times as broad as head; punctation moderately dense; interstices on average as broad as, or slightly broader than diameter of punctures; midline narrowly impunctate; lateral margins without long setae.

Elytra (Fig. 85) 0.83–0.86 times as long as pronotum; punctation defined and rather dense, interstices on average slightly narrower than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as, or slightly shorter than the combined length of II–IV.

Abdomen (Fig. 143) approximately 0.9 times as broad as elytra and with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portion of tergite VI with sparse and fine non-setiferous punctation; posterior margins of tergites III–VII each with row of numerous setiferous punctures; posterior portions/halves of tergites III–VII with irregular punctation not arranged in distinct transverse series; posterior portion of tergite VIII with denser punctation; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII barely noticeably concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin weakly convex; median lobe of aedeagus 0.65 mm long and shaped as in Figs. 242–247; ventral process very flat (lateral view).

♀: posterior margin of tergite VIII convex; posterior margin of sternite VIII very weakly concave in the middle.

#### Comparative notes

*Zyras tenebricosus* is characterized by the dark coloration of the body, the legs, and the antennae, by the morphology of the antennae, the punctation pattern of the abdomen, and by the morphology of the aedeagus. For characters distinguishing it from the similar *Z. tumidicornis* see the comparative notes in the following section.

#### Distribution and natural history

The currently known distribution is confined to five localities in northern and western Sichuan, and in eastern Tibet (Fig. 304). The specimens from the environs of Songpan were sifted from litter and moss on moist north slopes with willow, other shrubs, and rhododendron; the paratype from Tibet was collected in an alpine meadow. The altitudes range from 3000 to 4800 m.

*Zyras (Zyras) tumidicornis* **n. sp.**  
(Figs. 46, 86, 144, 250–251, 304)

#### Type material

**Holotype** ♂: “China – Sechuan, Sabde [29°27'N, 101°19'E], 24.6.–28.6.2001, lgt. E. KUČERA / coll. FELDMANN



Münster / Holotypus ♂ *Zyras tumidicornis* sp. n. det. V. ASSING 2014" (cAss).

**Paratypes:** 1 ♀: "China – W Sichuan, 3550–3650 m, Jiajin Shan, Jintang, 18 km E, primary coniferous forest, 1–24.VI.2004, leg. R. FABBRI" (cAss); 1 ♀: "China – W Sichuan, 2950–3200 m, Kangding pref., mixed forest, between Cuilai–Wuouana, 13–21.VI.2004, leg. R. FABBRI" (cSch); 1 ♀: "China: Sichuan, Daxue Shan mts., 25 km SE Kangding, 3200–3500 m, 13.VI.–4.VII.2009, leg. A. PLUTENKO" (cSch); 1 ♀: "China: Sichuan, Daxue Shan, Gongga Shan Mt., 15 km S Kangding, 3200–3500 m, 5.–10.VII.2004, PLUTENKO" (cSch); 1 ♀: "China–Yunnan, Zhongdian, 27.6.–30.6.2005, lgt. E. KUČERA" (cSch); 1 ♂: "China (N-Yunnan) Zhongdian Co., 48 km N Zhongdian, 28°16.6'N, 99°45.7'E, 3220 m (creek valley with devastated primary forest, field edge), 21.VIII.2003 WRASE [11A]" (cSch); 1 ♀: "China: Yunnan province, 32 km N Lijiang, 21.VI.2007, Maoniuping [Yak meadows], 27°09.9'N, 100°14.5'E, 3540 m, J. HÁJEK & J. RŮŽIČKA leg. [CH41] / sifted detritus, leaves and moss: steep slope, wet mixed forest (with *Pinus*, *Abies*, *Rhododendron*)" (cSch); 1 ♂: "China (N-Yunnan) Diqing Tibet. Aut. Pref., Deqin Co., Baima Shan, E-side pass 12 km SE Deqin / 28°23.86'N, 98°59.04'E, 4085–4200 m, small creek valley (dry slope with shrubs), 10.VI.2005 D. W. WRASE [08]" (cAss).

#### Etymology

The specific epithet (Latin, adjective) alludes to the massive antennae, particularly the conspicuously large antennomeres I and III.

#### Description

Body length 6.4–8.1 mm; length of forebody 3.1–4.0 mm. Coloration: whole body black (Figs. 86, 144); legs blackish-brown, with dark-brown tibiae and reddish tarsi; maxillary palpi reddish; antennae (Fig. 46) uniformly black.

Head (Fig. 86) distinctly transverse, narrowly to broadly impunctate along middle or only in posterior half; punctation in lateral and anterior dorsal portions moderately dense to dense; interstices on average mostly somewhat broader than diameter of punctures. Eyes approximately as long as postocular region in dorsal view, or somewhat longer. Antenna (Fig. 46) 2.2–2.9 mm long, rather massive; antennomere I conspicuously large; III large, distinctly coniform, and barely 1.5 times as long as broad; IV–IX distinctly transverse, gradually increasing in width; X weakly transverse and longer than IX; XI distinctly shorter than the combined length of IX and X.

Pronotum (Fig. 86) approximately 1.15 times as broad as long and 1.30–1.35 times as broad as head; punctation moderately dense; interstices on average as broad as diameter of punctures, or broader; midline narrowly impunctate; lateral margins without long setae.

Elytra (Fig. 86) 0.82–0.90 times as long as pronotum; punctation defined and moderately dense, interstices on average slightly broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 144) approximately 0.95 times as broad as elytra and with moderately deep anterior impressions

on tergites III–V; anterior impressions of tergites III–V impunctate or nearly so, only with few scattered fine non-setiferous punctures at most; tergite VI anteriorly with few scattered non-setiferous punctures; posterior margins of tergites III–VII each with row of numerous setiferous punctures; discs of tergites III–IV each with two transverse rows of setiferous punctures (anterior row sometimes reduced to few punctures); tergites V–VII in posterior halves with irregular sparse micropunctuation not arranged in distinct series; tergite VIII with sparse punctation in posterior portion and practically impunctate in anterior half; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII barely noticeably concave in the middle, nearly truncate; sternite VIII somewhat longer than tergite VIII, its posterior margin weakly convex or nearly truncate in the middle; median lobe of aedeagus approximately 0.7 mm long and shaped as in Figs. 250–251; ventral process not conspicuously flat (lateral view).

♀: posterior margin of tergite VIII weakly convex in the middle; posterior margin of sternite VIII weakly concave in the middle.

#### Comparative notes

In many respects, *Z. tumidicornis* resembles *Z. tenebricosus*, from which it differs by the more robust body, the longer and more massive antennae with a distinctly larger antennomere I and a distinctly larger, more coniform, and less oblong antennomere III, by the practically impunctate anterior impressions of tergites III–V, the presence of transverse series of punctures on tergites III and IV, the generally sparser punctation of the abdomen, and by the differently shaped aedeagus (ventral process less flat).

#### Distribution and natural history

The species was found in several localities in western Sichuan and northern Yunnan (Fig. 304) at altitudes between approximately 3000 and approximately 4100 m. The specimens were sifted from leaf litter in mixed and coniferous forests, and in a subalpine shrub habitat.

#### *Zyras (Zyras) athetoides* n. sp.

(Figs. 47, 88, 146, 252–253, 305)

#### Type material

**Holotype** ♂: "China: N-Sichuan, Minshan Mts., Baima pass, 3000 m, 5.–20.VII.2005 / Holotypus ♂ *Zyras athetoides* sp. n. det. V. ASSING 2014" (cAss).

**Paratypes:** 1 ♀: "China: W-Sichuan (6), Daxue Shan, Paoma-Shan b. Kangding, 30.02.56N, 101.58.05E, 2700–2900 m, 22.05.1997, M. SCHÜLKE" (cSch); 1 ♀: "China: W-Sichuan (7), Daxue Shan, W Kangding, 30.03.13N, 101.57.11E,

2700–2800 m, 24.05.1997, M. SCHÜLKE” (cSch); 1 ♀: “China: Sichuan, Daxue Shan, 25 km SE Kangding, 3200–3500 m, 13.VI.–4.VII.2009, leg. A. PLUTENKO” (cSch); 1 ♀: “China: W-Sichuan 1999, Ya’an Prefecture, Tianquan Co., E Erlang Shan Pass, 2900 m, 9 km SE Luding, 29°52N, 102°18E, Gesiebe, 20.VI., leg. M. SCHÜLKE” (cAss).

#### Etymology

The specific epithet (adjective) alludes to faint external resemblance (habitus, coloration) of this species with species of the genus *Atheta* Thomson, 1858.

#### Description

Small species; body length 4.5–5.7 mm; length of forebody 2.2–2.6 mm. Coloration: body blackish-brown with the humeral portion of the elytra indistinctly and diffusely paler and with the posterior margins of the abdominal segments reddish (Figs. 88, 146); legs dark-yellowish to yellowish brown, with the femora somewhat darker; antennae (Fig. 47) blackish-brown to blackish, with antennomeres I–III only indistinctly paler at most.

Head (Fig. 88) moderately transverse, impunctate along middle; punctation in lateral and anterior dorsal portions moderately dense to dense; interstices on average narrower than diameter of punctures. Eyes longer than postocular region in dorsal view. Antenna (Fig. 47) 1.8–1.9 mm long, distinctly incrassate apically; antennomeres IV–X distinctly transverse, gradually and distinctly increasing in width; X approximately 1.5 times as broad as long; XI shorter than the combined length of IX and X.

Pronotum (Fig. 88) relatively weakly transverse, approximately 1.1 times as broad as long and 1.25–1.30 times as broad as head; punctation moderately dense; interstices on average narrower than diameter of punctures; midline narrowly impunctate; lateral margins without conspicuous long setae.

Elytra (Fig. 88) 0.80–0.85 times as long as pronotum; punctation defined and rather dense, interstices on average narrower than diameter of punctures. Hind wings fully developed. Metatarsomere I distinctly shorter than the combined length of II–IV, barely longer than the combined length II and III.

Abdomen (Fig. 146) relatively broad, nearly as broad as, or slightly narrower than elytra and with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V impunctate or nearly so, only with few scattered fine non-setiferous punctures at most; tergite VI anteriorly with few scattered punctures; tergites III–VII each with row of numerous setiferous punctures at posterior margin and with a more or less distinct transverse row of punctures in posterior portion of disc; tergite VIII with sparse punctation in posterior portion and practically impunctate in anterior half; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII

convex to weakly concave in the middle, without evident sexual dimorphism.

♂: sternite VIII slightly longer than tergite VIII, its posterior margin convex; median lobe of aedeagus approximately 0.65 mm long and shaped as in Figs. 252–253.

♀: posterior margin of sternite VIII truncate in the middle.

#### Comparative notes

Among the more or less uniformly dark-coloured congeners known from China, *Z. athetoides* is characterized by relatively small size, the relatively short and distinctly incrassate antennae with transverse antennomeres IV–X, the indistinctly paler humeral angles of the elytra, the conspicuously short metatarsomere I, and by the shape of the median lobe of the aedeagus.

#### Distribution and natural history

The type specimens were collected in several localities in Sichuan (Fig. 305) at altitudes between 2700 and approximately 3500 m.

*Zyras (Zyras) atronitens* n. sp.  
(Figs. 48, 89, 147, 248–249, 303)

#### Type material

Holotype ♂: “E Tibet, road Toba – Jomda, pass 50 km E Toba, 31°19’N, 98°05’E, 4200 m, alpine meadow, 17.VII.1997, JAROSLAV TURNA leg. / Holotypus ♂ *Zyras atronitens* sp. n. det. V. ASSING 2014” (cAss).

#### Etymology

The specific epithet is composed of the Latin adjectives ater (black) and nitens (shiny) and alludes to the glossy and nearly uniformly black body.

#### Description

Rather small species; body length 5.8 mm; length of forebody 2.4 mm. Coloration: body blackish, except for the diffusely reddish humeral angles of the elytra, the narrowly reddish elytral suture, and the narrowly reddish posterior margins of the abdominal segments (Figs. 89, 147); legs with dark-brown femora and metatibiae, pale-brown pro- and mesotibiae, and dark-yellowish tarsi; antennae (Fig. 48) blackish, with antennomere XI reddish.

Head (Fig. 89) distinctly transverse, impunctate in median dorsal portion; punctation in lateral and anterior dorsal portions sparse; interstices broader than diameter of punctures. Eyes longer than postocular region in dorsal view. Antenna (Fig. 48) 1.8 mm long, distinctly incrassate apically; antennomere III conical, strongly dilated apically; IV–X distinctly transverse, gradually and distinctly increasing in width; X slightly less than 1.5 times as broad



as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 89) 1.13 times as broad as long and 1.27 times as broad as head; punctation sparse and irregularly spaced; interstices distinctly broader than diameter of punctures; midline broadly impunctate; lateral margins without conspicuous long setae.

Elytra (Fig. 89) 0.87 times as long as pronotum; punctation defined, conspicuously fine and sparse; interstices much broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 147) slightly narrower than elytra, subparallel anteriorly, segments III–VI of subequal width; anterior impressions of tergites III–V shallow and with sparse, very fine non-setiferous punctation; posterior margins of tergites III–VII each with a row of fine punctures; anterior portion of tergite VI with very fine and sparse non-setiferous punctation; remainder of discs of tergites III–VI nearly impunctate, only with very fine scattered punctures; tergite VII with fine non-setiferous punctation in anterior third and with sparse punctures in posterior third, impunctate in median third; tergite VIII with few punctures posteriorly, otherwise impunctate; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII very weakly concave in the middle, on either side of this concavity dentate; sternite VIII slightly longer than tergite VIII, its posterior margin convex; median lobe of aedeagus 0.68 mm long and shaped as in Figs. 248–249.

♀: unknown.

#### Comparative notes

Among the species of similar size and coloration, *Z. atronitens* is characterized particularly by the conspicuously sparse punctation of the forebody, especially of the elytra, and the abdomen, the dark legs, the distinctly incrassate antennae with black antennomeres I–II and with a strongly conical antennomere III, as well as by the morphology of the median lobe of the aedeagus.

#### Distribution and natural history

The type locality is situated to the east of Toba in eastern Tibet (Fig. 303). The holotype was collected in an alpine meadow at an altitude of 4200 m.

*Zyras (Zyras) nigronitens* n. sp.  
(Figs. 49, 87, 145, 254–255, 303)

#### Type material

Holotype ♂: “China: N-Yunnan [C2005-09], Diqing Tibet. Aut. Pref., Deqin Co., Meili Xue Shan, E-side, 14 km W

Deqin, 2850 m, / 28°27.47'N, 98°46.35'E, creek valley below glacier, mixed forest, leaf litter, moss, dead wood, sifted, 11.VI.2005, M. SCHÜLKE [C2005-09] / Holotypus ♂ *Zyras nigronitens* sp. n. det. V. ASSING 2014” (cAss).

Paratypes: 1 ♀: same data as holotype (cSch); 1 ♂, 1 ex.: “China: N-Yunnan [C2005-07], Diqing Tibet. Aut. Pref., Deqin Co., Meili Xue Shan, E-side, 12 km SW Deqin, 2890 m, 28°25.30'N, 98°48.47'E / small creek valley, mixed forest with bamboo, leaf litter, moss, dead wood, sifted, 9.VI.2005, M. SCHÜLKE [C2005-07]” (cSch, cAss); 1 ♂: “China (N-Yunnan) Diqing Tibet. Aut. Pref., Deqin Co., Baima Shan, pass 15 km SE Deqin, 28°22.68'N, 99°00.57'E, 4400–4500 m (alpine meadow, under gravel & stones along creek), 12.VI.2005 D. W. WRASE [10A]” (cSch); 1 ♂, 1 ♀: “China-Yunnan Diqing Tibet. Aut. Pr. Deqin Co. Meili Xue Shan E-side 12 km SW Deqin, 28°25.30'N 98°48.47'E 2890 m, 9.VI.2005 A. SMETANA [C156]” (cSme, cAss); 1 ♂: “China-Yunnan Diqing Tibet. Aut. Pr. Deqin Co. Meili Xue Shan E-side 14 km W Deqin, 28°27.47'N 98°46.35'E 2580 m, 11.VI.2005 A. SMETANA [C158]” (cSme).

#### Etymology

The specific epithet is composed of the Latin adjectives *niger* (black) and *nitens* (shiny). It refers to the conspicuously black and glossy body.

#### Description

Body length 6.5–7.5 mm; length of forebody 3.5 mm. Coloration: whole body black and shiny (Figs. 87, 145); legs pale-yellow; maxillary palpi yellow with palpomere III more or less distinctly infusate; antennae (Fig. 49) black, with antennomeres I–II and base of III reddish to dark-brown and XI pale-reddish, sharply contrasting with antennomere X.

Head (Fig. 87) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions sparse; interstices distinctly broader than diameter of punctures. Eyes much longer than postocular region in dorsal view. Antenna (Fig. 49) 2.0–2.1 mm long, not particularly massive; antennomere IV weakly transverse; V–X distinctly transverse, gradually and weakly increasing in width; X distinctly transverse, approximately 1.5 times as broad as long; XI approximately as long as the combined length of IX and X, or nearly so.

Pronotum (Fig. 87) strongly convex in cross-section, 1.08–1.12 times as broad as long and 1.31–1.38 times as broad as head; punctation very sparse; interstices on average much broader than diameter of punctures; midline moderately narrowly impunctate; lateral margins and antero-lateral portion with some very long black setae.

Elytra (Fig. 87) 0.78–0.80 times as long as pronotum; punctation defined and sparse (slightly less sparse in anterior portion), interstices on average at least twice as broad as diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 145) approximately 0.95 times as broad as elytra and with rather shallow anterior impressions on

tergites III–V; anterior impressions of tergites III–V with few (ca. 4–5) non-setiferous punctures in the middle, laterally impunctate; tergites III–V each with a median pair of setiferous punctures at or near posterior margin and with two lateral setiferous punctures on either side, otherwise impunctate; tergite VI with a transverse row of approximately 10 non-setiferous punctures at anterior margin, six setiferous punctures at posterior margin, two lateral setiferous punctures on either side, otherwise impunctate, except for an occasional 1–2 punctures on disc; tergite VII in antero-median portion with a transverse patch of approximately 15–20 moderately dense fine non-setiferous punctures and with two irregular transverse rows of approximately 6 setiferous punctures in posterior half; tergite VIII with a few setiferous punctures in posterior fourth, impunctate in anterior three-fourths; integument without microsculpture and very glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII somewhat projecting in the middle, posterior margin of this projection weakly concave; sternite VIII somewhat longer than tergite VIII, its posterior margin weakly concave; median lobe of aedeagus 0.78–0.83 mm long and shaped as in Figs. 254–255.

♀: shape of tergite VIII as in male; posterior margin of sternite VIII truncate in the middle.

#### Comparative notes

*Zyras nigrontens* is distinguished from other congeners recorded from China particularly by the conspicuously glossy and uniformly black body strongly contrasting with the yellow legs, by the morphology of the antennae, the sparse punctuation of the forebody, the distinctive punctuation pattern of the abdomen, and by the morphology of the aedeagus.

#### Distribution and natural history

The species was found in two localities in the Meili Xue Shan and one in the Baima Shan in West Yunnan (Fig. 303). Most of the specimens were sifted from leaf litter and moss in mixed forests, one on a gravel stream bank, at altitudes of 2580–4500 m.

*Zyras (Zyras) beijingensis* Pace, 1993  
(Figs. 50, 93–95, 151–152, 256–257, 304)

*Zyras (Zyras) beijingensis* PACE, 1993: 114.

*Zyras (Zyras) restitutus* PACE, 1993: 114 ff.; **n. syn.**

#### Type material examined

*Z. beijingensis*: Holotype ♂ [most of both antennae missing]: “China, Beijing, VIII:1982, ROUGEMONT / Holotypus *Zyras beijingensis* m., det. R. PACE 1987 / *Zyras beijingensis* sp. n., det. R. PACE 1987 / *Zyras beijingensis* Pace, det. V. ASSING 2015” (cRou).

*Z. restitutus*: Holotype ♀: “China, Sichoan [sic], Da Zu [= Dazhu], 28.IX.1985, ROUGEMONT / Holotypus *Zyras restitutus* m., det. R. PACE 1987 / *Zyras restitutus* sp. n., det. R. PACE 1987 / *Zyras beijingensis* Pace, det. V. ASSING 2015” (cRou).

#### Additional material examined

China: Gansu: 6 exs., W Longnan, Min Shan, 33°26'N, 104°36'E, 1470 m, deep cleft with scree, shrubs at N-slope, litter sifted, 5.VIII.2012, leg. ASSING & SCHÜLKE (cAss, cSch); 4 exs., S Longnan, Min Shan, 33°05'N, 104°45'E, 1500 m, N-slope, macchia, litter and moss sifted, 6.VIII.2012, leg. ASSING & SCHÜLKE (cAss, cSch). – Shaanxi: 1 ex., Micang Shan, 34 km S Hanzhong, 32°44'22"N, 106°51'55"E, 1460 m, W-slope, deciduous forest margin with bamboo, litter, grass, and moss sifted, 14.VIII.2012, leg. ASSING (cAss); 1 ex., Qinling Shan, 95 km WSW Xian, river bank at road Zhouzhi–Foping, 33°53'N, 108°01'E, 1000 m, gravel bank with vegetation, 4.VII.2001, leg. WRASE (cSch); 1 ex., 31 km E Xian, Li Shan near Lintong, 34°20'N, 109°16'E, 1000–1200 m, dry mountain meadow, forest, 23.–25.VIII.1985, leg. WRASE (cAss). – Zhejiang: 1 ex., Hangzhou Pref., Tianmu Shan, 40 km WNW Linan, water reservoir, 30°21'N, 119°19'E, 300 m, litter between rocks, sifted, 17.VI.2007, leg. WRASE (cAss).

#### Comment

The original description of *Z. beijingensis* is based on a unique male from “Beijing”, that of *Z. restitutus* on a single female from “Sichuan, Da Zu” (PACE 1993). Both holotypes were located in cRou, but note that PACE (1993) states that they are deposited in the Chinese Academy of Sciences, Beijing. An examination of the above type material, as well as of the additional material listed above revealed that both names refer to the same species. They were made available in the same article. Since the holotype of *Z. beijingensis* is a male, this name is designated as the senior name and *Z. restitutus* as its junior synonym. Nevertheless, the validity of *Z. beijingensis* is pending confirmation. A comparison with a male (in poor condition) and a female of *Z. fugax* (Sharp, 1888) from Japan suggests that *Z. beijingensis* may be a junior synonym of that name (see comparative notes below). However, more material in better condition of *Z. fugax* is needed to clarify this suspicion.

#### Redescription

Moderately small species; body length 4.5–6.3 mm; length of forebody 2.1–2.7 mm. Coloration: head black; pronotum bright-reddish; elytra black, often with the suture narrow dark-reddish (Figs. 93–95); abdomen (Figs. 151–152) with segments III–IV reddish, tergite IV sometimes more or less distinctly and more or less extensively infuscate in the middle; segments V–X dark-brown to blackish, with the anterior and posterior margins of tergites V–VII, and at least the anterior and posterior portion of paratergites V–VII reddish; legs pale-yellow; antennae (Fig. 50) blackish, often with antennomeres I–II and base of III reddish-brown to brown, and with antennomere XI partly or completely dark-reddish to brown; maxillary palpi pale-brown to dark-brown with yellowish terminal palpomere.



Head (Figs. 93–95) distinctly transverse, impunctate along middle; punctation in lateral dorsal portions moderately sparse and rather fine. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 50) 1.5–1.7 mm long, rather massive, and strongly incrassate apically; antennomere IV distinctly transverse, nearly 1.5 times as broad as long; antennomeres V–X of gradually increasing width and approximately twice as broad as long; X as long as, or slightly longer than combined length of IX and X.

Pronotum (Figs. 93–95) 1.09–1.16 times as broad as long and 1.25–1.35 times as broad as head; punctation fine to moderately coarse, sparse to moderately dense, and nearly equally distributed; midline narrowly impunctate.

Elytra (Figs. 93–95) 0.75–0.80 times as long as pronotum; punctation moderately coarse and dense, denser anteriorly than posteriorly. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Figs. 151–152) as broad as, or slightly narrower than elytra, with rather shallow anterior impressions on tergites III–IV, tergite V without appreciable anterior impression; anterior impressions of tergites III–IV each with a transverse row, anterior portions of tergites V–VII each with a transverse band of non-setiferous punctures; tergite III with a lateral setiferous puncture on either side and with 8–10 fine setiferous punctures at posterior margin; tergites IV and V each with a median pair of punctures, with a lateral puncture on either side, and with 8–10 punctures at posterior margin; tergite VI with a median pair of punctures, a variable number of additional lateral punctures, and with 8–10 punctures at posterior margin; tergite VII with a variable number of punctures in whole posterior half, sometimes partly arranged in two transverse series, and with numerous fine punctures at posterior margin; tergite VIII with sparse punctation on whole surface; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with or without shallow concavity in the middle.

♂: sternite VIII longer than tergite VIII, its posterior margin strongly convex; median lobe of aedeagus approximately 0.7 mm long and shaped as in Figs. 256–257; apical lobe of paramere rather long and slender.

♀: posterior margin of tergite VIII shallowly concave in the middle.

#### Intraspecific variation

The male from Zhejiang is distinguished from the material seen from other regions by slight differences in the coloration of the forebody, the slightly more transverse pronotum with slightly sparser and finer punctation, and by slight differences in the shape of the median lobe of the aedeagus. Since these differences are only slight and in

view of other pronounced similarities, they are attributed to intra- rather than interspecific variation.

#### Comparative notes

*Zyras beijingensis* is extremely similar to *Z. fugax* from Japan. The only differences observed between the material of *Z. beijingensis* examined and the two specimens of *Z. fugax* available for comparison are the slightly more incrassate antennae and the darker abdominal tergite V. In size, habitus, and coloration, *Z. beijingensis* is also similar to *Z. particornis* (Sharp, 1888), from which it is readily distinguished by the shorter, more massive, and much more strongly incrassate antennae, as well as by the different coloration of the antennae and the abdomen (*Z. particornis*: apical three antennomeres pale-yellowish; abdominal tergite V reddish).

#### Distribution and natural history

This species is currently known from the Chinese provinces Beijing, Shaanxi, Gansu, Sichuan, and Zhejiang (Fig. 304), but probably more widespread, as can be inferred from the relatively low altitudes (300–1500 m). The examined material was collected by sifting litter, moss, grass, and various debris in macchia, shrub habitats, in dry forest, at a forest margin, and on the banks of a reservoir and a stream.

#### *Zyras (Zyras) pulcher* n. sp.

(Figs. 51, 96, 150, 258–259, 305)

#### Type material

**Holotype** ♂: “China [17] – S-Gansu, S Longnan, Min Shan, macchia, 33°05′24″N, 104°45′13″E, 1500 m, 6.VIII.2012, V. ASSING / Holotypus ♂ *Zyras pulcher* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 1 ♀ [slightly teneral]: “China: S-Gansu [CH12-15], Min Shan, 30 km W Longnan, 33°26′19″N, 104°36′17″E, 1470 m, deep cleft with scree, shrubs at N-slope, litter sifted, 5.VIII.2012, M. SCHÜLKE” (cSch); 1 ♀ [slightly teneral]: “China – NW Sichuan, between Shangliusuo–Luhua, 5 km E of Luhua, 2400 m, shrubs, 7–28.VI.2004, leg. R. FABBRI” (cAss).

#### Etymology

The specific epithet (Latin, adjective: beautiful) alludes to the vivid and distinctive coloration of this species.

#### Description

Small species; body length 3.5–5.0 mm; length of forebody 1.7–2.2 mm. Coloration distinctive: head black; pronotum bright-reddish; elytra yellowish-red with sharply marked black spots in postero-lateral angles (Fig. 96); abdomen (Fig. 150) completely black; legs yellow; maxillary palpi dark-yellowish; antennae (Fig. 51) blackish-brown, with antennomere II somewhat paler brown.

Head (Fig. 96) distinctly transverse, broadly impunctate in median and posterior portions, in lateral and anterior portions with conspicuously sparse punctation; interstices several times as broad as diameter of punctures. Eyes longer than postocular region in dorsal view. Antenna (Fig. 51) 1.3–1.5 mm long and massive; antennomere IV distinctly transverse; V–X gradually increasing in width and increasingly transverse; X strongly transverse, more than 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 96) relatively slender, approximately 1.12 times as broad as long and 1.3 times as broad as head; punctation sparse; interstices much broader than diameter of punctures; midline moderately broadly impunctate; lateral margins without long setae.

Elytra (Fig. 96) 0.81–0.82 times as long as pronotum; punctation defined and sparse, interstices much broader than diameter of punctures. Hind wings fully developed. Metatarsomere I slightly shorter than the combined length of II–IV.

Abdomen (Fig. 150) approximately 0.9 times as broad as elytra, slender, very weakly tapering posteriad, with shallow anterior impressions on tergites III–V, and with fine punctation; anterior impressions of tergites III–V and anterior portion of tergite VI with sparse non-setiferous punctation; posterior margins of tergites III–VII each with row of setiferous punctures; tergites III–V each with a pair of setiferous punctures in the middle (individual punctures may occasionally be missing) and a lateral setiferous puncture near paratergites on either side; disc of tergite VI with a transverse row of six setiferous punctures; tergite VII anteriorly with a few punctures and with three transverse rows of sparse punctures in posterior half; tergite VIII with sparse, somewhat more distinct setiferous punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII truncate in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin weakly convex in the middle; median lobe of aedeagus relatively small, 0.57 mm long and shaped as in Figs. 258–259.

♀: posterior margin of tergite VIII smoothly convex; posterior margin of sternite VIII convex.

#### Comparative notes

Aside from its distinctive coloration, *Z. pulcher* is characterized by the rather massive antennae, the conspicuously sparse punctation of the forebody, the punctation pattern of the abdomen, and by the morphology of the aedeagus.

#### Distribution and natural history

The species was discovered in two geographically close localities in the Min Shan, southern Gansu, and one

in northwestern Sichuan (Fig. 305). The specimens from Gansu were sifted from debris and plant roots in macchia and in a deep cleft with sparse vegetation. The altitudes range from 1470 to 2400 m. The paratypes are slightly teneral.

#### *Zyras (Zyras) schuelkei* n. sp. (Figs. 28, 90, 148, 260–261, 306)

##### Type material

**Holotype** ♂ [slightly teneral]: “China: Sichuan (2), Qingcheng-Shan, Rückseite, 650–700 m, 30.53.56N, 103.33.01E, 18.05.1997, M. SCHÜLKE / Holotypus ♂ *Zyras schuelkei* sp. n. det. V. ASSING 2014” (cAss).

**Paratype** ♀: “China: Fujian prov., Wuyi Shan Nat. Res., Sangan [recte: Sangang] env. (900 m), 30.V.–12.VI.2001, HLAVÁČ & COOTER lgt.” (cHla).

##### Etymology

This colourful species is dedicated to my friend and colleague MICHAEL SCHÜLKE, who collected not only the holotype of this species, but also numerous specimens of other *Zyras* species treated in the present paper.

##### Description

Body length 6.8–8.5 mm; length of forebody 3.1–3.3 mm. Coloration: head blackish; pronotum bright-reddish; elytra yellowish, with sharply delimited black marking of triangular shape in postero-lateral portion (Fig. 90); abdomen (Fig. 148) black; legs pale-yellow; antennae (Fig. 28) blackish-brown, with antennomeres I–II and the basal half of III pale-reddish.

Head (Fig. 90) distinctly transverse, broadly impunctate in median and posterior portions, in lateral and anterior portions with sparse punctation; interstices distinctly broader than diameter of punctures. Eyes large, distinctly longer than postocular region in dorsal view. Antenna (Fig. 28) long and slender, 2.5–2.6 mm long; antennomeres IV–V weakly oblong; VI–VII approximately as long as broad; VIII–IX weakly transverse; X nearly 1.5 times as long as broad; XI long and apically acute, longer than the combined length of IX and X.

Pronotum (Fig. 90) approximately 1.15 times as broad as long and 1.15 times as broad as head; punctation sparse and irregularly spaced; interstices much broader than diameter of punctures; midline narrowly impunctate; lateral margins with few long black setae.

Elytra (Fig. 90) 0.9 times as long as pronotum; punctation defined and moderately dense, interstices on average broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 148) approximately 0.9 times as broad as elytra, slender, weakly tapering posteriad, with shallow anterior impressions on tergites III–V; anterior impressions



of tergites III–V and anterior portion of tergite VI with rather sparse non-setiferous punctation; tergite III with a median pair of setiferous punctures on disc, otherwise practically impunctate, posterior margin impunctate; tergite IV impunctate in posterior half, except for a median pair of setiferous punctures at hind margin; tergites V–VI each with two lateral punctures on either side and with four setiferous punctures at posterior margin, otherwise impunctate in posterior half; tergite VII with several setiferous punctures at posterior margin, with a median pair of punctures, and with few lateral punctures, otherwise impunctate; tergite VIII with a few punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: median pair of punctures on tergite VII and punctures in posterior portion of tergite VIII somewhat granulose; posterior margin of tergite VIII concave in the middle, on either side of this concavity dentate; sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus 0.75 mm long; ventral process distinctly bent subapically in lateral view (Figs. 260–261).

♀: posterior margin of tergite VIII concave in the middle, but not dentate on either side of concavity.

#### Comparative notes

*Zyras schuelkei* is distinguished from the similarly coloured *Z. pulcher* by numerous characters, particularly its much larger body size, the more transverse head with larger and more bulging eyes, the much longer and more slender antennae, the relatively smaller pronotum (in relation to the head), the much more coarsely and more densely punctured elytra, the larger and more defined dark markings on the elytra, the punctation pattern of the abdomen, and by the shape of the larger aedeagus.

#### Distribution and natural history

The species is known from two localities, one in the Qingcheng Shan, Sichuan, and one in the Wuyi Shan, Fujian (Fig. 306). The altitudes range from approximately 700 to 900 m. The holotype is slightly teneral.

*Zyras (Zyras) discolor* n. sp.  
(Figs. 52, 91, 149, 262–263, 303)

#### Type material

**Holotype** ♂: “China: Fujian prov., Wuyi Shan Nat. Res., Guadun hill, (900–1300), 1.–2.VI.2001, HLAVÁČ & COOTER lgt. / Sifting bamboo forest / Holotypus ♂ *Zyras discolor* sp. n. det. V. ASSING 2014” (cHla).

**Paratypes**: 1 ♀: same data as holotype (cHla); 1 ♂ [slightly teneral], 1 ♀: “China: Fujian prov., Wuyi Shan Nat. Res., Sangan env. (900 m), 30.v.–12.vi.2001, HLAVÁČ & COOTER lgt.” (cAss).

#### Etymology

The specific epithet (Latin, adjective: colourful) alludes to the vivid and distinctive coloration of this species.

#### Description

Body length 5.8–7.0 mm; length of forebody 2.5–3.0 mm. Coloration: forebody blackish-brown (Fig. 91); abdomen (Fig. 149) distinctly bicoloured, with segments III–VI bright-reddish and segments VII (except for the reddish anterior margin) and VIII dark-brown; legs yellow; maxillary palpi yellowish to brown; antennae (Fig. 52) dark-reddish to brown, with antennomeres I–II and the apical antennomeres more or less extensively reddish.

Head (Fig. 91) distinctly transverse, broadly impunctate in median portion, in lateral portions with few scattered coarse punctures; interstices several times as broad as diameter of punctures. Eyes longer than postocular region in dorsal view. Antenna (Fig. 52) 2.0–2.2 mm long and rather slender; antennomeres IV–VI as long as broad or very weakly transverse; V–X only indistinctly increasing in width; X weakly transverse, less than 1.5 times as broad as long; XI approximately as long as the combined length of IX and X, or nearly so.

Pronotum (Fig. 91) relatively slender, approximately 1.09–1.13 times as broad as long and 1.19–1.27 times as broad as head; punctation sparse and coarse; interstices on average much broader than diameter of punctures; midline narrowly impunctate; lateral margins with few very long black setae.

Elytra (Fig. 91) 0.89–0.90 times as long as pronotum; punctation defined and sparse, denser in anterior than in posterior portion; interstices in posterior portion on average more than twice as broad as diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 149) approximately 0.95 times as broad as elytra, slender, with rather deep anterior impressions on tergites III–V; setiferous punctures with long dark setae; anterior impressions of tergites III–V and anterior portion of tergite VI with dense and coarse non-setiferous punctation; tergites III–IV with a median pair of setiferous punctures (near posterior margin), with two lateral setiferous punctures on either side, and without punctures at posterior margin; tergite V with a median pair of setiferous punctures, with two lateral setiferous punctures on either side, and with four setiferous punctures at posterior margin; tergite VI with transverse row of 6 setiferous punctures on disc and 6 setiferous punctures at (or near) posterior margin; tergite VII with some non-setiferous punctures near anterior margin and with approximately 20 setiferous punctures indistinctly arranged in two irregular transverse rows in posterior portion of disc, without setae at posterior margin; tergite VIII in posterior fourth with approximately 20 setiferous punctures, in anterior three-

fourths impunctate; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII shallowly and angularly excised in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus 0.72–0.75 mm long and shaped as in Figs. 262–263; ventral process long and apically very acute.

♀: posterior margin of tergite VIII smoothly convex; posterior margin of sternite VIII weakly concave in the middle.

#### Comparative notes

Aside from its distinctive coloration, *Z. discolor* is characterized by the coarse punctation of the whole body, the slender antennae, the long setae on the pronotum and abdomen, the shape of the posterior excision of the male tergite VIII, and by the morphology of the aedeagus.

#### Distribution and natural history

The species was found in two geographically close localities in the Wuyi Shan, Fujian (Fig. 303), at elevations between 900 and 1300 m. Two specimens were sifted in a bamboo forest. One of the paratypes is teneral.

*Zyras (Zyras) bicoloricollis* n. sp.  
(Figs. 53, 92, 153, 270–271, 305)

#### Type material

**Holotype** ♂: “China [15] – Yunnan, valley S Gejiu, road margin, 23°08'38"N, 103°11'42"E, 1010 m, 21.VIII.2014, V. ASSING / Holotypus ♂ *Zyras bicoloricollis* sp. n. det. V. ASSING 2015” (cAss).

**Paratypes**: 1 ♂: same data as holotype (cAss); 1 ♀: “China: Yunnan, valley S Gejiu, 23°08'53"N, 103°10'58"E, 1250 m, field margin with shrubs, litter and soil between stones sifted, 21.VIII.2014, SCHÜLKE [CH14-16]” (cSch).

#### Etymology

The specific epithet (adjective) alludes to the indistinctly bicoloured pronotum.

#### Description

Body length 5.3–7.0 mm; length of forebody 2.5–3.1 mm. Coloration: head dark reddish-brown, with the frons and the mouthparts reddish; pronotum indistinctly bicoloured: disc dark-brown, margins rather narrowly and postero-lateral portion more extensively dark-reddish; elytra pale-reddish, with the postero-lateral portions extensively blackish-brown (Fig. 92); abdomen (Fig. 153) with tergite III reddish, tergite IV reddish or brown, and tergites V–VII blackish-brown with reddish anterior portions (including anterior portions of paratergites) and with the posterior margins of tergites V–VI narrowly reddish; legs yellowish; antennae (Fig. 53) blackish, with antenno-

meres I–II and base of III reddish and with antennomere XI pale-yellowish; maxillary palpi reddish.

Head (Fig. 92) distinctly transverse, broadly impunctate in median portion, in lateral portions with few scattered moderately coarse punctures; interstices several times as broad as diameter of punctures. Eyes distinctly longer than postocular region in dorsal view. Antenna (Fig. 53) 1.8–2.0 mm long; antennomeres IV–V as long as broad or very weakly transverse; VI–X only indistinctly increasing in width and weakly transverse; X less than 1.5 times as broad as long; XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 92) 1.14–1.18 times as broad as long and 1.20–1.28 times as broad as head; punctation sparse, rather coarse, and equally distributed; interstices on average much broader than diameter of punctures; midline rather narrowly impunctate; lateral margins each with four very long black setae (often broken off).

Elytra (Fig. 92) 0.87–0.90 times as long as pronotum; punctation defined and sparse, very sparse in posterior and postero-sutural portion; interstices in median portion of disc on average approximately twice as broad as diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as, or even longer than the combined length of II–IV.

Abdomen (Fig. 153) slightly narrower than elytra, slender, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portion of tergite VI with dense non-setiferous punctation; tergite III with a lateral puncture and a latero-marginal puncture on either side and with a pair of median punctures near posterior margin; tergites IV and V without a median pair of punctures; tergite IV with a lateral puncture on either side and with four punctures at posterior margin; tergites V–VI with a lateral puncture on either side and with six punctures at posterior margin; tergite VI with or without a median pair of punctures (in the female paratype only one puncture is present); tergite VII with few scattered non-setiferous punctures in antero-median portion and with two transverse rows of setiferous punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with shallow concavity in the middle.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus approximately 0.6 mm long and shaped as in Figs. 270–271.

♀: posterior margin of sternite VIII distinctly concave in the middle.

#### Comparative notes

This species is distinguished from other Chinese representatives of the subgenus by its coloration alone. In addition, it is characterized by the sparse punctation of the



forebody, the punctation pattern of the abdomen, and by the shape of the median lobe of the aedeagus.

#### Distribution and natural history

The type specimens were collected in two adjacent localities to the south of Gejiu, southeastern Yunnan (Fig. 305). They were sifted from litter and soil at a road margin and at a field margin at altitudes of 1010 and 1250 m.

#### *Zyras (Zyras) bisinuatus* n. sp. (Figs. 29, 98, 155, 266–267, 304)

##### Type material

**Holotype** ♂: “China [12a] – Yunnan, mt. WNW Wuding, mix. forest, 25°38'45"N, 102°06'55"E, 2390 m, 1.IX.2014, V. ASSING / Holotypus ♂ *Zyras bisinuatus* sp. n. det. V. ASSING 2015” (cAss).

**Paratypes**: 1 ♂: same data as holotype (cAss); 1 ♂: “China [18] – Yunnan, mts S Jianshui, broad-leaved for., 23°25'20"N, 102°51'05"E, 1890 m, 22.VIII.2014, V. ASSING” (cAss); 1 ♀: “China [22] – Yunnan, SE Pingbian, primary forest, 22°54'31"N, 103°41'44"E, 2100 m, 27.VIII.2014, V. ASSING” (cAss); 1 ♀: same data, but “[22a] ... 28.VIII.2014” (cAss); 2 ♂♂: same data, but leg. SCHÜLKE (cSch, cAss).

##### Etymology

The specific epithet (adjective) alludes to the bisinuate ventral process and the bisinuate crista apicalis of the median lobe of the aedeagus (lateral view).

##### Description

Species of slender habitus. Body length 6.5–7.7 mm; length of forebody 3.0–3.1 mm. Coloration: head and pronotum blackish-brown to blackish; elytra bicoloured, blackish, with the anterior third and the suture dark-yellowish (Fig. 98); abdomen (Fig. 155) with tergite III reddish (rarely weakly infusate in the middle), tergite IV reddish with the middle more or less infusate, tergites V–VI reddish with the middle extensively infusate, tergite VII blackish-brown to blackish with the anterior and lateral portions more or less broadly and the posterior margin sometimes narrowly reddish, and tergite VIII blackish-brown to blackish with the anterior portion broadly reddish and usually the apex somewhat dark-reddish; legs pale-yellowish, with the apical  $\frac{1}{3}$ – $\frac{2}{5}$  of the metafemora distinctly infusate and the apices of the mesofemora more weakly and less extensively infusate; antennae (Fig. 29) dark-brown to blackish brown, with the basal 2–3 antennomeres reddish and the apical 2–3 antennomeres yellowish; maxillary palpi reddish with at least the apical half of palpomere III, usually with all of palpomeres II and III dark-brown to blackish-brown.

Head (Fig. 98) distinctly transverse, broadly impunctate in median portion, in lateral portions with sparse coarse punctation. Eyes longer than postocular region

in dorsal view. Antenna (Fig. 29) long and slender, 2.4–2.6 mm long; antennomeres IV–VII oblong (rarely VII as long as broad), VIII approximately as broad as long, IX–X weakly transverse, and XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 98) weakly transverse, 1.05–1.10 times as broad as long and approximately 1.3 times as broad as head; punctation coarse, moderately dense to dense, and more or less equally distributed; interstices on average narrower than, more rarely approximately as broad as diameter of punctures; midline with or without narrow impunctate band; lateral margins each with four long black setae (often broken off).

Elytra (Fig. 98) 0.80–0.85 times as long as pronotum; punctation coarse and defined, rather dense in anterior half, sparse in posterior portion. Hind wings fully developed. Legs long and very slender; metatarsomere I approximately as long as, or even longer than the combined length of II–IV.

Abdomen (Fig. 155) slightly narrower than elytra, slender, with deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portion of tergite VI with rather coarse and somewhat weakly defined non-setiferous punctation; tergite III with a transverse row of setiferous punctures near posterior margin; tergite IV with a transverse row of setiferous punctures near posterior margin and with an additional lateral puncture on either side; tergite V with six marginal setiferous punctures and an additional lateral puncture on either side; tergite VI with 8 marginal setiferous punctures and an additional lateral puncture on either side; tergite VII with few scattered non-setiferous punctures in antero-median portion and with two transverse rows of setiferous punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with distinct concavity in the middle.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin convex, in the middle truncate or nearly so; median lobe of aedeagus 0.87–0.93 mm long and of distinctive shape: ventral process long, bisinuate in lateral view, and apically convex in ventral view; crista apicalis bisinuate in lateral view (Figs. 266–267).

##### Comparative notes

This distinctive species is characterized particularly by the coloration, the slender habitus, a weakly transverse pronotum, the coarse punctation of the pronotum and elytra, the punctation pattern of the abdomen, and above all by the conspicuous shape of the aedeagus.

##### Distribution and natural history

The type specimens were collected in three localities in eastern and southeastern Yunnan (Fig. 304). They were

sifted from leaf litter in a mixed forest margin with alder and pine, in a subtropical broad-leaved forest, and in a primary subtropical broad-leaved forest at altitudes of 1890–2390 m.

*Zyras (Zyras) fratrunkadoorium* Pace, 1998  
(Figs. 43, 97, 154, 272–273, 304)

*Zyras (Zyras) fratrunkadoorium* PACE, 1998: 968.

#### Type material examined

Paratypes: 2 ♂♂, 1 ♀ [originally on one pin]: “Hong Kong, Tai Po, VII.1996, G. DE ROUGEMONT / Paratypi *Zyras fratrunkadoorium* m., det. R. PACE 96 / *Zyras fratrunkadoorium* Pace, det. V. ASSING 2015” (cRou, cAss).

#### Comment

The original description is based on eleven type specimens from “Hong Kong, Kadoorie Farm” collected in VI.1991 and VII.1992 by G. ADES and in V.1996, VIII.1996, and IX.1996 by G. DE ROUGEMONT (PACE 1998).

#### Description

Small species; body length 4.3–5.0 mm; length of forebody 1.9–2.1 mm. Coloration: head blackish; pronotum blackish-brown; elytra yellowish, with the postero-lateral portions extensively blackish (Fig. 97); abdomen (Fig. 154) bicoloured, with segments III–V pale-reddish and segments VI–X dark-brown; legs pale-yellowish; antennae (Fig. 43) blackish-brown with antennomeres I–II and base of antennomere III reddish; maxillary palpi pale reddish-brown.

Head (Fig. 97) distinctly transverse, broadly impunctate in median and posterior portions; punctation in lateral dorsal portions moderately coarse and very sparse. Eyes large, much longer than postocular region in dorsal view. Antenna (Fig. 43) 1.7–1.8 mm long; antennomeres IV–V weakly oblong, VI–VII approximately as broad as long, VIII–X weakly transverse, X less than 1.5 times as broad as long, and XI conspicuously long, approximately as long as the combined length of VIII–X.

Pronotum (Fig. 97) weakly transverse and small in relation to head, approximately 1.1 times as broad as long and only approximately 1.13 times as broad as head; disc with rather few scattered, irregularly spaced, and moderately coarse punctures, without distinct impunctate band along middle.

Elytra (Fig. 97) approximately 0.85 times as long as pronotum; punctation rather coarse, defined, and moderately dense, interstices on average broader than diameter of punctures. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 154) narrower than elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V each with a row of rather ill-defined and shallow non-setiferous punctures; tergites III–VI each with a lateral puncture on either side and with six punctures at posterior margin; tergites VI and VII completely without non-setiferous punctures anteriorly; tergite VII with very few scattered fine punctures in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII with very shallow median concavity.

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin convex; median lobe of aedeagus 0.57 mm long; ventral process straight in lateral view, weakly curved apically (Figs. 272–273).

#### Comparative notes

*Zyras fratrunkadoorium* is distinguished from other Chinese representatives of the subgenus of similar coloration particularly by its small size, the long antennomere XI, the small pronotum (in relation to head), the scattered and irregularly spaced punctation of the pronotum, the distinctive punctation of the abdomen (tergites III–V without median pair of punctures; tergites VI and VII anteriorly without non-setiferous punctures), and by the shape of the median lobe of the aedeagus.

#### Distribution and natural history

This species is currently known only from Hong Kong (Fig. 304). Some of the type specimens were collected with a Malaise trap, others with flight interception traps, and one with a yellow pan trap (ROUGEMONT 2001).

*Zyras (Zyras) song* Pace, 1993  
(Figs. 32, 102, 159, 305)

*Zyras (Zyras) song* PACE, 1993: 112.

#### Type material examined

Holotype ♂: “China X.1986, Yunnan: Dali 2100 m, G. DE ROUGEMONT / Holotypus *Zyras song* mihi, det. R. PACE 1987 / *Zyras song* sp. n., det. R. PACE 1987 / *Zyras song* Pace, det. V. ASSING 2015” (cRou).

#### Comment

The original description is based on a male holotype and a female paratype from “Yunnan, Dali” (PACE 1993).

#### Redescription

Body length 4.3 mm; length of forebody 2.2 mm. Coloration: head blackish; pronotum pale-reddish; elytra blackish (Fig. 102); abdomen with segments III–V reddish,



segment VI reddish, with the postero-median portion of tergite VI infusate; segments VII–VIII blackish-brown; legs bicoloured: tarsi yellowish; profemora dark-brown; protibiae brown, with the external faces paler; meso- and metafemora with the basal halves pale-yellowish and the apical halves blackish; meso- and metatibiae pale-yellowish with the bases and the apices weakly and narrowly infusate; antennae (Fig. 32) with antennomeres I–III dark-brown, IV pale-brown; V–VI dark-yellowish, and VII–XI pale-yellowish; maxillary palpi blackish-brown with the terminal palpomere yellowish.

Head (Fig. 102) distinctly transverse, broadly impunctate in median portion, in lateral portions with very sparse and fine punctation. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 32) 2.0 mm long; antennomeres IV–VI weakly oblong, VII approximately as broad as long, VIII–X weakly transverse, X distinctly less than 1.5 times as broad as long, and XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 102) weakly transverse, 1.1 times as broad as long and 1.15 times as broad as head; lateral margins not distinctly sinuate in posterior half (dorsal view); disc with scattered, sparse, irregularly spaced, shallow, and very fine punctures; lateral margins each with four long black setae, antero-lateral portion with additional long black setae.

Elytra (Fig. 102) 0.87 times as long as pronotum; punctation rather fine and sparse, less sparse in anterior than in posterior half; interstices much broader than diameter of punctures. Hind wings fully developed. Metatarsomere I distinctly shorter than the combined length of II–IV.

Abdomen (Fig. 159) narrower than elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V with fine, shallow, and weakly defined non-setiferous punctation; tergite III without median pair of punctures, with a lateral puncture on either side, and with 8 punctures at posterior margin; tergite IV with a median pair of punctures, with a lateral puncture on either side, and with 8 punctures at posterior margin; tergite V with a median pair of punctures, with two lateral punctures on either side, and with 10 punctures at posterior margin; tergite VI anteriorly with a narrow transverse band of non-setiferous punctures, with a median pair of punctures, with two lateral punctures on either side, and with approximately 10 punctures at posterior margin; tergite VII with non-setiferous punctures in antero-median portion and with few scattered setiferous punctures not arranged in distinct series in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII convex, not concave in the middle.

♂: median lobe of aedeagus 0.6 mm long, shaped as illustrated by PACE (1993); paramere with slender apical lobe.

### Comparative notes

Among the species with a similarly bicoloured body, *Z. song* is characterized particularly by the colour of the antennae (five terminal antennomeres pale-yellowish) and the coloration of the legs, additionally also by the sparse punctation of the head and pronotum, the less elongate metatarsomere I, the punctation pattern of the abdomen, and the shape of the median lobe of the aedeagus.

### Distribution

The species is currently known only from the type locality, which is situated in northwestern Yunnan (Fig. 305). The type specimens were collected at an altitude of 2100 m.

### *Zyras (Zyras) exspoliatus* n. sp.

(Figs. 31, 103, 160, 264–265, 293–294, 305)

### Type material

**Holotype** ♂: “China, Guangxi, Diding, 8.VII.99, J. R. FELLOWS leg. / *Zyras song* Pace, det. 2002, G. DE ROUGEMONT / Holotypus ♂ *Zyras exspoliatus* sp. n., det. V. ASSING 2015” (cAss).

### Etymology

The specific epithet (Latin, adjective: robbed, stripped) alludes to the absence of median pairs of punctures on the abdominal tergites III–V.

### Description

Body length 6.3 mm; length of forebody 2.6 mm. Coloration: head blackish; pronotum pale-reddish; elytra blackish, except for the dark-reddish suture (Fig. 103); abdomen (Fig. 160) with segments III–V reddish, tergite VI blackish, except for the reddish paratergites and the reddish anterior and antero-lateral portions; segments VII–VIII blackish; legs pale-yellowish, with the profemora and the apical halves of the meso- and metafemora brown; antennae (Fig. 31) blackish-brown, with antennomere XI dark-yellowish; maxillary palpi dark-brown with the terminal palpomere yellowish.

Head (Fig. 103) distinctly transverse, broadly impunctate in median portion, in lateral portions with very sparse and fine punctation. Eyes much longer than postocular region in dorsal view. Antenna (Fig. 31) 2.3 mm long; antennomeres IV–V distinctly oblong, VI–VII weakly oblong; VIII approximately as broad as long, IX–X weakly transverse, X slightly less than 1.5 times as broad as long, and XI approximately as long as the combined length of IX and X.

Pronotum (Fig. 103) weakly transverse, 1.07 times as broad as long and 1.2 times as broad as head; lateral margins weakly sinuate in posterior half (dorsal view); disc

with rather sparse, irregularly spaced, shallow, and somewhat ill-defined punctures; lateral margins without long black setae in holotype, but probably broken off (setiferous punctures present).

Elytra (Fig. 103) 0.78 times as long as pronotum; punctation moderately fine and moderately dense, not distinctly sparser posteriorly than anteriorly; interstices much broader than diameter of punctures. Hind wings fully developed. Metatarsomere I slightly longer than the combined length of II–IV.

Abdomen (Fig. 160) as broad as elytra, with rather deep anterior impressions on tergites III–V; anterior impressions of tergites III–V with fine, shallow, and weakly defined non-setiferous punctation; tergites III–VI without median pairs of punctures; tergite III with a lateral puncture on either side, and with 4 punctures at posterior margin; tergites IV–V each with a lateral puncture on either side and with 6 punctures at posterior margin; tergite VI anteriorly with a slightly irregular transverse series (not a band) of non-setiferous punctures anteriorly, with a lateral puncture on either side, and with a series of punctures at posterior margin; tergite VII with approximately 15 non-setiferous punctures anteriorly and with very sparse setiferous punctures not arranged in distinct series in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII indistinctly concave in the middle (Fig. 293).

♂: sternite VIII much longer than sternite VIII, its posterior margin nearly truncate in the middle (Fig. 294); median lobe of aedeagus 0.75 mm long and shaped as in Figs. 264–265; paramere with slender apical lobe.

#### Comparative notes

*Zyras exspoliatus* is distinguished from the similar *Z. song* by the different coloration of the antennae, the legs, the suture, and abdominal tergite VI, by the denser punctation of the pronotum, the broader pronotum (in relation to head), the shorter elytra, the longer metatarsomere I, the sparser punctation of the abdomen (particularly the absence of pairs of median punctures on tergites IV–VI), and by the larger and differently shaped median lobe of the aedeagus.

#### Distribution

The type locality is situated in Guangxi province, South China (Fig. 305). Additional information is not available.

*Zyras (Zyras) yongshengensis* Pace, 2012  
(Figs. 104, 161, 305)

*Zyras (Zyras) yongshengensis* PACE, 2012a: 86.

#### Type material examined

Holotype ♂ [damaged; antennomeres V–XI of left antenna and VII–XI of right antenna missing]: “China: N-Yunnan, Lijiang Naxi Aut. Co. 3 km NW Yongsheng 53 km WSW Lijiang, 26°41.8'N, 100°43.1'E 1990 m, 14.VIII.2003 A. SMETANA [C122] / Holotypus *Zyras yongshengensis* det. R. PACE 2005 / *Zyras yongshengensis* n. sp., det. R. PACE 2005 / coll. DEI Müncheberg / *Zyras yongshengensis* Pace, det. V. ASSING 2015” (SDEI).

#### Comment

According to the original description, which is based on a unique male holotype from “China: N-Yunnan, Lijiang, Naxi Co., 3 km NW Yongsheng, 53 km WSW Lijiang, 26°41.8'N, 100°43.1'E”, *Z. yongshengensis* has completely reduced hind wings (PACE 2012a). Indeed, the holotype does not possess hind wings, but the presence of a fully developed palisade fringe at the posterior margin of tergite VII suggests that the wings may have been removed in the process of mounting the specimen. Moreover, according to PACE (2012a), the eyes are shorter than the temples and the head lacks punctation. An examination of the holotype, however, revealed that the eyes are distinctly longer than the postocular region and the lateral dorsal portion of the head is sparsely punctate.

#### Redescription

Body length 5.7 mm; length of forebody 2.4 mm. Coloration: head blackish; pronotum pale-reddish; elytra blackish, with the suture reddish (Fig. 104); abdomen (Fig. 161) with segments III–VI pale-reddish, segment VII blackish-brown with the anterior margin, the antero-lateral portion, and the paratergites pale-reddish, and segments VIII–X blackish-brown; legs pale-yellowish, with the profemora pale-brown and the apical halves of the meso- and metafemora dark-brown; antennomeres I–VI dark-brown (remainder missing in holotype); maxillary palpi yellowish-brown, with the terminal palpomere yellowish.

Head (Fig. 104) distinctly transverse, broadly impunctate in median portion, in lateral portions with sparse and fine punctation. Eyes longer than postocular region in dorsal view. Antenna with antennomeres IV–V distinctly oblong and VI very weakly oblong.

Pronotum (Fig. 104) weakly transverse, approximately 1.1 times as broad as long and 1.2 times as broad as head; lateral margins not sinuate in posterior half (dorsal view); disc with scattered, sparse, irregularly spaced, shallow, and rather fine punctures; lateral margins each with four long black setae, antero-lateral portion with additional long black setae.

Elytra (Fig. 104) conspicuously short, 0.65 times as long as pronotum; punctation coarse, denser in anterior than in posterior half; interstices in posterior half much broader than diameter of punctures. Hind wings: see comment above. Legs long and very slender; metatarsomere I approximately as long as the combined length of II–IV.



Abdomen (Fig. 161) approximately as broad as elytra, with rather deep anterior impressions on tergites III–V; anterior impressions of tergites III–V with fine, shallow, and weakly defined non-setiferous punctation; tergites III–V without median pair of punctures; tergite III with a lateral puncture on either side and with 4 punctures at posterior margin; tergite IV with a lateral puncture on either side and with 8 punctures at posterior margin; tergite V with a lateral pair of punctures on either side and with 8 punctures at posterior margin; tergite VI with a narrow transverse band of non-setiferous punctures anteriorly, a lateral setiferous puncture on either side, and 8 punctures near posterior margin; tergite VII with numerous non-setiferous punctures in antero-median portion and with scattered fine setiferous punctures not arranged in distinct series in posterior portion; integument without micro-sculpture and glossy; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII convex, not concave in the middle.

♂: median lobe of aedeagus 0.68 mm long, shaped as illustrated by PACE (2012a); paramere with slender apical lobe.

#### Comparative notes

This species is readily distinguished from all other Chinese representatives of the subgenus by the short elytra alone.

#### Distribution and natural history

*Zyras yongshengensis* is currently known only from the type locality, which is situated in northwestern Yunnan (Fig. 305). The holotype was collected at an altitude of nearly 2000 m, most likely by sifting leaf litter.

*Zyras (Zyras) hongkongensis* Pace, 1999  
(Figs. 33, 99, 157, 274–277, 295–297, 306)

*Zyras (Zyras) hongkongensis* PACE, 1999: 684 ff.  
*Zyras (Zyras) benenensis* PACE, 2001: 196 f.; **n. syn.**

#### Type material examined

*Z. hongkongensis*: Paratype ♀: “Hong Kong, Tai Long, G. REELS, 11.III.1997 / At light / Paratypus *Zyras hongkongorum* [sic] m., det. R. PACE 1998 / *Zyras hongkongorum* sp. n., det. R. PACE 1999 / *Zyras hongkongensis* Pace, det. V. ASSING 2015” (cRou).

*Z. benenensis*: Holotype ♂: “Vietnam-N, 100 km SSW Hanoi, 40 km SW Than Hoa, Ben En Nat. Park, 50 m, 29.–30.1997, leg.: A. NAPOLOV / Holotypus *Zyras benenensis* mihi, det. R. PACE 2001 / *Zyras benenensis* mihi, det. R. PACE 2001 / *Zyras hongkongensis* Pace, det. V. ASSING 2015” (NME).

#### Additional material examined

China: 1 ♀, Yunnan, Xishuangbanna, Menglun, 500 m, at light, 4.–7.XI.1999, leg. JÄCH et al. (NHMW); 7 exs., Guangxi,

Shiwandashan National Forest Park, 21°54'N, 107°54'E, 290–360 m, forested river valley, at light, 5.–9.IV.2013, leg. FIKÁČEK et al. (NMP, cAss); 1 ♀, Guangdong, W Qixing, Heishiding nature reserve, 23°28'N, 111°54'E, 190 m, forested stream valley, at light, 1.–3.V.2011, leg. FIKÁČEK & HÁJEK (NMP).

Hong Kong: 1 ♀, Lung Kwachao [?], at light, 16.X.1997, leg. REELS (cRou).

Taiwan: 1 ♂, “Kosempo” [= Chia-hsien; 23°05'N, 120°35'E], leg. SAUTER (FMNH).

India: 1 ♂, border region Assam-Arunachal Pradesh, Bhalukpong, 27°01'N, 92°39'E, 150 m, 1.–8.V.2012, leg. DEMBICKÝ (NHMB).

Vietnam: 4 exs., Cuc Phuong National Park, 100 km S Hanoi, 2.–12.V.1991, leg. JENDEK (NHMW, cAss); 5 exs., Cuc Phuong, 2.–11.V.1991, leg. STRNED (NMP, cAss); 1 ex., Sapa (Lao Cai), 22°20'N, 103°50'E, 25.V.–10.VI.1991, leg. JENDEK (NHMW).

Indonesia: 2 ♂♂, Sumatra, leg. SCHULTHEISS (FMNH); 1 ♂, Sumatra, Tebing Tinggi, leg. SCHULTHEISS (FMNH); 1 ♂, Java Barat, Bandung, 1908, leg. ROEPKE (FMNH).

#### Comment

The original description of *Z. hongkongensis* is based on a male holotype and two female paratypes from “Hong Kong, Tai Long” (PACE 1999). In the description of *Z. benenensis*, PACE (2001) compares the species with *Z. chinkiangensis* and *Z. song*, but there is no reference to *Z. hongkongensis*. A comparison of the holotype of *Z. benenensis* with the paratype and non-type material of *Z. hongkongensis* revealed no differences whatsoever, neither in external nor in the male sexual characters, suggesting that both names refer to the same species. Consequently, *Z. benenensis* is placed in synonymy with the senior name *Z. hongkongensis*. The additional material from Taiwan and Indonesia had been identified as *Z. geminus* (Kraatz, 1859) by BERNHAUER.

#### Redescription

Body length 5.2–7.2 mm; length of forebody 2.9–3.2 mm. Coloration: head and elytra black; pronotum bright-reddish (Fig. 99); abdomen (Fig. 157) with segments III–V pale-reddish, tergite VI black, with the narrow anterior margin and the antero-lateral portions reddish, and tergites VII–VIII black; legs yellowish, with the apices of the meso- and metafemora, often also those of the profemora, more or less distinctly infuscate; antennae (Fig. 33) blackish with antennomeres XI or X–XI yellowish and with antennomere IX often somewhat paler brown, sometimes only with the basal 4–5 antennomeres blackish and the intermediate antennomeres gradually becoming paler towards antennal apex; maxillary palpi with palpomeres II and III brown to dark-brown and the terminal palpomere yellowish to reddish.

Head (Fig. 99) distinctly transverse, broadly impunctate in median portion, in lateral portions with sparse and very fine punctation. Eyes much longer than postocular region in dorsal view. Antenna (Fig. 33) 2.0–2.1 mm

long; antennomere IV approximately as broad as long, V weakly transverse, VI–X of gradually increasing width and increasingly transverse, X nearly twice as broad as long, and XI nearly as long as the combined length of IX and X.

Pronotum (Fig. 99) weakly transverse and rather small in relation to head, 1.06–1.10 times as broad as long and about 1.15 times as broad as head; lateral margins weakly sinuate in posterior half (dorsal view); punctation rather fine and rather dense; midline moderately broadly impunctate; lateral margins and antero-lateral portions with long black setae (mostly broken off in the examined material).

Elytra (Fig. 99) approximately 0.85 times as long as pronotum; punctation extremely fine. Hind wings fully developed. Legs long and very slender; metatarsomere I approximately as long as, or even longer than the combined length of II–IV.

Abdomen (Fig. 157) approximately as broad as elytra, with deep anterior impressions on tergites III–V; anterior impressions of tergites III–V with fine and weakly defined non-setiferous punctation; tergite III with a few lateral punctures on either side and with 8–10 punctures at posterior margin; tergites IV–V each with a few lateral punctures on either side and with 12–16 punctures at posterior margin; tergite VI with a transverse band of rather dense non-setiferous punctures anteriorly and scattered setiferous punctures posteriorly; tergite VII with rather dense non-setiferous punctures in anterior half and scattered setiferous punctures in posterior half; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; tergite VIII strongly transverse, posterior margin truncate or weakly convex, not concave in the middle (Fig. 295).

♂: sternite VIII somewhat longer than tergite VIII, its posterior margin strongly convex, in the middle truncate or nearly so (Fig. 296); median lobe of aedeagus (Figs. 274–277) 0.75–0.80 mm long; paramere with short, broad, and flattened apical lobe (Fig. 297).

#### Comparative notes

*Zyras hongkongensis* is characterized by the coloration of the body, the legs, and the antennae, by the fine punctation of the forebody, the punctation pattern of the abdomen, and by the shape of the median lobe of the aedeagus.

#### Distribution and natural history

Previously known only from Hong Kong (HLAVÁČ et al. 2011), the distribution of *Z. hongkongensis* now also includes southern China (Guangdong, Guangxi, Yunnan), Taiwan, Northeast India, Vietnam, and Indonesia (Sumatra, Java) (Fig. 306). The type material (ROUGEMONT 2001) and at least some of the additional specimens examined were collected at light.

### *Zyras (Zyras) flexus* n. sp. (Figs. 15, 101, 156, 282–283, 302)

#### Type material

**H o l o t y p e** ♂: “China: Fujian prov., Wuyi Shan Nat. Res., Sangang [recte: Sangang] env. (900 m), 30.V.–12.VI.2001, HLAVÁČ & COOTER lgt. / Holotypus ♂ *Zyras flexus* sp. n. det. V. ASSING 2014” (cAss).

**P a r a t y p e** ♀: “China: Fujian prov., Wuyi Shan Nat. Res., Masu (1100 m), 6.VI.2001, HLAVÁČ & COOTER lgt.” (cHla).

#### Etymology

The specific epithet is the past participle of the Latin verb *flectere* and alludes to the subapically angled ventral process of the aedeagus.

#### Description

Moderately large species; body length 7.0–7.3 mm; length of forebody 2.9–3.3 mm. Coloration: forebody dark-brown (Fig. 101); abdomen (Fig. 156) brownish-red, with the middle of tergite VII moderately infuscate; legs weakly bicoloured: forelegs brown, mid- and hindlegs brown, with the bases of the femora yellowish and the apical portions of the tibiae and the tarsi reddish-yellow; maxillary palpi yellowish-brown to brown; antennae (Fig. 15) dark-brown, with the apical 2–5 antennomeres yellowish-brown.

Head (Fig. 101) distinctly transverse, broadly impunctate in median portion, in lateral portions with rather sparse and coarse punctation; macrosetae long and erect; interstices on average approximately as broad as diameter of punctures. Eyes longer than postocular region in dorsal view. Antenna (Fig. 15) 2.2–2.5 mm long; antennomere IV approximately as long as broad; VI weakly transverse; VI–X gradually increasing in width and increasingly transverse; X distinctly transverse, more than 1.5 times as broad as long; XI distinctly shorter than the combined length of IX and X.

Pronotum (Fig. 101) 1.11–1.13 times as broad as long and 1.27–1.29 times as broad as head; punctation dense, shallow, and relatively ill-defined; interstices on average slightly narrower than diameter of punctures; midline narrowly impunctate; antero-lateral portions with numerous very long, erect, and dense dark setae; remainder of pronotal surface with suberect pale long pubescence.

Elytra (Fig. 101) 0.87–0.89 times as long as pronotum; punctation defined and moderately dense, denser in anterior portion; interstices on average as broad as, or slightly broader than diameter of punctures. Hind wings fully developed. Metatarsomere I somewhat shorter than the combined length of II–IV.

Abdomen (Fig. 156) large, approximately as broad as elytra, with moderately deep anterior impressions on tergites III–V; posterior margins of all tergites without short setae; anterior impressions of tergites III–V with sparse



non-setiferous punctation or nearly impunctate; tergite III with a few setiferous punctures laterally and at posterior margin (absent in the middle of posterior margin in holotype), middle of disc impunctate, or nearly so; tergite IV with similar chaetotaxy as tergite III, but laterally with more extensive punctation; tergite V with punctate anterior impression and with scattered setiferous punctures and non-setiferous micropunctures on whole disc; tergite VI with coarse and rather dense oblong punctures in anterior half and sparser setiferous punctures in posterior half; tergite VII with coarse and very dense punctation in anterior portion and with moderately dense punctures in posterior portion; tergite VIII with moderately sparse punctation; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII shallowly concave in the middle; sternite VIII somewhat longer than tergite VIII, its posterior margin strongly convex; median lobe of aedeagus relatively small in relation to body size, 0.69 mm long and shaped as in Figs. 282–283; ventral process subapically angled in lateral view.

♀: posterior margin of tergite VIII smoothly convex; posterior margin of sternite VIII weakly concave in the middle.

#### Comparative notes

*Zyras flexus* is readily distinguished from all other congeners known from China by numerous characters such as the antennal morphology, the coloration, the large abdomen, and particularly by the chaetotaxy of the pronotum, the punctation pattern of the abdomen, and the shape of the ventral process of the aedeagus. Based on similarly derived external characters (very short antennomere XI; antennae apically distinctly incrassate; pronotum with dense punctation and with numerous long black setae in antero-lateral portions; elytra and abdominal sternites with long and erect pubescence; meso- and metafemora bicoloured; abdomen with extensive punctation at least on tergites VII and VIII), *Z. flexus* is most closely allied to *Z. setosivestis* from Burma, from which it is distinguished by smaller body size, a more slender habitus, the coloration (antennomeres I–IX darker; legs paler and with only indistinctly bicoloured meso- and metafemora; abdominal segments III–VI and VIII–X reddish), more distinctly incrassate antennae (antennomere V transverse; antennomeres VI–X more strongly transverse), the more transverse pronotum, elytra with less dense punctation and shorter and less dense pubescence, and the punctation of the abdomen (punctation less dense and less extensive).

#### Distribution and natural history

The type specimens were collected in two geographically close localities in the Wuyi Shan, Fujian (Fig. 302), at altitudes of 900 and 1100 m.

### *Zyras (Zyras) formosanus* n. sp. (Figs. 30, 105, 166, 284–285, 305)

*Zyras hirtus*: FENYES (1914); misidentification.

#### Type material

**H o l o t y p e** ♂: “Kankau (Koshun) [= Hengchun; 22°00'N, 120°44'E], Formosa, H. SAUTER, VII.1909 / 4377 det. A. FENYES / FENYES det. / *Zyras hirtus* Kr. / DEI Müncheberg, Col-06466 / Holotypus ♂ *Zyras formosanus* sp. n., det. V. ASSING 2015” (SDEI).

**P a r a t y p e** ♀: “Chialoshui c. 100 m, Pintung [sic] Taiwan, 3.XI.2000, HIROSHI SUGAYA leg. (Under dead leaves)” (cMar).

#### Etymology

The specific epithet is an adjective derived from Formosa, the ancient name of Taiwan.

#### Comment

The holotype is one of the two specimens erroneously reported as *Z. hirtus* from Taiwan by FENYES (1914).

#### Description

Body length 5.3–6.2 mm; length of forebody 2.2–2.6 mm. Coloration: head dark-reddish; pronotum and elytra reddish (Fig. 105); abdomen (Fig. 166) reddish, with segment VI, the posterior portion of segment V, and the anterior portion of segment VII slightly darker; legs dark-yellowish, with the apices of the metafemora indistinctly darker; antennae (Fig. 30) reddish-brown to dark-brown, with antennomeres I–II reddish and the apical 2–4 antennomeres reddish to pale-reddish (gradually becoming paler towards apex of antenna); maxillary palpi reddish-yellow.

Head (Fig. 105) distinctly transverse, broadly impunctate in median portion, in lateral portions with scattered fine punctation. Eyes large and strongly bulging, much longer than postocular region in dorsal view. Antenna (Fig. 30) slender, 2.1–2.2 mm long; antennomeres IV distinctly, V–VI decreasingly oblong; VI very weakly oblong, VII approximately as long as broad; VIII–X weakly transverse; XI slightly shorter than the combined length of IX and X.

Pronotum (Fig. 105) approximately 1.15 times as broad as long and 1.2 times as broad as head; punctation fine, sparse, and very shallow; interstices much broader than diameter of punctures; midline broadly impunctate; pubescence fine, sparse, and moderately long.

Elytra (Fig. 105) short, approximately 0.65 times as long as pronotum; punctation moderately coarse and moderately dense. Hind wings not examined, probably reduced. Metatarsomere I slightly shorter than the combined length of II–IV.

Abdomen (Fig. 166) large, broader than elytra, with rather deep anterior impressions on tergites III–V; tergites

III–V without distinct non-setiferous punctures in anterior impressions and with a lateral setiferous puncture on either side; tergite III with a row of 8, tergites IV–V each with a row of 10–12 punctures bearing long black setae at posterior margin; tergite VI with a transverse row of non-setiferous punctures at anterior margin, with a pair of lateral setiferous punctures on either side, and with a transverse row of 15–20 setiferous punctures near posterior margin; tergite VII with rather sparse non-setiferous punctures in antero-median portion and with numerous setiferous punctures partly arranged in transverse rows in posterior third; tergite VIII with punctures bearing long black setae in posterior fourth or third; sternites with long, dense, and erect dark setae in posterior halves; integument without microsculpture and glossy; posterior margin of tergite VII without palisade fringe; tergite VIII distinctly transverse, its posterior margin truncate or weakly concave in the middle.

♂: sternite VIII transverse and longer than tergite VIII, its posterior margin nearly truncate in the middle; median lobe of aedeagus (Figs. 284–285) 0.75 mm long and with rather stout ventral process in lateral view; apical lobe of paramere rather short and stout.

♀: posterior margin of sternite VIII weakly concave in the middle.

#### Comparative notes

This species is characterized particularly by its broad abdomen (in relation to forebody), the nearly uniformly reddish coloration of the body, the absence of a palisade fringe at the posterior margin of the abdominal tergite VII, the rather long and relatively massive antennae, the punctation pattern of the abdomen, and the shape of the median lobe of the aedeagus. It is distinguished from *Z. hirtus*, with which it was previously confounded, by the smaller and less robust body, the morphology of the antennae (*Z. hirtus*: antennomeres IV–X distinctly transverse), the much coarser punctation of the elytra, the much sparser punctation of the abdomen, the shorter elytra, the absence of a palisade fringe at the posterior margin of tergite VII, and by the smaller aedeagus with a much stouter ventral process.

#### Distribution and natural history

The type specimens were collected in two localities in Pingtung Hsien in the south of Taiwan (Fig. 305). The paratype was sifted from leaf litter at an altitude of approximately 100 m.

*Zyras (Zyras) glabricollis* Scheerpeltz, 1965  
(Figs. 11, 106, 162, 171, 286–288, 306)

*Zyras (Zyras) glabricollis* SCHEERPELTZ, 1965: 358 f.

#### Type material examined

Holotype ♂: “N. E. Burma, Kambaiti 7000 ft., 7–9.VI.1934, R. MALAISE / Holotypus / Typus *Zyras glabricollis* O. Scheerpeltz / *Zyras (Zyras) glabricollis* n. sp., det. SCHEERPELTZ 1941 / 3748, E91 + / NHRS-JLKB 000023266 / *Zyras glabricollis* Scheerpeltz, det. V. ASSING 2015” (SMNH).

#### Comment

The original description is based on a single male holotype from “N. E. Burma, Kambaiti” (SCHEERPELTZ 1965).

#### Redescription

Body length 5.7 mm; length of forebody 2.6 mm. Coloration: head blackish-brown (Fig. 171); pronotum reddish-brown (Fig. 162); elytra yellowish with the postero-lateral portions extensively infusate (Fig. 106); abdomen (Fig. 162) pale reddish-brown, with segment VI dark-brown, and the posterior margins of the segments yellowish; legs and maxillary palpi yellowish; antennae (Fig. 11) pale-brown, with the basal two antennomeres pale-reddish.

Head (Fig. 171) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions fine and sparse, bearing long pale setae. Eyes noticeably longer than postocular region in dorsal view. Antenna (Fig. 11) long and slender 2.5 mm long; antennomeres IV–VII distinctly oblong; VIII weakly oblong; IX–X as broad as long or weakly transverse; XI nearly as long as the combined length of IX and X.

Pronotum (Fig. 171) relatively weakly transverse, 1.1 times as broad as long and 1.24 times as broad as head, posteriorly with a pronounced median impression; punctation confined to a pair of median punctures anteriorly, a transverse cluster of punctures on either side behind the middle, and few lateral and marginal punctures, disc largely impunctate.

Elytra (Fig. 106) 0.9 times as long as pronotum; punctation moderately coarse and dense in lateral and anterior portions, sparser in postero-sutural portions. Hind wings fully developed. Metatarsomere I shorter than the combined length of II–IV.

Abdomen (Fig. 162) wedge-shaped, distinctly tapering posteriad and with rather shallow anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with smooth grooves, but without punctation; tergites III–VI with a lateral puncture on either side and a transverse row of setiferous punctures near hind margin, otherwise impunctate; tergite VII with two irregular transverse rows of punctures in posterior portion; tergite VIII with approximately 20 punctures bearing long black setae in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: tergite VIII weakly transverse, middle of posterior margin with a sharply delimited concavity; sternite VIII (Fig. 288) longer than tergite VIII, weakly transverse,



posteriorly conspicuously truncate, middle of posterior margin weakly concave; median lobe of aedeagus (Figs. 286–287) 0.65 mm long; ventral process strongly curved and with long and very acute apex in lateral view; paramere with conspicuously long apical lobe.

♀: unknown.

#### Comparative notes

*Zyras glabricollis* is distinguished from other species of the genus, except *Z. extensus* and *Z. rectus*, by the combination of slender habitus, long and slender antennae, a characteristic punctation pattern of the pronotum and the abdomen, the wedge-shaped abdomen, a posteriorly conspicuously truncate male sternite VIII, and an apically remarkably acute ventral process of the aedeagus. For characters separating it from the similar and evidently closely related *Z. extensus* see the comparative notes in the following section.

#### Distribution and natural history

This species is currently known only from the type locality, which is situated in northeastern Burma, close to the border with Yunnan (Fig. 306), at an altitude of approximately 2100 m.

*Zyras (Zyras) extensus* **n. sp.**  
(Figs. 12, 107, 163, 289–290, 306)

#### Type material

**Holotype** ♂: “China: Yunnan, Lincang Pref., Laobie Shan, Wei Bo Shan pass, 24°08'16"N, 99°42'53"E, 2375 m, creek valley, devastated second. decid. forest, litter & moss sifted, 8.IX.2009, leg. M. SCHÜLKE [CH09-35] / Holotypus ♂ *Zyras extensus* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 2 ♂♂: same data as holotype (cSch, cAss); 1 ♀ [teneral]: “China: Yunnan, Lincang Pref., Xue Shan, 11 km ENE Lincang, 2510 m, 23°55'01"N, 100°11'17.5"E, second. pine forest with Rhodod., small cleft with water, litter & mushrooms sifted, 10.IX.2009, leg. M. SCHÜLKE [CH09-39]” (cSch); 1 ♂, 1 ♀: “China: Yunnan province, Shanzhi env., 22.–24.VI.2007, Jizu Shan Mt., 2180–2580 m, along the path to the summit, 27°57.7–8'N, 100°22.1–23.6'E, J. HÁJEK & J. RŮŽIČKA leg. / sifted detritus and leaves, dense mixed forest (with dominant *Pinus*, *Quercus* and *Rhododendron*) near stream [CH45-47]” (cSch); 1 ♂, 1 ex.: “China (N-Yunnan) Lijiang Naxi Aut. Co., E Yulongxue Shan, 30 km N Lijiang, 2800–2900 m, 27°09.0'N, 100°14.9'E (creek valley, secondary mixed forest), 13.VIII.2003 WRASE [01]” (cSch, cAss); 1 ex.: same data, but leg. SCHÜLKE (cSch).

#### Etymology

The specific epithet is the past participle of the Latin verb *extendere* (to stretch) and alludes to the conspicuously long and slender antennae.

#### Description

Body length 5.0–6.8 mm; length of forebody 2.4–2.8 mm. Coloration: head and pronotum blackish-brown

to blackish; elytra dark-brown to blackish-brown with the humeral angles and the sutural portion more or less distinctly and more or less extensively yellowish to reddish (Fig. 107); abdomen (Fig. 163) reddish, with the middle of tergite V more or less extensively, and tergites VI–VIII (except posterior margin), more or less strongly infuscate; legs and maxillary palpi yellowish; antennae (Fig. 12) dark-brown, with antennomeres I–II and XI reddish.

Head (Fig. 107) moderately transverse, nearly impunctate, only with some fine setiferous punctures bearing long fine pale setae in lateral portion; interstices much broader than diameter of punctures. Eyes longer than postocular region in dorsal view. Antenna (Fig. 12) conspicuously slender, 2.4–2.7 mm long; antennomeres IV–X oblong; XI slender, as long as the combined length of IX and X, or slightly shorter.

Pronotum (Fig. 107) 1.10–1.15 times as broad as long and 1.3–1.4 times as broad as head; punctation distinctive: near the anterior margin and slightly behind middle with a median pair of coarse punctures, with some setiferous punctures in medio-lateral portion, antero-lateral and postero-lateral portions extensively impunctate; anterior and lateral margins with some very long black setae.

Elytra (Fig. 107) approximately 0.9 times as long as pronotum, somewhat convex in cross-section; punctation fine and very sparse, in posterior portion partly absent; interstices several times as broad as diameter of punctures. Hind wings fully developed. Metatarsomere I slightly shorter than the combined length of II–IV.

Abdomen (Fig. 163) wedge-shaped, distinctly tapering posteriad and with rather deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portion of tergite VI each with a row of sparse and rather coarse non-setiferous punctures; tergites III–VI impunctate, except for a transverse row of setiferous punctures bearing long black setae near posterior margins and with few setiferous punctures in lateral portions; tergite VII with two rows of setiferous punctures bearing thin pale setae in posterior half and with few scattered punctures in anterior portion; tergite VIII with moderately dense setiferous punctures only in posterior portion; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe; tergite VIII without evident sexual dimorphism, with shallow concavity in the middle of hind margin.

♂: sternite VIII longer than tergite VIII, posterior margin conspicuously truncate, in the middle even concave; median lobe of aedeagus approximately 0.8 mm long; ventral process strongly curved and with conspicuously acute apical portion in lateral view (Figs. 289–290); apical lobe of paramere conspicuously long and thin, more than half as long as basal portion.

♀: sternite VIII similar to that of male, but posterior margin with less pronounced postero-lateral angles.

## Comparative notes

This highly distinctive species differs from other *Zyras* species known from China, except *Z. glabricollis* and *Z. rectus* (see preceding and following sections), by numerous characters, particularly the conspicuously long and slender antennae, the conspicuously sparse punctation of the forebody, the punctation pattern of the abdomen, by the morphology of the median lobe of the aedeagus, and by the conspicuously long apical lobes of the parameres. The synapomorphically modified morphology of the parameres in particular suggests that *Z. extensus*, *Z. glabricollis*, and *Z. rectus* represent a distinct lineage. The similarly modified male sternite VIII suggests that *Z. extensus* is most closely related to *Z. glabricollis*, from which it is distinguished by the darker coloration, particularly of the antennae, the pronotum, and abdominal tergite VI, by the slightly less slender antennae, the near absence of punctures even in the lateral portions of the head, the sparser punctation of the elytra, the more numerous marginal punctures on the abdominal tergites III–V, the presence of a transverse row of punctures on tergite VI, the more numerous punctures on tergite VII, and by the larger aedeagus with a more pronounced crista apicalis and a longer, less strongly curved (lateral view), and more slender (ventral view) ventral process. For characters distinguishing *Z. extensus* from *Z. rectus* see the comparative notes in the following section. The distinguishing characters observed are not very pronounced, but, based on the examined material, apparently constant. Nevertheless, the possibility that they may be an expression of intra- rather than interspecific variation cannot be ruled out with certainty. Additional males of *Z. glabricollis* from the vicinity of the type locality of that species would be required to confirm the present hypothesis that *Z. glabricollis* and *Z. extensus* represent different species.

## Distribution and natural history

The specimens were collected in several localities in Yunnan (Fig. 306), by sifting leaf litter in mixed, coniferous, and deciduous forests at altitudes between 2180 and 2900 m. One female collected in September is teneral.

*Zyras (Zyras) rectus* n. sp.  
(Figs. 13, 108, 164, 291–292, 306)

## Type material

**Holotype** ♂: “China: Yunnan [CH07-11], Baoshan Pref., Gaoligong Shan, nr. Xiaoheshan N. R., 35 km SE Tengchong, 2110 m, 24°50'16"N, 98°45'43"E, decid. forest, litter, sifted, 30.V.2007, M. SCHÜLKE / Holotypus ♂ *Zyras rectus* sp. n. det. V. ASSING 2014” (cAss).

**Paratypes**: 1 ♀: same data as holotype (cSch); 1 ♀: “China: Yunnan, Baoshan Pref., Gaoligong Shan, W pass 35 km SE Tengchong, 2100 m, 24°50'18"N, 98°45'43"E, devast. prim.

dec. forest, litter, wood, mushrooms sifted, 25.VIII.2009, leg. M. SCHÜLKE [CH09-06]” (cSch).

## Etymology

The specific epithet (Latin, adjective) alludes to the nearly straight ventral process of the aedeagus (lateral view), one of the characters distinguishing this species from the similar *Z. extensus*.

## Description

Body length 5.1–6.3 mm; length of forebody 2.5–2.8 mm. Coloration: head and pronotum blackish-brown to blackish; elytra dark-brown to blackish-brown with the humeral angles and the sutural portion yellowish (Fig. 108); abdomen (Fig. 164) with segments III–IV reddish and tergites V–VIII, except the narrowly reddish posterior margins, dark-brown to blackish; legs and maxillary palpi yellowish; antennae (Fig. 13) dark-brown, with antennomeres I–II yellowish-red and XI dark-reddish.

Antenna (Fig. 13) slender, 2.3–2.5 mm long; antennomeres IV–VII oblong; VIII–IX approximately as broad as long; X weakly transverse; XI slender, as long as the combined length of IX and X, or slightly shorter. Tergite VIII with posterior margin truncate, not distinctly concave in the middle.

Other external characters as in *Z. extensus*.

♂: sternite VIII longer than tergite VIII, posterior margin truncate to weakly convex; median lobe of aedeagus approximately 0.8 mm long; ventral process slender, weakly curved, and with conspicuously acute apical portion in lateral view (Figs. 291–292); apical lobe of the paramere conspicuously long and thin, more than half as long as basal portion.

♀: sternite VIII posteriorly weakly convex.

## Comparative notes

Based on the similar external characters and particularly the similarly derived morphology of the median lobe (ventral process very slender in ventral view; apex of ventral process conspicuously acute in lateral view) and the paramere (apical lobe conspicuously long and thin), *Z. rectus* is undoubtedly closely allied to *Z. glabricollis* and *Z. extensus*, from which it differs by the antennal morphology (less massive; antennomeres IV–VII less oblong, VIII–IX as broad as long, and X weakly transverse), by the shape of the male sternite VIII, and by the shape of the ventral process of the aedeagus (longer in relation to basal portion of median lobe; more slender in ventral view; less distinctly curved in lateral view; crista apicalis distinctly narrower).

## Distribution and natural history

The species is known from two geographically close localities to the southeast of Tengchong in the Gaoligong



Shan (Fig. 306). The specimens were sifted from leaf litter in deciduous forests at an altitude of approximately 2100 m.

*Zyras (Zyras) gibbus* Pace, 2010

*Zyras (Zyras) gibbus* PACE, 2010a: 26.

Type material examined

Holotype ♂: “Taiw. Kaohsiung Hs., for. abv. Tona For. Sta., 1100 m, 30.IV.1998, A. SMETANA [T192] / Holotypus *Zyras gibbus* mihi, det. R. PACE 2006 / *Zyras gibbus* n. sp., det. R. PACE 2006” (MCSNV).

Comment

The original description is based on a unique male from “Taiwan, Kaohsiung Hs., For. abv. Tona Sta.” (PACE 2010a). A loan of this specimen was requested prior to the finalization of the manuscript, but this request remained unanswered. Eventually, thanks to the efforts of ADRIANO ZANETTI (Verona), however, it was possible to examine the holotype after submission of the manuscript.

Redescription

Body length 6.1 mm; length of forebody 2.5 mm. Coloration: body blackish-brown; legs dark-yellowish (probably an artefact resulting from the procedure used during the dissection; originally probably pale-yellowish); antennae blackish-brown with the apical portion of antennomere XI slightly paler.

Head strongly transverse and distinctly wedge-shaped, broadest posteriorly; punctation of dorsal surface moderately coarse and moderately dense; antero-median portion extensively, postero-median portion narrowly impunctate. Eyes large, nearly reaching posterior margin of head in dorsal view. Antenna 2.1 mm long and slender; antennomeres IV–V weakly oblong, VI approximately as long as broad, VII–X gradually, very weakly increasing in width and increasingly transverse, X much less than 1.5 times as broad as long and only slightly broader than IV, and XI slightly longer than combined length of IX and X.

Pronotum strongly transverse, 1.28 times as broad as long and 1.33 times as broad as head; posterior margin rather strongly convex; posteriorly with a large and pronounced transverse elevation; anteriorly, near middle, with an impression on either side of middle; punctation conspicuous: very dense and strongly granulose along middle and on posterior elevation, less dense and less strongly granulose in lateral portions; lateral margins each with five long and stout erect setae, anterior margin with two such setae on either side.

Elytra 0.82 times as long as pronotum; punctation rather dense, equally distributed, and slightly granulose.

Hind wings present. Metatarsomere I approximately as long as combined length of II–IV.

Abdomen wedge-shaped, broadest at segment IV, and approximately as broad as elytra; tergite III posteriorly with a pronounced, dorso-ventrally flattened, broad, and medially pointed median projection (male secondary sexual character?); tergites III–IV with shallow, tergite V without anterior impression; anterior portions of tergites III–VII without non-setiferous punctation, only with micropunctation; tergites III–V posteriorly with moderately dense setiferous punctation; tergite VI with fine and sparse punctation; tergite VII with dense and coarse granules in the middle (male secondary sexual character?); tergite VIII with coarse and dense oblong granules, its posterior margin truncate.

♂: median lobe of aedeagus 0.63 mm long; ventral process rather long, slender, and parallel-sided; crista apicalis pronounced. For illustrations see PACE (2010a).

Comparative notes

This species is unique among Chinese *Zyras* sensu strictu particularly in the shape of the head, the large eyes, as well as regarding the modifications of the pronotum and the abdomen. Based on the similar habitus, particularly on the similarly derived head shape, it is closely allied to *Z. trapeziceps* Dvořák, 1996 (Vietnam) and related species, which are associated with ants of the genus *Leptogenys* Roger, 1861. For an illustration of the forebody of *Z. trapeziceps* see ASSING (2015d).

Distribution and natural history

The type locality is situated in Taiwan at an altitude of 1100 m. The phylogenetic affiliations (see above) suggest that *Z. gibbus* is myrmecophilous, too.

3.6 Species of doubtful identity

*Zyras (Zyras) hauserianus* Bernhauer, 1933  
(Figs. 38, 77, 132)

*Zyras (Zyras) hauserianus* BERNHAUER, 1933a: 46.

Type material examined

Holotype ♀: “Thian-S., Tekesthal / 527 / *Hauserianus* Bernh. (*Zyras*), Typus unic. / *Hauserianus* Brnh. Typ. unic., don. D. G. HAUSER. / Chicago NHMus, M. BERNHAUER Collection / Holotypus ♀ *Zyras* (s. str.) *hauserianus* Brnh., P. HLAVÁČ det. 2003 / *Zyras hauserianus* Bernhauer, det. V. ASSING 2015” (FMNH).

Comment

The original description is based on a unique female from “Thian-S.: Tekesthal” (BERNHAEUER 1933a). The valley of the Tekes river is situated in the Tian Shan and extends

from southeastern Kazakhstan to northwestern China (eastern Xinjiang province) [approximately 42°55'N, 81°22'E].

In external characters [size and habitus; shape and punctuation of pronotum (Fig. 77); shape of antennae (Fig. 38); general punctuation pattern of the abdomen (Fig. 132)], the holotype is similar to the present interpretation of *Z. inexcisus*, but distinguished by the sparser punctuation of the elytra, the denser, more extensive, and coarser non-setiferous punctuation of the anterior impressions of tergites III–V and of the anterior portions of tergites VI–VII, the paler coloration of the antennae and of the margins of the abdominal tergites (anterior margins of tergites VI and VII distinctly and broadly pale-reddish). These differences are not pronounced, but sufficient to cast considerable doubt on the hypothesis that both names should refer to the same species. However, more material, particularly males, from the vicinity of the type locality would be needed to confirm that *Z. hauserianus* and *Z. inexcisus* represent distinct species. For characters distinguishing *Z. hauserianus* from the similar *Z. illecebrosus* see the section on that species.

*Zyras (Zyras) songanus* Pace, 1993  
(Figs. 54, 111, 139)

*Zyras (Zyras) songanus* PACE, 1993: 114.

Type material examined

Holotype ♀: “China, Beijing, VIII.1982, ROUGEMONT / Holotypus *Zyras songanus* m., det. R. PACE 1987 / *Zyras songanus* sp. n., det. R. PACE 1987 / *Zyras songanus* Pace, det. V. ASSING 2015” (cRou).

Additional material examined

China: 2 ♀♀ [1 teneral], Beijing, Yan Shan, Dongling Mountains, Xiaolongmen, 1400 m, 15.–16.VI.2001, leg. HLAVÁČ & COOTER (cHla, cAss); 1 ♀, Beijing, Xiaolongmen, 39°58'N, 115°26'E, 1100 m, 9.–13.VI.2004, leg. COOTER (cAss).

Comment

According to the original description, which is based on a unique female from “Beijing” and which specifies practically nothing except the coloration, the holotype is deposited in the Chinese Academy of Sciences, Beijing (PACE 1993). The specimen, however, was located in cRou.

Redescription

Body length 5.6–6.3 mm; length of forebody 2.2–2.6 mm. Coloration: head and pronotum blackish-brown to blackish; elytra yellowish, with the postero-lateral angles moderately extensively infuscate (Fig. 111); abdomen (Fig. 139) of somewhat variable coloration: dark-brown

with the margins of tergites V–VIII yellowish, tergites III–IV completely yellowish (holotype) or with infuscate antero-median portion, or of similar coloration as posterior tergites; legs pale-yellowish to dark-yellowish; antennae (Fig. 43) pale-reddish to dark-brown, with the basal 2–3 antennomeres paler yellowish to reddish and antennomere XI pale-reddish to dark-reddish; maxillary palpi yellowish to reddish-yellow.

Head (Fig. 111) distinctly transverse, broadly impunctate in median portion, in lateral portions with moderately sparse and moderately coarse punctuation; interstices on average approximately as broad as, or broader than diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 43) 1.6–1.7 mm long; antennomere IV weakly transverse, antennomeres V–X of gradually increasing width and increasingly transverse, X approximately 1.5 times as broad as long; XI slightly longer than the combined length of IX and X.

Pronotum (Fig. 111) 1.11–1.18 times as broad as long and 1.25–1.37 times as broad as head; punctuation dense and defined; midline narrowly impunctate.

Elytra (Fig. 111) 0.82–0.86 times as long as pronotum; punctuation defined and rather dense, denser in anterior portion. Hind wings fully developed. Metatarsomere I somewhat shorter than the combined length of II–IV.

Abdomen (Fig. 139) approximately as broad as, or somewhat narrower than elytra, with moderately deep anterior impressions on tergites III–V; anterior impressions of tergites III–V and anterior portions of tergites VI–VII with dense (but not extensive) non-setiferous punctuation; remainder of tergal surfaces with dense setiferous punctuation; tergite VIII with dense punctuation, except for a narrow transverse band near anterior margin; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: unknown.

♀: posterior margin of tergite VIII smoothly convex or truncate in the middle; posterior margin of sternite VIII smoothly convex or indistinctly concave in the middle.

Comparative notes

Among the species of the *Z. shaanxiensis* coloration pattern, this species is characterized particularly by the relatively short and distinctly incrassate antennae and the extensive and rather dense setiferous punctuation of the abdomen.

Distribution and natural history

Reliable and confirmed records are currently known only from Beijing province. All other specimens identified by R. PACE as *Z. songanus* were misidentified. The additional material was collected at altitudes of 1100–1400 m. One of non-type specimens is slightly teneral (June).



## 3.7 Doubtful records

*Zyras (Zyras) particornis* (Sharp, 1888)

*Myrmedonia particornis* SHARP, 1888: 290.

## Comment

This species was originally described from Japan and subsequently recorded also from the Russian Far East, and Korea (HLAVÁČ et al. 2011). LI (1992) reported it from the Chinese province Jilin, but the records in this book are notoriously unreliable; moreover, previous attempts at recovering reference specimens (see, e. g., FELDMANN et al. 2014) have been unsuccessful. This species is characterized by the coloration alone: head and elytra black; pronotum bright-reddish; abdomen with segments III–V reddish, segment VI reddish with the middle of tergite VI extensively blackish, tergite VII black with the anterior margin and the antero-lateral portions reddish, and tergite VIII black; legs yellow; antennae distinctly bicoloured, with antennomeres I–VIII blackish and IX–XI pale-yellowish. For an image of this species see [http://www.zin.ru/Animalia/Coleoptera/images/sources/Zyras\\_particornis\\_ms.jpg](http://www.zin.ru/Animalia/Coleoptera/images/sources/Zyras_particornis_ms.jpg).

*Zyras (Zyras) condignus* Last, 1969

*Zyras (Zyras) distinctus* CAMERON, 1939b: 540; preoccupied.  
*Zyras (Zyras) condignus* LAST, 1969: 279; replacement name.

## Comment

This species was originally described from North India and subsequently reported from Nepal and Vietnam (CAMERON 1939b, HLAVÁČ et al. 2011). PACE (2010a) doubtfully recorded it also from Taiwan.

*Zyras (Zyras) cylindricornis* Dvořák, 1981

*Zyras (Zyras) cylindricornis* DVOŘÁK, 1981: 56.

## Comment

According to the original description, which is based on a unique male from “Japan, Honschu, Halbinsel Hinomi (p. Hiroschima)”, *Z. cylindricornis* is characterized as follows: body length 7.0 mm; head and pronotum black, elytra reddish-brown with infusate postero-lateral angles, abdomen black with the paratergites and the posterior margins of the tergites brown, legs and palpi brownish-yellow; antennae cylindrical; pronotum densely and regularly punctate, except for the median impunctate band (DVOŘÁK 1981). The species was subsequently recorded also from Korea and China (Liaoning) (HLAVÁČ et al. 2011). These records require revision.

*Zyras (Zyras) hirtus* (Kraatz, 1859)

*Myrmedonia hirta* KRAATZ, 1859: 25.

## Type material examined

Holotype ♀: “Ceylon, J. NIETNER / Holotypus / *hirta* mihi / coll. KRAATZ / *Myrmedonia hirta* Kraatz / DEI Müncheberg, Col-06465” (SDEI).

## Additional material examined

India: 5 exs., Tamil Nadu, Nilgiri Hills, 15 km SE Kotagiri, Kunchappanai, 11°22'N, 76°56'E, 900 m, 15.XI.1993, leg. BOUKAL & KEJVAL (NHMW, cAss).

Sri Lanka: 2 exs., Uva, S Wellawaya, 300 m, 25.I.1970, leg. MUSSARD, BESUCHET & LÖBL (MHNG, cAss); 3 exs., North central, Ambagaswewa, 3.II.1970, leg. MUSSARD, BESUCHET & LÖBL (MHNG); 1 ex., Central, S Mululla, 750 m, 4.II.1970, leg. MUSSARD, BESUCHET & LÖBL (cAss).

## Comment

The original description of *Zyras hirtus* is based on a “Specimen unicum in insula Ceylan lectum” (KRAATZ 1859). The holotype, a female, is deposited in SDEI. The subsequent record from Taiwan by FENYES (1914) (see also SHIBATA 1973) is erroneous (see section on *Z. formosanus*).

## 3.8 Unnamed species

The examined material included a considerable number of specimens that could not be attributed to any of the described species. Most, if not all, of these specimens are likely to represent undescribed species, but remain unnamed as they are either females or teneral males. The material is deposited in cAss unless indicated otherwise.

*Zyras (Zyras) sp. 1*

Material examined: China: 1 ♀, Jiangxi, Jinggang Shan, Jingzhu Shan, 26°31'N, 114°06'E, 640 m, 25.IV.2010, leg. FIKÁČEK et al. (NMP).

This species is characterized as follows: body length 8.0 mm; length of forebody 3.3 mm; head and pronotum black; elytra reddish-yellow with the postero-lateral portions extensively black; abdomen with segments III–VI bright-reddish, tergite VII black with the anterior portion bright-reddish, and tergite VIII black; legs yellow; antennae blackish with antennomere XI pale-brown; maxillary palpi dark-brown with palpomere IV yellowish; abdominal tergites V–VI with non-setiferous punctures also in median portion; tergite VII with non-setiferous punctures in nearly all of anterior half and with numerous punctures in posterior half.

*Zyras (Zyras) sp. 2*

Material examined: Taiwan: 2 ♀♀, NE-Taiwan, Ilan Hsien, “75 km, N.Crossing Highway”, 1100 m, flight interception trap, 22.V.2003, leg. LI (MNHUB).

This species is of similar size and coloration as *Z. nigronitens*, but differs by the longer and more massive antennae, denser and more regular punctuation of the elytra (also near posterior margin), as well as much denser non-setiferous punctuation and more extensive setiferous punctuation on the abdomen.

*Zyras (Zyras) sp. 3*

Material examined: Taiwan: 1 ♀, Ilan Hsien, "17 km, 100 Logging Road", 1650 m, flight interception trap, 22.VII.2003, leg. LI (MNHUB).

Using the key in section 3.4, this species would key out at couplet 9 together with *Z. beijingensis*, from which it differs by numerous characters such as bicoloured elytra, a much more extensively reddish abdomen, distinctly longer and more slender antennae, smaller eyes, a less transverse pronotum, more sparsely and coarsely punctate elytra, and a different punctuation pattern of the abdomen.

*Zyras (Zyras) sp. 4*

Material examined: China: 1 ♂ [teneral], Sichuan, Aba Tibet. Aut. Pref., Weizhou Co., Qionglai Shan, Wolong valley, 20 km WNW Dujiangyan, 31°05'N, 103°26'E, 1100 m, stream bank, 14.VII.1999, leg. WRASE.

Except for the paler antennae with a pale-yellowish antennomere XI, the coloration pattern of this species is similar to that of *Zyras* sp. 1. It is additionally characterized by relatively small body size (body length 6.1 mm; length of forebody 2.8 mm), a weakly transverse pronotum with coarse, rather sparse, and irregularly spaced punctuation and with a pair of two oblong elevations in posterior portion, and by an abdomen with coarse non-setiferous punctuation in the anterior portions and very sparse punctuation in the posterior portions of tergites III–VII.

*Zyras (Zyras) sp. 5*

Material examined: China: 1 ♀, Sichuan, Ya'an Pref., Tianquan Co., 57 km W Ya'an, Jiajin Shan, valley above Labahe N. R. St., 30°06'N, 102°25'E, 1800 m, forest, 12.VII.1999, leg. WRASE.

This species is distinguished from the highly similar *Z. setosivestis* only by the distinctly denser punctuation of the abdomen.

*Zyras (Zyras) sp. 6*

Material examined: China: 1 ♀, Yunnan, Lijiang Naxi Aut. Co., 53 km WSW Lijiang, 3 km NW Yongsheng, 26°42'N, 100°43'E, 1950–2000 m, secondary broad-leaved forest, 14.VIII.2003, leg. SCHÜLKE.

This species is similar to *Zyras* sp. 5, but distinguished by smaller body size (body length 6.4 mm; length of forebody 3.0 mm), by the reddish-yellow abdominal segments VIII and posterior portion of segment VII, and by shorter

antennae with a transverse antennomere V and more transverse antennomeres VI–X. In size, coloration, chaetotaxy, and habitus, the specimen much resembles *Z. funestus* (Dvořák, 1996) from Vietnam (male unknown), but differs by distinctly finer and shallower punctuation of the pronotum and the elytra, longer and less strongly incrassate antennae with less transverse antennomeres V–X, as well as by the reddish-yellow abdominal segment VIII (*Z. funestus*: segment VIII reddish-brown to dark-brown).

*Zyras (Zyras) sp. 7*

Material examined: China: 1 ♀, Sichuan, Qingcheng Shan, NW Chengdu, 30°54'N, 103°33'E, 650–700 m, 3.–4.VI.1997, leg. WRASE.

Based on the similar external characters (habitus, short antennomere XI, etc.), this species, too, is closely related to *Z. setosivestis* and allied species (*Z. sp. 5* and *Z. sp. 6*). In size (body length 6.9 mm; length of forebody 2.9 mm) and habitus, it is most similar to *Zyras* sp. 6, from which it differs by blackish-brown abdominal segments VII–VIII (posterior margin of tergites VIII slightly paler), dark-reddish anterior margins of segments III–VI, uniformly yellowish legs, the coloration of the antennae (antennomeres I–IV blackish brown, V–XI gradually becoming paler, XI yellowish-brown), and by the impunctate anterior half of tergite VIII (punctate in *Z. sp. 6*).

*Zyras (Zyras) sp. 8*

Material examined: China: 1 ♀, Yunnan, Baoshan Pref., Gaoligong Shan, 65 km NNE Tengchong, 25°35'N, 98°40'E, 1750 m, secondary mixed forest, litter and moss sifted, 31.VIII.2009, leg. SCHÜLKE; 1 ♀, Yunnan, Baoshan Pref., Gaoligong Shan, 32 km SE Tengchong, 24°51'N, 98°44'E, 1600 m, degraded primary forest, 28.VIII.2009, leg. SCHÜLKE; 1 ♀, Yunnan, Baoshan Pref., mountain range 25 km S Tengchong, 24°48'N, 98°32'E, 1900 m, degraded primary deciduous forest, litter sifted, 2.VI.2007, leg. WRASE.

This species is most similar to *Z. rectus*, from which it differs by the even finer antennae with oblong antennomeres IX and by the completely blackish body (except for the narrow posterior margins of the abdominal segments).

*Zyras (Zyras) sp. 9*

Material examined: Taiwan: 1 ♀, Taichung Hsien, Amashan, 2230 m, 12.V.1982, leg. SMETANA [T127] (cSme).

This species is characterized by rather large size (body length 8.0 mm; length of forebody 3.3 mm) and its coloration: head and pronotum black; elytra pale-reddish with the postero-lateral portions infusate (infusate portion rather ill-defined); abdomen with segments III–VI black with indistinctly paler posterior margins and with segments VII–VIII reddish; legs and maxillary palpi yellowish; antennae dark-brown with antennomeres I–III and XI



reddish. It differs from the similarly coloured *Z. rufoterminalis* particularly by distinctly smaller body size, much shorter antennae, shorter elytra with coarser and less dense punctation, and dense non-setiferous punctation of the anterior portions of abdominal tergites III–VII.

*Zyras (Zyras) sp. 10*

Material examined: China: 1 ♀, Yunnan, Baoshan Pref., mountain range 22 km S Tengchong, 24°49'N, 98°29'E, 1750 m, secondary forest, litter sifted, 2.VI.2007, leg. SCHÜLKE.

The similar habitus, size, and punctation suggests that this species is closely allied to *Z. bisinuatus*, from which it is distinguished by the coloration (whole body black except for the dark-reddish anterior margins, antero-lateral portions, and anterior portions of paratergites of the abdominal tergites III–VII; legs yellowish with the profemora dark-brown and the apical halves of the meso- and metafemora blackish; antennae dark-brown with antennomere XI yellowish), the much sparser punctation of the pronotum, and the smoothly convex posterior margin of tergite VIII.

*Zyras (Zyras) sp. 11*

Material examined: China: 1 ♀, Yunnan, Dali Bai Aut. Pref., mountain range N Er Hai, 42 km N Dali, 26°05'N, 100°10'E, 2500–2550 m, NE-slope with oak, litter sifted, 12.VI.2007, leg. SCHÜLKE.

This distinctive species is characterized by small body size (body length 4.8 mm; length of forebody 2.2 mm), a slender habitus with a weakly transverse and sparsely punctate pronotum, strongly incrassate antennae (antennomere IV approximately twice as broad as long; antennomeres V–IX increasingly transverse and of gradually increasing width; X slightly narrower than IX; IX and X nearly three times as broad as long; XI of conical shape and rather short), and by the coloration (body black; legs pale-yellowish; antennae blackish with antennomeres I–III and apical half of XI reddish-brown).

*Zyras (Zyras) sp. 12*

Material examined: China: 2 ♀♀, Sichuan, Daxue Shan, 25 km SE Kangding, 3200–3500 m, 13.VI.–4.VII.2009, leg. PLUTENKO; 1 ♀, Sichuan, Gongga Shan, Hailuoguo, above camp 3, 29°35'N, 102°00'E, 3200 m, 7.VII.1996, leg. SMETANA et al. (cSme) [labelled: “*Zyras wei* Pace, det. R. PACE 1999”] (cSme); 1 ♀, Sichuan, Gongga Shan, Hailuoguo, above camp 3, 29°35'N, 102°00'E, 3050 m, 6.VII.1996, leg. SMETANA et al. (cSme) [labelled: “*Zyras wei* Pace, det. R. PACE 1999”] (cSme).

This species is characterized by relatively small body size (body length 5.1–6.0 mm; length of forebody 2.5–3.0 mm), a somewhat depressed forebody (pronotum weakly convex in cross-section), dense and moderately coarse punctation of the forebody, the punctation of

the abdomen (anterior portions of tergites III–VI without non-setiferous punctation), antennae with antennomere IV weakly transverse and antennomeres V–X increasingly transverse and of gradually increasing width, and the coloration (head, pronotum, and abdomen black, with the with the posterior margins of the abdominal tergites narrowly dark-reddish; elytra of very variable coloration, nearly uniformly dark-yellowish to blackish with only the humeral angles very indistinctly paler; legs yellowish-brown with brown to dark-brown femora; antennae blackish-brown with antennomeres I–II and X indistinctly paler).

Two of the specimens had been misidentified by R. PACE as *Z. wei*, from which this species is readily distinguished by the different punctation pattern of the abdomen alone (*Z. wei*: anterior impressions of tergites III–V and anterior portions of tergites VI–VII with dense and extensive non-setiferous punctation).

*Zyras (Zyras) sp. 13*

Material examined: China: 1 ♀, Yunnan, SE Pingbian, 22°55'N, 103°42'E, 2100 m, primary subtropical broad-leaved forest, litter sifted, 28.VIII.2014, leg. SCHÜLKE.

This species is of moderately large size (body length 7.0 mm; length of forebody 2.9 mm) and characterized by rather long and massive antennae, rather dense and coarse punctation of the forebody, the presence of rather sparse and not very extensive non-setiferous punctation in the anterior portions of tergites III–VII, and the coloration (body black, with only the humeral angles very indistinctly paler; legs yellowish; antennae blackish; maxillary palpi blackish-brown with the terminal palpomere yellowish).

*Zyras (Zyras) sp. 14*

Material examined: China: 1 ♀, Yunnan, Lincang Pref., Bangma Shan, 20 km NW Lincang, 23°58'N, 99°55'E, 2210 m, water reservoir, degraded forest with fern, litter and ferns sifted, bank of reservoir, 9.IX.2009, leg. SCHÜLKE; 1 ♀, Yunnan, Nujiang Lisu Aut. Pref., Gongshan Co., Gaoligong Shan, stream valley 17 km N Gongshan, 27°55'N, 98°40'E, 1525–1600 m, 20.VI.2005, leg. SMETANA.

This species is of similar size, habitus, coloration, and punctation as *Zyras sp. 13*, except as follows: elytral suture and posterior margins of the abdominal tergites narrowly dark-reddish; head sparsely punctate; anterior portions of tergites III–VII with denser and more extensive non-setiferous punctation; antennae shorter and distinctly less massive.

*Zyras (Zyras) sp. 15*

Material examined: China: 1 ♀ [slightly teneral], Guizhou, Fanjing Shan, 27°54'N, 108°42'E, 1400–1700 m, 5.–11.VI.2014, leg. REUTER.

This species is characterized by relatively small body size (body length 6.5 mm; length of forebody 2.8 mm), a slender habitus with a weakly transverse pronotum, a very irregularly punctate pronotum (punctuation distinctly clustered, antero-lateral and postero-lateral portions largely impunctate), the morphology of the antennae (antennomeres I–III very slender, elongate and of similar length; IV weakly oblong; V approximately as broad as long; VI–X of gradually increasing width and increasingly transverse; X approximately 1.15 times as broad as long; antennomere XI elongate, nearly as long as the combined length of VIII–X). The coloration (*Z. shaanxiensis* pattern) is as follows: head blackish; pronotum blackish-brown; elytra yellowish with the postero-lateral portions infusate; abdomen brown with the posterior margins of the segments pale-reddish; legs yellowish; antennae blackish-brown with antennomeres I–II and the base of III reddish-brown; maxillary palpi reddish-yellow with palpomere III weakly infusate).

*Zyras (Zyras) sp. 16*

Material examined: China: 1 ♀, Sichuan, Daliang Shan, road Meigu–Leibo, pass 15 km NE Meigu, 28°25'N, 103°17'E, 27.VII.1997.

This distinctive species (body length 6.3 mm; length of forebody 2.8 mm) is characterized particularly by the massive and distinctly incrassate antennae (antennomeres IV–X increasingly transverse and of distinctly increasing width; antennomere X approximately twice as broad as long; XI rather short, shorter than the combined length of IX and X), by the punctuation pattern of the abdomen (anterior impressions of tergites III–V and anterior portions of tergites VI and VII only with few scattered non-setiferous punctures), and by the coloration (head and pronotum blackish; elytra with the anterior half reddish-yellow and the posterior half black; abdomen with tergite III pale-reddish, tergite IV pale-reddish with weakly infusate middle, tergites V–VII blackish with the anterior margins, the antero-lateral portions, and the paratergites anteriorly reddish, and segments VIII–X pale-reddish with the posterior portion of tergite VIII infusate; legs yellowish; antennae blackish with antennomeres I–II and base of III reddish, X brown, and XI yellowish; maxillary palpi pale-reddish with the terminal palpomere yellowish).

*Zyras (Zyras) sp. 17*

Material examined: China: 1 ♀, Shaanxi, Xunyangba, 1.–3.VII.2005, leg. JENIŠ; 1 ♀, border Shaanxi/Chongqing, Daba Shan, pass 20 km SSE Zhenping, 31°44'N, 109°35'E, 1700–1800 m, young dry mixed forest, litter and moss sifted, 9.–12.VII.2001, leg. WRASE.

This species is of similar size and coloration as *Z. shaanxiensis*, but distinguished by much more slender and

less massive antennae, a distinctly smaller (in relation to head) and less transverse pronotum, the coloration of the abdomen (posterior margins of tergites and paratergites narrowly dark-reddish), and dense non-setiferous punctuation of the anterior impressions of the abdominal tergites III–V.

*Zyras (Zyras) sp. 18*

Material examined: China: 1 ♀, Sichuan, Ganzi Tibet. Aut. Pref., Kangding Co., Daxue Shan, stream valley 15 km S Kangding, 29°56'N, 101°58'E, 2800 m, 26.VI.1999, leg. WRASE; 1 ♀, Sichuan, Daxue Shan, Gongga Shan, 15 km S Kangding, 3200–3500 m, 5.–10.VII.2004, leg. PLUTENKO; 1 ♀, Yunnan, Dali Bai Aut. Pref., Diancang Shan, pass 43 km NW Dali, 26°00'N, 99°52'E, 3100 m, pasture and shrubs, litter and moss sifted, 23.VIII.2009, leg. SCHÜLKE.

This species is of similar size and coloration as *Z. shaanxiensis*, but distinguished by slightly larger body size (body length 6.0–8.3 mm; length of forebody 3.1–3.5 mm), slightly different coloration (abdominal segments more narrowly dark-reddish; legs dark-yellowish), and particularly by the longer and even more massive antennae.

*Zyras (Zyras) sp. 19*

Material examined: China: 1 ♀, Yunnan, Diqing Tibet. Aut. Pref., Deqin Co., Baima Shan, pass 12 km SE Deqin, 28°24'N, 98°54'E, 4085–4200 m, dry slope with shrubs, 10.VI.2005, leg. WRASE; 1 ♀ [slightly teneral], Yunnan, Diqing Tibet. Aut. Pref., Deqin Co., Meili Xue Shan, 14 km W Deqin, 28°27'N, 98°46'E, 2580 m, stream valley below glacier, mixed forest, leaf litter and moss sifted, 11.VI.2005, leg. SCHÜLKE.

This species is of similar size as *Z. shaanxiensis*, but distinguished by a conspicuously massive antennomere I, a more transverse, less convex (cross-section), and more densely punctate pronotum, and by the coloration (elytra uniformly reddish; abdominal tergites III–VII more narrowly and more darkly reddish posteriorly; tergite VIII with completely black posterior portion; legs brown; antennae completely black; maxillary palpi dark-brown, except for the pale-reddish terminal palpomere).

#### 4 Redescriptions of two species from Burma

*Zyras (Zyras) setosivestis* Scheerpeltz, 1965  
(Figs. 9, 70, 123)

*Zyras (Zyras) setosivestis* SCHEERPELTZ, 1965: 356 ff.

Type material examined

Holotype ♀: “S. Shan States, Road 40 km. E of Taunggyi, 25.IX.–13.X.34, MALAISE / Holotypus / Typus *Zyras setosivestis* O. Scheerpeltz / *Zyras (Zyras) setosivestis* n. sp., det. SCHEERPELTZ 1941 / 3823, E91 + / NHRS-JLKB 000023269 / *Zyras setosivestis* Scheerpeltz, det. V. ASSING 2015” (SMNH).

## Comment

The original description is based on a unique female holotype from “S. Shan-States, Road 50 [sic] km E. of Taunggyi” (SCHEERPELTZ 1965).

## Redescription

Rather large species; body length 7.2 mm; length of forebody 3.6 mm. Coloration: forebody black (Fig. 70); abdomen (Fig. 123) with segments III–V dark-reddish, VI blackish (except for posterior margin); and VII–VIII dark-reddish; legs: profemora and protibiae blackish-brown, meso- and metafemora bicoloured with the basal halves yellowish and the apical halves blackish, meso- and metatibiae dark-brown with the external side somewhat paler, tarsi brown; antennae (Fig. 9) blackish-brown with antennomere X slightly paler and antennomere XI pale-brown; maxillary palpi yellowish, with palpomere III slightly darker (yellowish-brown).

Head (Fig. 70) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions moderately coarse and moderately dense. Eyes longer than postocular region in dorsal view. Antenna (Fig. 9) 2.6 mm long; antennomere IV oblong; antennomeres V–VI approximately as broad as long; VII weakly transverse; VIII–X increasingly transverse and of gradually increasing width; X approximately 1.5 times as broad as long; XI very short, much shorter than the combined length of IX and X.

Pronotum (Fig. 70) weakly transverse, 1.07 times as broad as long and 1.35 times as broad as head, posteriorly with a pronounced median impression; whole disc, except the narrowly impunctate midline, with moderately dense punctation; antero-lateral portions with numerous very long, erect, and dense dark setae.

Elytra (Fig. 70) 0.8 times as long as pronotum; punctation moderately coarse, dense, and defined; pubescence dense, pale, long, and erect. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 123) nearly as broad as elytra, with moderately deep anterior impressions on tergites III–V; lateral portions of sternites with dense, long, pale, and erect pubescence distinctly visible in dorsal view; anterior impressions of tergites III–IV practically impunctate; tergites III–IV with rather numerous, predominantly fine punctures in lateral and posterior portions; tergite V with few non-setiferous punctures in anterior impression and with numerous, mostly fine punctures on remainder of disc; tergites VI–VII with dense and mostly rather coarse punctures practically everywhere; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: unknown.

♀: posterior margin of tergite VIII indistinctly concave in the middle; sternite VIII with broadly convex posterior margin.

## Comparative notes

From the syntopic *Z. setosipennis*, this species is readily distinguished by the completely different coloration of practically all body parts, shorter antennae, a less transverse pronotum, distinctly paler pubescence, and the different punctation particularly of the abdomen. For characters distinguishing it from the similar *Z. flexus* see the comparative notes in the section on that species.

## Distribution and natural history

*Zyras setosivestis* is known only from the type locality to the east of Taunggyi in Burma, where it was found together with *Z. setosipennis*. Additional data are not available.

*Zyras (Zyras) setosipennis* Scheerpeltz, 1965  
(Figs. 4, 58, 114)

*Zyras (Zyras) setosipennis* SCHEERPELTZ, 1965: 356 ff.

## Type material examined

Holotype ♀: “S. Shan States, Road 40 km. E of Taunggyi, 25.IX.–13.X.34, MALAISE / Holotypus / Typus *Zyras setosipennis* O. Scheerpeltz / *Zyras (Zyras) setosipennis* n. sp., det. SCHEERPELTZ 1941 / 3824, E91 + / NHRS-JLKB 000023268 / *Zyras setosipennis* Scheerpeltz, det. V. ASSING 2015” (SMNH).

## Comment

The original description is based on a unique female holotype from “S. Shan-States, Road 40 km E. of Taunggyi” (SCHEERPELTZ 1965). The only significant differences between the holotype of *Z. setosipennis* and that of *Z. chinkiangensis* are the coloration of the forebody (pale-reddish in *Z. setosipennis*, dark-brown in *Z. chinkiangensis*) and the number of yellowish apical antennomeres (four in *Z. setosipennis*, three in *Z. chinkiangensis*). More material is needed to decide whether or not *Z. setosipennis* is a junior synonym of *Z. chinkiangensis*.

## Redescription

Body length 7.4 mm; length of forebody 3.8 mm. Coloration: head black; pronotum reddish; elytra pale-reddish (Fig. 58); abdomen (Fig. 114) reddish, with segments VI and VII (except for posterior margins) blackish; legs dark-yellowish; antennae (Fig. 4) black, with the apical four antennomeres pale-yellowish; maxillary palpi blackish, except for the pale-reddish terminal palpomere.

Head (Fig. 58) distinctly transverse, broadly impunctate along middle; punctation in lateral dorsal portions moderately coarse and rather sparse. Eyes distinctly longer than postocular region in dorsal view. Antenna (Fig. 4) 3.0 mm long; antennomeres IV–VI oblong; VII approximately as broad as long; VIII–X weakly transverse; XI much shorter than the combined length of IX and X.



Pronotum (Fig. 58) distinctly transverse, 1.18 times as broad as long and 1.3 times as broad as head, posteriorly with a pronounced median impression; whole disc with moderately dense punctation.

Elytra (Fig. 58) 0.85 times as long as pronotum; punctation moderately coarse, dense, and defined; pubescence dense, dark, long, and erect. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 114) nearly as broad as elytra, with rather shallow anterior impressions on tergites III–V; lateral portions of sternites with dense, long, dark, and erect pubescence distinctly visible in dorsal view; anterior impressions of tergites III–V practically impunctate; tergites III–V with some lateral punctures and a transverse row of punctures at or near posterior margin; tergites VI and VII with numerous punctures not arranged in series apparently on whole surface (anterior portion not visible in holotype); integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: unknown.

♀: posterior margin of tergite VIII weakly concave in the middle.

#### Comparative notes

In external characters (coloration of antennae and body; habitus; punctation pattern of abdomen), *Z. setosipennis* is highly similar to *Z. alboantennatus* and *Z. preangeranus* Cameron, 1939 (Java, Borneo; syntype examined). It differs from the former by the coloration of the antennae (*Z. alboantennatus*: apical two to four antennomeres pale-yellowish), the coloration of the elytra (*Z. alboantennatus*: elytra usually bicoloured, exceptionally uniformly reddish), and by the different punctation of the abdomen, particularly the anteriorly impunctate tergites III–V and the less densely punctate tergites VI–VII. From *Z. preangeranus*, it is distinguished by the coloration of the legs (*Z. preangeranus*: meso- and metafemora apically weakly infusate; profemora and protibiae darker brown) and the abdomen (*Z. preangeranus*: tergite V somewhat infusate in posterior half; segments VIII–X pale-yellowish), as well as by the punctation of the abdominal tergites VI and VII (*Z. preangeranus*: anteriorly with more extensive fine non-setiferous punctation, posteriorly with much finer and somewhat sparser punctation). Aside from *Z. alboantennatus* and *Z. preangeranus*, *Z. setosipennis* is also similar to *Z. hirtus*, from which it is distinguished by the different coloration of the antennae (*Z. hirtus*: apical antennomeres not distinctly pale-yellowish), larger and more robust body, longer and more slender antennae (*Z. hirtus*: antennomeres V–X distinctly transverse), and the absence of non-setiferous punctation in the anterior impressions of the abdominal tergites III–V.

#### Distribution and natural history

*Zyras setosipennis* is known only from the type locality, which is situated to the east of Taunggyi in Burma. Additional data are not available.

### 5 On some species of *Zyras* sensu strictu from other regions

#### *Zyras (Zyras) haworthi* (Stephens, 1832)

##### Material examined

Portugal: 1 ex., Algarve, Monchique, 37°19'N, 8°34'W, 550 m, *Rubus* litter sifted, 15.IV.2002, leg. MEYBOHM (cAss); 1 ex., Algarve, Monchique, above road to Alferce, 37°19'N, 8°32'W, 590 m, *Rubus* litter sifted, 10.IV.2002, leg. MEYBOHM (cAss).

Spain: 2 exs., Lugo, Sierra de Ancares, 2.VIII.1984, leg. OTERO (cAss); 1 ex., Girona, Les Guilleries, St. Hilari, 41°55'N, 2°31'E, 660 m, 1.VI.2014, leg. HERNÁNDEZ et al. (NMP).

France: 1 ex., Alpes-Maritimes, Sospel, 500 m, 1.VI.1999, leg. ANGELINI (cAss).

Germany: 1 ex., Niedersachsen, Stadthagen, forest, pitfall trap, VII.1991, leg. SPRICK (cAss); 1 ex., Niedersachsen, Braunschweig env., Immensen, forest, pitfall trap, VII.1989, leg. WÖLKERLING (cAss); 1 ex., Niedersachsen, Hildesheim-Ochtersum, Trillkegut, 10.VII.2001, leg. SPRICK (cAss); 2 exs., Niedersachsen, E Schladen, Hedeper, Westerberg, pitfall, VI.2001, leg. SCHMIDT (cAss); 1 ex., Nordrhein-Westfalen, Porta Westfalica, Wittekindsberg, 10.VI.1993, leg. ASSING (cAss); 1 ex., same locality, 2.VII.1992, leg. BORCHERDING (cFel); 2 exs., Sachsen-Anhalt, Stendal, Badingen, pitfall trap, 24.VI.1993, leg. SPRICK (cAss).

Italy: 2 exs., Toscana, Elba, Cavo (LI), 250 m, 15.V.1998, leg. ANGELINI (cAss).

Slovenia: 1 ex., Zalog, Zg. Kašeli, 3.VI.1996, leg. DROVENIK (cAss).

Serbia: 1 ex., Radan planina, Davolja, Varoš, 1.VI.2009, leg. STEVANOVIC (cAss).

Macedonia: 1 ex., Skopje, VI.1955, leg. SCHUBERT (NHMW).

Bulgaria: 1 ex., Eminska Planina, Vlas, 10.V.1987, leg. HEINIG (cAss).

Turkey: 1 ex., Sinop, Çangal Dağı, VII.1961, leg. SCHUBERT (NHMW); 3 exs., Sinop, Sinop env., Lala, 20.V.1976, leg. BESUCHET & LÖBL (cAss); 1 ex., Rize, İkizdere, leg. SCHUBERT (NHMW); 1 ex., Rize, 17 km S Ardeşen, 41°03'N, 41°01'E, 350 m, stream bank, leaf litter sifted, 10.VII.2008, leg. ASSING (cAss); 1 ex., Artvin, Çiftköprü/Hopa, 1000 m, VI.1977, leg. SCHUBERT (NHMW); 1 ex., Bitlis, Tatvan, 1800 m, V.1976, leg. SCHUBERT (NHMW); 2 exs., Bitlis, Mutki, 1700 m, 25.V.1973, leg. SCHUBERT (NHMW, cAss); 2 exs., Bitlis, Van Lake, Yelkenli, 38°28'N, 42°32'E, 1800 m, pitfall trap, 21.IV.–20.V.2014, leg. REUTER (cFel); 2 exs., Ardahan/Kars, Çıldır Gölü, 1800 m, VI.1977, leg. SCHUBERT (NHMW, cAss); 2 exs., Tunceli, Ovacık, 1400 m, VI.1976, leg. SCHUBERT (NHMW, cAss); 2 exs., Mersin, road to Arslanköy, 5 km SE Aladağ, 36°55'N, 34°32'E, 700 m, 10.V.2004, leg. BESUCHET & MEYBOHM (cAss); 1 ex., Osmaniye, Osmaniye, 300 m, VI.1968, leg. SCHUBERT (NHMW); 1 ex., Hatay, E Yeşilkent, 36°58'N, 36°16'E, 390 m, sifted from under bushes near road, 30.IV.2007, leg. MEYBOHM (cAss); 1 ex., E Yeşilkent, 36°57'N, 36°15'E, 400 m, 30.IV.2002, leg. BRACHAT & MEYBOHM (cAss).

Lebanon: 7 exs., Rayfoun, 33°58'N, 35°42'E, 990 m, oak forest, pitfall trap, 6.V.2013, leg. REUTER (cFel).

Israel: 1 ex., Galilee, Eilon, N Betzet, 20.IV.1982, leg. BESUCHET & LÖBL (cAss); 1 ex., Upper Galilee, Hurfeish, Mt. Meron, 33°00'N, 35°22'E, 22.II.2005, leg. STARKE (cFel).

Russia: 1 ex., W-Caucasus, Krasnodar, 35 km NNE Sochi, Babuk-Aul, 43°53'N, 39°49'E, 560 m, *Fagus orientalis* and *Castanea sativa* forest, litter and bark sifted, 11.VII.2011, leg. ASSING (cAss).

Azerbaijan: 1 ex., ca. 15 km SW Lenkoran, 1–5 km W Avra, 18.–25.V.1993, leg. NAPOLOV (cAss).

Iran: 1 ex., Gilan province, Hashtpar, Gijau, 37°41'N, 48°51'E, 240 m, 1.V.2012, leg. FRENZEL (NME).

Middle Asia: 1 ex., "Turkmenien", leg. LEDER & REITTER (NHMW).

### Comment

According to SMETANA (2004), this widespread West Palaearctic species was previously unknown from Azerbaijan, Lebanon, and Israel.

### *Zyras (Zyras) fulgidus* (Gravenhorst, 1806)

#### Material examined

Germany: 1 ex., Niedersachsen, Northeim env., Weper, pitfall trap, 6.VII.1987, leg. JOGER (cAss); 1 ex., Niedersachsen, S Hannover, Alfeld env., Ortsberg, pitfall trap, 29.VI.1986, leg. ASSING (cAss); 7 exs., Hessen, Eberschütz, NSG Bunteberg, pitfall trap, 16.VII.1995, leg. LÜCKMANN (cAss, cFel); 1 ex., same data, but 1.VI.1997 (cFel); 1 ex., Sachsen-Anhalt, Halle/Saale, Gimritz, pitfall trap, 16.IX.1992, leg. TEICHMANN (cFel); 1 ex., same data, but 9.VII.1996 (cFel).

Austria: 4 exs., Niederösterreich, Pfaffenberg, pitfall trap, VII.–X.1965, leg. MALICKY (cAss).

Slovenia: 1 ex., Opatje selo, Lokvica, 270 m, 23.VI.–20.VII.2006, leg. DROVENIK & KUNTNER (cAss); 1 ex., Temnica, Novo, 360 m, 7.–23.VI.2005, leg. DROVENIK (cAss).

Italy: 1 ex., Puglia, Prom. del Gargano, Vico, 650 m, 25.VIII.–6.IX.1986 (cAss); 1 ex., Abruzzi, Collarmele, V.1977, leg. ZWICK (cAss); 1 ex., Friuli-Venezia Giulia, Trieste, 4 km SE Basovizza, 10.VIII.1977, leg. BRANDMAYR (cAss).

Georgia: 1 ♂, Central Caucasus, Shatili–Mutso, 42°37'N, 45°12'E, 1510 m, 15.VII.2015, leg. BRACHAT & MEYBOHM (cAss); 1 ♂, Central Caucasus, Shatili–Kristani, 42°38'N, 45°08'E, 1630 m, 16.VII.2015, leg. BRACHAT & MEYBOHM (cAss).

### Comment

This species is widespread, but rare, in South and southern Central Europe, eastwards to the Middle East, Iran, and European Russia. According to SMETANA (2004), it was previously unknown from Slovenia.

### *Zyras (Zyras) collaris* (Paykull, 1800)

#### Material examined

France: 1 ex., Haute-Corse, Sagone, La Liscia, VII.1988, leg. FRANK (cAss).

Belgium: 1 ex., Spa env., moist forest margin, under stone, 6.IV.1983, leg. ASSING (cAss).

Germany: 1 ex., Niedersachsen, NW Hannover, Helstorfer Heide, 16.VI.1983, leg. ASSING (cAss); 1 ex., same data, but 30.IV.1981 (cAss); 1 ex., Niedersachsen, Lüneburger Heide, Niederhaverbeck, pitfall, 1.VI.1998, leg. ASSING (cAss); 1 ex., same data, but 1.VII.1999 (cAss); 1 ex., Nordrhein-Westfalen, Borken env., Vreden, Fürstenbusch, pitfall trap, 16.XI.1992, leg. TERLUTTER (cFel).

Austria: 2 exs., Burgenland, Apetlon, pasture, pitfall trap, V.1967, leg. MALICKY (cAss).

Italy: 2 exs., Toscana, Vinci env., Stabbia, 43°46'N, 10°50'E, 50 m, 15.X.2007, leg. MEYBOHM (cAss).

Slovenia: 1 ex., Police, Gor. Radgona, 7.III.1998, leg. DROVENIK (cAss); 1 ex., same data, but 23.III.1999 (cFel).

Croatia: 3 exs., Istria, 1 km E Marušići, 45°25'N, 13°44'E, 24.VI.1981, leg. PUTHZ (cAss).

Serbia: 1 ex., Svrlijske Planine, Bare, 15.V.2009, leg. STEVANOVIĆ (cAss).

Greece: 1 ex., Thessalia, NE Ossa Oros, Stomio, 39°52'N, 22°23'E, 10 m, floodplain forest, 5.IV.1998, leg. ASSING (cAss).

Turkey: 1 ex., Artvin, Borçka, 1700 m, VII.1971, leg. SCHUBERT (NHMW); 1 ex., Bitlis, Tatvan, 1900 m, 20.V.1969, leg. SCHUBERT (cAss).

Georgia: 1 ♀, Central Caucasus, Gudani–Zhinvali, 42°27'N, 44°56'E, 1200 m, 19.VII.2015, leg. BRACHAT & MEYBOHM (cAss).

### Comment

*Zyras collaris* is widespread and not uncommon in the West Palaearctic region, but was previously unknown from Slovenia, Serbia, and Turkey.

### *Zyras (Zyras) pictus* (Sharp, 1874)

#### Material examined

Japan: 1 ex., Fukuoka Pref., Munakata, Mt. Jouyama, 13.V.2006, leg. LACKNER (cAss).

### Comment

*Zyras pictus* was originally described from Japan and subsequently reported also from North and South Korea (SMETANA 2004). The identification of the above specimen was confirmed by MUNETOSHI MARUYAMA based on a photo.

### *Zyras (Zyras) kraatzi* Schubert, 1908

#### Material examined

India: 1 ♂, 1 ♀, Uttarakhand, 5 km E Govind, road to Ghangaria, 9.–10.VI.2011, leg. SHAVRIN (cAss).

### Comment

According to HLAVÁČ et al. (2011), this species is distributed in the Himalayan region from Himachal Pradesh to Nepal.

*Zyras (Zyras) iniquus* n. sp.  
(Figs. 10, 68, 121, 268–269)

Type material

**Holotype** ♂: “Pakistan: Changla-Gali nw. Murree, 2400 m, 30.VII.–2.VIII.1982, ERBER & HEINZ leg. / Holotypus ♂ *Zyras iniquus* sp. n., det. V. ASSING 2015” (cAss).

**Paratype** ♂: “Afghanistan, E, Nangarhar prov., Dara-i Nur, 1500 m, 17.VII.2008, leg. REUTER” (cFel).

Etymology

The specific epithet (Latin, adjective: uneven) alludes to the punctuation of the pronotum and the male elytra, one of the characters readily distinguishing this species from the similar *Z. kraatzii*.

Description

Body length 7.5–8.2 mm; length of forebody 3.1–3.5 mm. Coloration: body black with the abdominal segments VII–X bright-reddish (Figs. 68, 121); legs with the femora blackish and the tibiae and tarsi brown to dark-brown; antennae (Fig. 10) blackish, with antennomere XI dark-reddish to brown; maxillary palpi blackish with the apical palpomere dark-yellowish.

Head (Fig. 68) distinctly transverse, broadly impunctate along middle; punctuation in lateral dorsal portions coarse and rather sparse; interstices on average broader than diameter of punctures. Eyes slightly longer than postocular region in dorsal view. Antenna (Fig. 10) 2.4–2.5 mm long; antennomeres IV approximately as long as broad, V weakly oblong, VI approximately as long as broad, VII–X very weakly transverse, X distinctly less than 1.5 times as broad as long, XI slightly shorter than the combined length of IX and X.

Pronotum (Fig. 68) moderately transverse, 1.09 times as broad as long and 1.30–1.38 times as broad as head, posteriorly with a pronounced median impression; punctuation very irregularly distributed, posteriorly and laterally with extensively impunctate places.

Elytra (Fig. 68) 0.80–0.87 times as long as pronotum; punctuation sexually dimorphic, sparser posteriorly than anteriorly, in postero-sutural portion extensively impunctate. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen (Fig. 121) slightly narrower than elytra; anterior impressions on tergites III–V shallow and with few scattered non-setiferous punctures in the middle; tergites III–V with a lateral puncture on either side and with four setiferous punctures at posterior margin, otherwise impunctate; tergite VI with few non-setiferous punctures in the middle of anterior margin, with a lateral puncture on either side, and with six punctures at posterior margin; tergite VII with few non-setiferous punctures anteriorly, with a lateral setiferous puncture on either side, with a transverse row of 4 punctures at posterior fourth, and

a transverse row of approximately 8 punctures near posterior margin; tergite VIII with approximately 20 punctures bearing long dark setae near posterior margin, otherwise impunctate; integument without microsculpture and glossy; posterior margin of tergite VII with palisade fringe.

♂: elytra anteriorly with very dense and distinctly granulose punctation; tergite VIII with a smooth elevation in the middle, posterior margin projecting in the middle, with distinct and sharply defined concavity; posterior margin of sternite VIII convex; median lobe of aedeagus 0.85 mm long, compact; ventral process small in relation to capsule, particularly in ventral view (Figs. 268–269); apical lobe of paramere slender and moderately long.

♀: punctuation of elytra sparse anteriorly, not denser than in the middle of disc; tergite VIII without median tubercle, posterior margin weakly concave in the middle; posterior margin of sternite VIII concave in the middle.

Comparative notes

Using the key in CAMERON (1939b), *Z. iniquus* would key out together with the similarly coloured *Z. kraatzii*. It is, however, readily distinguished from this species by external characters alone: the much darker legs (*Z. kraatzii*: legs pale-yellowish), the less sparse punctuation of the pronotum, and particularly the distinctive punctuation of the elytra (*Z. kraatzii*: elytral punctuation distinctly less dense anteriorly and not granulose). Moreover, the ventral process of the aedeagus is shorter in relation to the capsule, more slender in lateral view, and less broad in ventral view. *Zyras iniquus* differs from the similar *Z. kambaitiensis* by the much darker legs and maxillary palpi, the reddish antennomere XI, the much sparser punctuation of the posterior portion of the elytra, and by the much smaller aedeagus with a ventral process and crista apicalis of different shapes (lateral view).

Distribution and natural history

Based on the catalogue by HLAVÁČ et al. (2011), *Z. iniquus* is the first representative of *Zyras* sensu strictu to be recorded from Pakistan and Afghanistan. The holotype was collected at an altitude of 2400 m, the paratype at an altitude of 1500 m.

*Zyras (Zyras) exasperatus* Schubert, 1908

Material examined

India: 1 ex., Uttarakhand, left side of Kosi river, 5 km N Ramnagar, 29.432°N, 79.140°E, 7.–11.VI.2011, leg. SHAVRIN (cAss).

Comment

This species was previously known only from Himachal Pradesh (HLAVÁČ et al. 2011).



*Zyras (Zyras) preangeranus* Cameron, 1939*Zyras (Zyras) preangeranus* CAMERON, 1939a: 17 f.

## Type material examined

Syntype ♂: “F. C. DRESCHER, G. Tangkoeban Prahoe, 4000–5000 Voet, Preanger. Java, XI.1936 / Chicago Nat. Hist. Mus. (ex CAMERON Colln. by exchange with Brit. Mus. Nat. Hist.) / *Zyras preangeranus* Cam. / Syntypus *Zyras preangeranus* Cameron, rev. V. ASSING 2015” (FMNH).

## Additional material examined

Malaysia: 2 exs., Sarawak (Borneo), ca. 25 km E Kapit, III.1994, leg. KODADA (cAss).

## Comment

The original description is based on an unspecified number of syntypes from “G. Tangkoeban Prahoe, alt. 4000–5000 feet” (CAMERON 1939a). In coloration, size, habitus, and other external characters, this species is highly similar to *Z. setosipennis* and *Z. alboantennatus*, but readily distinguished by the yellowish abdominal segments VIII–X alone. In addition it differs from both species by the slightly different punctuation of the abdomen and by the shape of the median lobe of the aedeagus. This species was previously known only from Java.

*Zyras (Zyras) illecebrosus* Last, 1982*Zyras (Cephalodonia) illecebrosus* LAST, 1982: 81 f.

## Type material examined

Paratypes: 2 ♂♂: “Mongolia, Central aimak, Tosgoni ov., 1700 m, (6–10 km N Ulan Bator), Z. KASZAB, 4.–8.VI.1968 ex coll. M. DVOŘÁK, National Museum Prague, Czech Republic / Paratypus 1982, *Zyras illecebrosus* Last / *Z. (Cephalodonia) illecebrosus* sp. n., H. R. LAST det., Paratype” (NMP).

## Comment

This species has been recorded only from Mongolia. It is characterized by the coloration (*shaanxiensis* type with the antennae uniformly reddish, the elytra extensively reddish-yellow, and the margins of the abdominal tergites broadly reddish-yellow), short and distinctly incrassate antennae (antennomere IV 1.5 times as broad as long; antennomeres V–X strongly transverse, X approximately twice as broad as long), a weakly convex pronotum (cross-section), conspicuously dense, not very coarse, and somewhat granulose punctuation of the elytra (particularly so in antero-sutural portion), sparse non-setiferous punctuation of the anterior portions of tergites III–VI, and the extensive and rather dense setiferous punctuation on tergites III–VII (equally distributed on whole of tergal discs). *Zyras illecebrosus* is similar in size, coloration, antennal morphology, and the weakly convex pronotum to *Z. hauseri-*

*anus*, from which it differs particularly by much denser punctuation of the elytra and the denser and extensive setiferous punctuation on tergites III–VI. It also resembles *Z. inexcisus* in size and the weakly convex pronotum, but is distinguished from it by the reddish antennae and the paler coloration of the elytra and abdomen, the shorter antennae with distinctly more transverse antennomeres IV–X, a more transverse pronotum (1.15–1.20 times as broad as long in *Z. illecebrosus*), the denser and granulose elytral punctuation, the denser non-setiferous punctuation and the more extensive setiferous punctuation of tergites III–VII, and by the smaller and slightly differently shaped median lobe of the aedeagus.

*Zyras (Zyras) alternans* (Cameron, 1925)*Myrmedonia (Zyras) alternans* CAMERON, 1925: 45 f.

## Material examined

Indonesia: 1 ♂, Java, Jember (FMNH).

## Comment

The original description is based on an unspecified number of syntypes, among them at least one male, from “Sumatra, Lago Tuba” (CAMERON 1925).

*Zyras (Zyras) geminus* (Kraatz, 1859)  
(Figs. 35, 109, 165, 278–279, 298–300)*Myrmedonia gemina* KRAATZ, 1859: 27.

## Type material examined

Lectotype ♂ [dissected prior to present study]: “Ceylon, J. NIETNER / coll. KRAATZ / Syntypus / coll. DEI, Eberswalde / Lectotypus *Zyras geminus* (Kraatz), R. PACE 2002 det.” (SDEI). – Paralectotypes: 2 ♂♂ [1 dissected prior to present study]: same data as lectotype (SDEI).

## Comment

The original description is based on an unspecified number of syntypes from “Ceylan” (KRAATZ 1859). Three male syntypes are deposited in the KRAATZ collection at the SDEI. One of them had been designated as the lectotype by PACE (2010b). The external and male sexual characters of one of the paralectotypes are illustrated in Figs. 35, 109, 165, 278–279, 298–300.

*Zyras (Zyras) articollis* n. sp.  
(Figs. 34, 100, 158, 280–281)

## Type material

Holotype ♂: “N-Laos, 21°07'N, 101°21'E, 15 km NW Luang Namth, 13.–24.V.1997, ca. 750 m, leg. STRBA & HERGOVITS /

Holotypus ♂ *Zyras articollis* sp.n., det. V. ASSING 2015" (NHMW).

Paratypes: 1 ♂: same data as holotype (cAss); 2 exs.: "N-Laos, 21°09'N, 101°18'E, 20 km NW Luang Namth, 5.–11.V.1997, ca. 900 m, leg. STRBA & HERGOVITS" (NHMW).

#### Etymology

The specific epithet (adjective) alludes to the slender pronotum, one of the characters distinguishing this species from the similar *Z. hongkongensis*.

#### Description

Body length 6.4–6.6 mm; length of forebody 2.8–3.1 mm. Coloration: head and elytra black; pronotum bright-reddish; abdomen with segments III–V pale-reddish, tergite VI black, with the narrow anterior margin and the antero-lateral portions reddish, and tergites VII–VIII black, with the apical margin of tergite VIII somewhat paler; legs yellowish, with the apices of the meso- and metafemora very weakly and very narrowly infusate at most; antennae (Fig. 34) blackish with antennomeres IX–XI or X–XI yellowish; maxillary palpi brown, with the terminal palpomere yellowish.

External characters as in *Z. hongkongensis*, except as follows:

Antenna (Fig. 34) more slender; antennomeres IV–V weakly oblong, VI approximately as broad as long, VII–IX increasingly transverse and of gradually increasing width, and X approximately 1.5 times as broad as long. Pronotum (Fig. 100) narrower, only 1.03–1.05 times as broad as long. Abdomen (Fig. 158) with anterior impressions III–V practically impunctate; tergites III–V laterally only with one seta on either side; tergite VI anteriorly only with one irregular transverse series of non-setiferous punctures.

♂: median lobe of aedeagus 0.8 mm long, ventral process very weakly bent in lateral view (Figs. 280–281); parameres as in *Z. hongkongensis* with short, broad, and flattened apical lobes.

#### Comparative notes

This species is distinguished from the similar *Z. hongkongensis* only by the different coloration of the antennae, the legs, and the abdominal segment VIII, by the slightly more slender antennae, the more slender pronotum, the different punctuation of the abdomen, and by the slightly different shape of the median lobe of the aedeagus (crista apicalis more distant from the base of the ventral process). It differs from *Z. geminus*, with which it shares a similar coloration, a similar antennal morphology, and a similarly slender pronotum, by the finer punctuation of the pronotum, the finer and denser punctuation of the elytra, the punctuation pattern of the abdomen (*Z. geminus*: tergite VI with a cluster – not a transverse row – of non-setiferous punctures in antero-median portion), the apically distinctly broader male sternite VIII (*Z. gemi-*

*nus*: male sternite VIII strongly tapering apically and with strongly convex posterior margin), and by the morphology of the aedeagus (*Z. geminus*: median lobe approximately 0.7 mm long; ventral process longer in relation to capsule, more strongly curved and less slender in lateral view; crista apicalis less strongly projecting; apical lobe of paramere slightly shorter). The similarly coloured *Z. paricornis* from Japan has much more massive antennae with the apical four antennomeres yellowish, the lateral portions of tergite VI and the antero-lateral portions of tergite VII more extensively yellowish, uniformly yellowish legs, very dense and much more distinct elytral punctuation, and very dense non-setiferous punctuation in the anterior impressions of tergites III–V.

#### Distribution

*Zyras articollis* is currently known only from two localities in northern Laos. The altitudes range from approximately 750 to 900 m.

#### *Zyras (Zyras) thaiorum* Pace, 1986

*Zyras thaiorum* PACE, 1986a: 460.

#### Material examined

Thailand: 1 ♂, Doi Pha Hom Pok, Tad Mok waterfall, 20°04'N, 99°16'E, 700 m, leaf litter, 27.I.2014, leg. OB (cAss).

#### Comment

The original description is based on a unique male holotype from "Thailand, Chian. [sic] Rai: Mae Yao" deposited in the Museo Civico di Storia Naturale Verona (PACE 1986a). The holotype was not examined, but the above male, including its aedeagus, is in good agreement with the short description and the illustrations provided by PACE (1986a).

#### Distribution

The known distribution is confined to Thailand (HLAVÁČ et al. 2011).

#### *Zyras (Zyras) sp. aff. thaiorum* Pace, 1986

#### Material examined

Thailand: 2 ♀♀, Betong, Yala district, Gunung Cang dun vil-lage, 26.III.–22.IV.1993, leg. HORAK & STRNAD (NHMW, cAss).

#### Comment

The above females most likely represent an undescribed species similar to *Z. thaiorum*, but distinguished by the slight differences in the coloration (antennomeres X–XI or IX–XI yellowish; profemora yellowish brown;

apical halves of meso- and metafemora less strongly infuscate), by distinctly shorter antennae with distinctly transverse antennomeres IX and X, by a more densely punctate pronotum, much finer and denser punctation of the elytra, and by the punctation pattern of the abdomen, particularly the much denser and more extensive non-setiferous punctation of tergites VI–VIII.

*Zyras (Zyras) brignolii* (Pace, 1986), **n. comb.**

*Drusilla brignolii* PACE, 1986b: 487.

### Comment

This species was described from a unique female holotype collected in “Thailand, Bangkok” deposited in the Museo Civico di Storia Naturale Verona (PACE 1986a). Based on the details indicated in the description and particularly on the illustrations of the habitus and the spermatheca, the specimen clearly belongs to *Zyras* sensu strictu.

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Manuscript received: 24.IX.2015, accepted: 4.XII.2015.

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Autor(en)/Author(s): Assing Volker

Artikel/Article: [A revision of \*Zyras Stephens\* sensu strictu of China, Taiwan, and Hong Kong, with records and \(re-\)descriptions of some species from other regions \(Coleoptera: Staphylinidae: Aleocharinae: Lomechusini\) 87-175](#)