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A revision of *Amarochara* of the Holarctic region. IV. Three new species from China, a new synonymy, additional records, and an updated key to species (Coleoptera: Staphylinidae: Aleocharinae: Oxypodini)

V. ASSING

A b s t r a c t : *Ischnopoda turfanensis* PACE 1998 nov.syn. is synonymized with *Amarochara umbrosa* (ERICHSON 1837). *Amarochara schuelkei* nov.sp. (China: Yunnan), *A. hamulata* nov.sp. (China: Zhejiang), and *A. effeminata* nov.sp. (China: Yunnan) are described and illustrated. Additional records are reported for several species, one of them undescribed. An updated key to the species of the Holarctic region is provided. The genus is currently represented in the Holarctic region by 30 described species.

K e y w o r d s : Coleoptera, Staphylinidae, Aleocharinae, Oxypodini, *Amarochara*, Palaearctic region, China, taxonomy, new species, new synonymy, new records, key to species

1. Introduction

The genus *Amarochara* THOMSON 1858 was represented in the Holarctic region by 28 valid species, three of them of doubtful status and identity. Twelve species (two doubtful) are confined to the Western Palaearctic, eleven (one doubtful) to the Eastern Palaearctic, one has a trans-Palaearctic distribution, and four are distributed in the Nearctic region (ASSING 2002a, 2007; PACE 1991). *Amarochara flavicornis* BERNHAUER 1907, which is still listed in the genus as a nomen dubium by SMETANA (2004), was excluded from the genus and attributed to the Athetini (ASSING 2002).

Since the latest contribution (ASSING 2007), numerous specimens of *Amarochara* from various sources have been studied. This material included three new species, which are described below. Moreover, two previously unrevised holotypes were examined; one of them proved to be conspecific with *A. umbrosa*. Thus, thirty valid species are currently known from the Holarctic region.

2. Material and methods

The material referred to in this study is deposited in the following collections:

MCSNV ..... Museo Civico di Storia Naturale, Verona (L. Latella)
MHNG ..... Muséum d'histoire naturelle, Genève (G. Cuccodoro)
MNHUB..... Museum für Naturkunde der Humboldt-Universität Berlin (J. Frisch)
SMNS..... Staatliches Museum für Naturkunde, Stuttgart (W. Schawaller, K. Wolf-Schwenninger)
cAss..... author´s private collection
cSch..... private collection Michael Schülke, Berlin
cSme..... private collection Aleš Smetana, Ottawa

The morphological studies were carried out using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). For the photographs a digital camera (Nikon Coolpix 995) was used.

Head length was measured from the anterior margin of the clypeus (without anteclypeus) to neck, elytral length at the suture from the apex of the scutellum to the posterior elytral margin, and aedeagus length from the apex of the ventral process to the base of the capsule.

3. Species description and additional records

Amarochara umbrosa (ERICHSON 1837)

Ischnopoda turfanensis PACE 1998: 404 ff.; **nov.syn.**
Type material examined: Holotype ♀: "China - Xinjiang, Turfan, 40 m, 11-X-93, Rougemont / Holotypus Ischnopoda turfanensis m. det. R. Pace 1995 / Ischnopoda turfanensis sp. n., det. R. Pace 1995 / Amarochara turfanensis (Pace), det. G. Paśnik 2001 / Amarochara umbrosa (Erichson), det. V. Assing 2010" (MHNG).

Material examined: Iran: 1♂, Razavi Khorasan, 20 km NW Torbat-e Heydariyeh, Senobar, 35°26'N, 49°06'E, 1730 m, 28.V.2006, leg. Frisch & Serri (MNHUB).

Amarochara turfanensis (PACE 1998) was originally attributed to the tachyusine genus *Ischnopoda* STEPHENS 1835, consequently not compared with any *Amarochara* species, and subsequently moved to *Amarochara* by PAŚNIK (2006). The original description is based on a single female from "China, Xinjiang, Turfan" (PACE 1998). An examination of the holotype revealed that it is conspecific with *A. umbrosa*.

Amarochara umbrosa is the most widespread species of the genus, its distribution ranging from Western Europe to China, North Korea, and West Siberia (ASSING 2002a, SMETANA 2004). The above specimen from Iran represents a new country record.

Amarochara rougemonti PACE 1991

Type material examined: Holotype ♀: "Yemen, II.1984, Jigla, Rougemont / Holotypus Amarochara rougemonti m. det. R. Pace 1985 / Amarochara rougemonti sp. n., det. R. Pace 1985 / Amarochara rougemonti Pace, rev. V. Assing 2010" (MCSNV).

According to the original description, which is based on a single female from "Yemen,

Jibla", *A. rougemonti* is similar to *A. umbrosa*, but distinguished by the more transverse preapical antennomeres and by the different punctation of the pronotum (PACE 1991). An examination of the holotype revealed that the specimen resembles a small specimen of *A. umbrosa* with yellowish elytra; apart from the shorter antennae with somewhat more transverse preapical antennomeres, no distinguishing characters were found. The possibility that the holotype is conspecific with *A. umbrosa* cannot be ruled out with certainty, but a clarification of the status of *A. rougemonti* will be possible only when males from Yemen become available.

Amarochara forticornis (LACORDAIRE 1835)

Material examined: Greece: 1 ex., Pelopónnisos, Feneos, 37°55'N, 22°17'E, meadow, IV.-VI.2006, leg. Miksch (cSch).

The distribution of *A. forticornis* is of the Ponto-Mediterranean type and ranges from Greece and Ukraine to southern Scandinavia, southern England, France, and Spain (ASSING 2002a).

Amarochara cribripennis (MULSANT & REY 1875)

Material examined: Italy: 1 ex., Sardegna, Br. Spina (NU), 1300 m, 22.IV.1992, leg. Schawaller (SMNS); 1 ex., Sardegna, NE Sadali (NU), 850 m, 20.IV.1992, leg Schawaller (cAss).

This rare species has a Tyrrhenian distribution; its range is confined to Corsica and Sardinia (ASSING 2002a).

Amarochara wrasei ASSING 2002

Material examined: China: Yunnan: 1♀, Dali Bai Auton. Pref., Diancang Shan, 45 km NW Dali, 26°01'N, 99°53'E, 2730 m, creek valley with pine and ferns, sifted, 29.V.2007, leg. Schülke (cSch); 1♀, Dali Bai Auton. Pref., Mao Jiao Shan, 56 km NE Dali, W pass, 25°55'N, 100°39'E, 2360 m, creek valley, washed from gravel bank, 4.IX.2009, leg. Schülke (cSch); 1♂, Shanzhi env., Jizu Shan mt., 25°56.8'N, 100°23.9'E, 2000 m, dense mixed forest, detritus and leaves near trunk bases sifted, near stream, 24.VI.2007, leg. Hájek & J. Růžička (cAss); 1♀, Nujiang Lisu Auton. Pref., Gongshan Co., Gaoligong Shan, creek valley 17 km N Gongshan, 27°55'N, 98°40'E, 1525-1600 m, 20.VI.2005, leg. Smetana (cSme); 1♀, Lincang Pref., Wuliang Shan, old pass road, W-side, 24°43'N, 100°30'E, 2200 m, small creek valley with primary forest remnant, litter and debris sifted, 12.IX.2009, leg. Schülke (cAss).

Amarochara wrasei was originally described from Sichuan and Shaanxi and subsequently reported also from Yunnan (ASSING 2002a, 2007).

Amarochara sp.

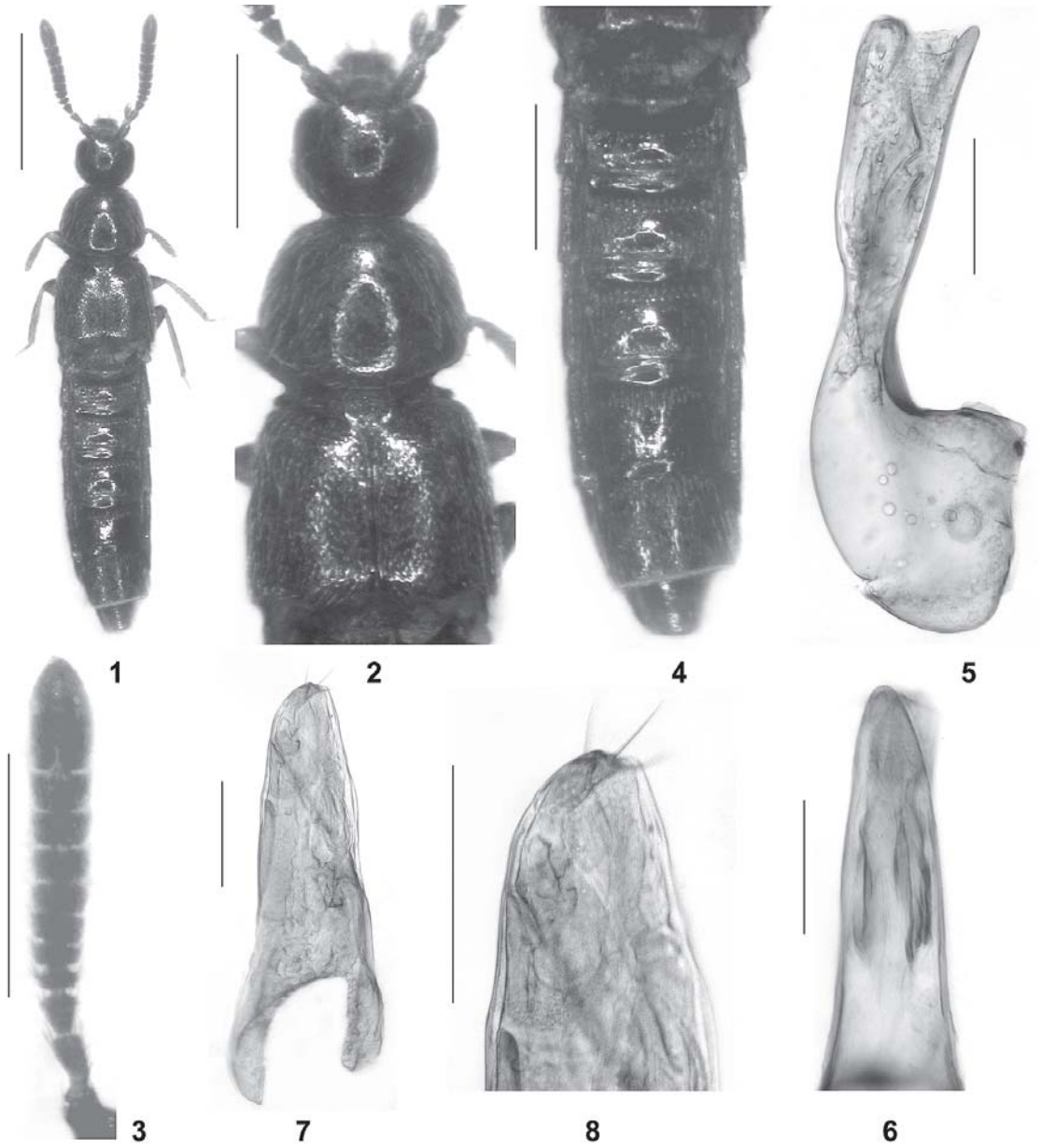
Material examined: China: Yunnan: 1♀, Baoshan Pref., Gaoligong Shan, 32 km SE Tengchong, 24°51-53'N, 98°45'E, 2150-2250 m, degraded primary and secondary forest, litter sifted, 26.VIII.2009, leg. Schülke (cSch).

The above specimen, unfortunately a female, belongs to the *A. loebli* group (ASSING 2002a) and probably represents an undescribed species.

***Amarochara schuelkei* nov.sp.** (Figs 1-8)

T y p e m a t e r i a l : Holotype ♂: "China: Yunnan, Baoshan Pref., mount. range 22 km S Tengchong, 1800 m, 24°49'29"N, 98°29'30"E, devast. primary forest, litter & mushr. sifted, 30.VIII.2009, leg. M. Schülke [CH09-19] / Holotypus ♂ *Amarochara schuelkei* sp.n. det. V. Assing 2010" (cAss).

D e s c r i p t i o n : Body length 3.9 mm. Habitus as in Fig. 1. Coloration: body blackish-brown, with the posterior margins of the abdominal segments reddish; legs reddish; antennae dark-brown, with antennomere II dark-reddish.



Figs 1-8: *Amarochara schuelkei* nov.sp. (holotype): (**1**) habitus; (**2**) forebody; (**3**) antenna; (**4**) abdomen; (**5**) median lobe of aedeagus in lateral view; (**6**) ventral process of median lobe of aedeagus in ventral view; (**7**) paramere; (**8**) apical portion of paramere. Scale bars: 1: 1.0 mm; 2-4: 0.5 mm; 5-8: 0.1 mm.

Head (Fig. 2) posteriorly without distinct neck, approximately as wide as long and of subquadrate shape, lateral margins subparallel in dorsal view; punctation very fine; interstices with very weak traces of microsculpture; eyes large and bulging, approximately as long as the distance from their posterior margins to posterior carina of head; genal carina very fine and short, in lateral view visible only posteriorly. Maxillary palpus moderately slender, preapical palpomere approximately 2.5 times as long as wide. Antennae massive; antennomere I less than twice as long as wide and with pronounced dorsoapical furrow; II shorter and more slender than I, little more than 1.5 times as long as broad; III shorter than II, distinctly coniform, and approximately 1.5 times as long as wide; IV disc-shaped, approximately 3 times as wide as long; V-X slightly wider than IV, of subequal width, of gradually increasing length, and decreasingly transverse, X less than twice as wide as long; XI of ovoid shape and almost as long as the combined length of VIII-X (Fig. 3).

Pronotum (Fig. 2) approximately 1.2 times as wide as long and 1.45 times as wide as head, posterior angles weakly marked; lateral margins weakly convex, maximal width approximately in the middle; punctation moderately dense and very fine; interstices at most with very indistinct traces of microsculpture and glossy; pubescence relatively short and depressed.

Elytra approximately 1.2 times as wide and at suture almost 0.9 times as long as pronotum; posterior margin distinctly sinuate near posterior angles; punctation moderately dense, moderately fine (much coarser than that of pronotum), and defined; interstices without distinct microsculpture and on average approximately as wide as diameter of punctures (Fig. 2); pubescence depressed to suberect; mesoventrite anteriorly with short median carina; process of mesoventrite long and apically acute, reaching more than halfway between mesocoxae. Metatarsus 0.82 times as long as metatibia; metatarsomere I elongated, slightly longer than the combined length of II-IV.

Abdominal tergites III-V with moderately deep, densely and coarsely punctate, but not carinate anterior impressions; tergites VI-VII anteriorly with conspicuous coarse and striate punctation; remainder of tergal surfaces with very sparse and fine punctation; tergites III-VI without, tergites VII-VIII with extremely shallow microsculpture, all tergites glossy (Fig. 4); tergite X anteriorly not distinctly elongated and rather broad.

♂: tergite VIII posteriorly weakly convex; posterior margin of sternite VIII broadly convex and with dense long marginal setae; median lobe of aedeagus slender, 0.45 mm long; ventral process much longer than basal capsule, straight in lateral view, and with short basal folds (Figs 5-6); paramere 0.42 mm long, not distinctly modified, apical lobe small and with four long setae (Figs 7-8).

♀: unknown.

Etymology: The species is dedicated to my colleague and friend Michael Schülke, who collected the holotype.

Comparative notes: *Amarochara schuelkei* is distinguished from the similar *A. formosana* ASSING 2002 from Taiwan by numerous characters: the uniformly dark coloration of the body (*A. formosana*: elytra dark-yellowish); the glossy head and pronotum with moderately dense punctation (*A. formosana*: with distinct microsculpture and subdued shine, punctation conspicuously dense); the disc-shaped antennomeres IV and V (*A. formosana*: barely twice as wide as long); the much less slender and shorter maxillary

palpi; the larger (in relation to head and elytra) and differently shaped pronotum (*A. formosana*: pronotum approximately 1.05 times as wide as long and 1.20-1.25 times as wide as head, maximal width anterior to middle); the much coarser, sparser, and more defined punctation of the elytra (*A. formosana*: punctation extremely dense and fine); the depressed and sparser pubescence of the forebody (*A. formosana*: suberect and extremely dense); the shorter tibiae (*A. formosana*: metatarsus approximately 0.7 times as long as metatibia); the longer metatarsomere I (*A. formosana*: distinctly shorter than the combined length of metatarsomeres II-IV); the much sparser punctation on the posterior tergal surfaces of the abdomen (*A. formosana*: punctation dense everywhere); the striate punctation in the anterior portion of tergites VI and VII); the differently shaped median lobe of the aedeagus; the more slender apical lobe of the paramere (*A. formosana*: wedge-shaped). For illustrations of *A. formosana* see ASSING (2002a).

D i s t r i b u t i o n a n d b i o n o m i c s : The type locality is situated in western Yunnan, China, to the south of Tengchong. The holotype was sifted from leaf litter in a degraded primary forest at an altitude of 1800 m.

***Amarochara hamulata* nov.sp.** (Figs 9-16)

T y p e m a t e r i a l : Holotype ♂: "China - Zhejiang Prov., Lin'an Co., W Tianmu Shan, 30°21'N, 109°25'E, 1200 m, mixed forest, VI-VII.2008, C. Huschke / Holotypus ♂ *Amarochara hamulata* sp.n. det. V. Assing 2010" (cAss). Paratypes: 1♂, 1♀: same data as holotype (cAss).

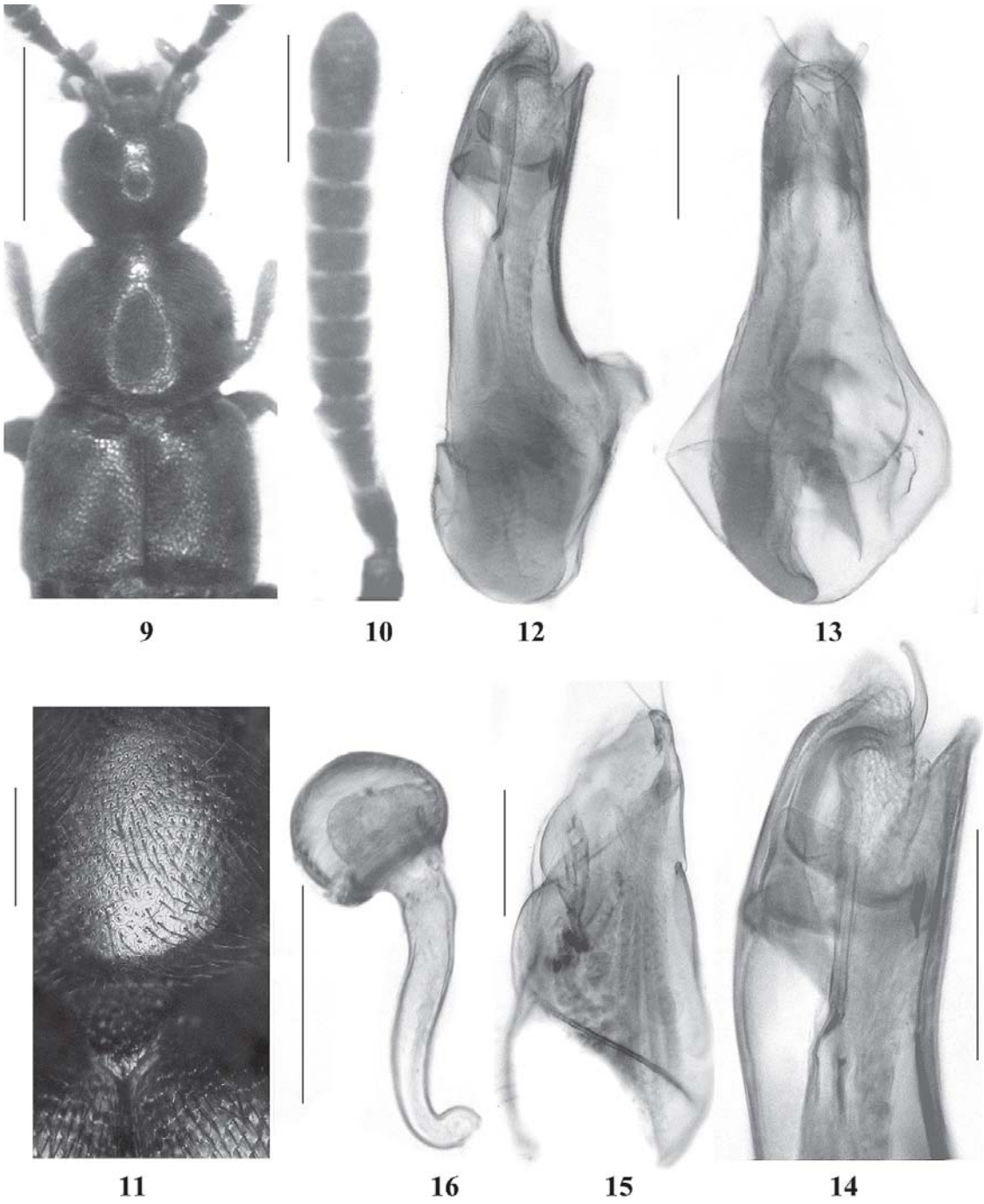
D e s c r i p t i o n : Body length 3.2-3.6 mm. Coloration: body blackish-brown, with the elytra and the abdominal apex paler brown; legs brown to dark-brown with paler tarsi; antennae blackish-brown.

Head (Fig. 9) posteriorly without distinct neck, weakly transverse, widest across eyes, and of subquadrate shape, lateral margins behind eyes subparallel in dorsal view; punctation very fine; interstices without distinct microsculpture; eyes large and bulging, distinctly longer than the distance from posterior margins to posterior carina of head; genal carina very fine and short, in lateral view visible only posteriorly. Maxillary palpus slender, preapical palpomere approximately 4 times as long as wide. Antenna massive; antennomere I less than twice as long as wide and with pronounced dorso-apical furrow; II approximately as long as I and more slender than I, approximately twice as long as broad; III slightly shorter than II, distinctly coniform, and more than 1.5 times as long as wide; IV approximately twice as wide as long; V-X slightly wider than IV, of subequal width, of gradually increasing length, and decreasingly transverse; X much less than twice as wide as long; XI of ovoid shape and slightly longer than the combined length of IX-X (Fig. 10).

Pronotum (Fig. 9) relatively large, approximately 1.10-1.15 times as wide as long and 1.30-1.35 times as wide as head, posterior angles weakly marked; lateral margins weakly convex, maximal width in anterior half; punctation dense and fine; interstices without distinct microsculpture and glossy (Fig. 11); pubescence depressed.

Elytra (Fig. 9) approximately 1.25 times as wide and at suture approximately 0.80-0.85 times as long as pronotum; posterior margin weakly sinuate near posterior angles; punctation dense and fine, but somewhat more distinct than that of pronotum; interstices without distinct microsculpture; pubescence depressed. Hind wings fully developed. Mesoventrite coarsely and densely punctate, without median carina; process of meso-

ventrite moderately long and apically distinctly truncate, reaching approximately halfway between mesocoxae. Metatarsus approximately 0.9 times as long as metatibia; metatarsomere I elongated, approximately as long as the combined length of II-IV.



Figs 9-16: *Amarochara hamulata* nov.sp.: (**9**) forebody; (**10**) antenna; (**11**) postero-median portion of pronotum and antero-median portion of elytra; (**12-13**) median lobe of aedeagus in lateral and in ventral view; (**14**) apical portion of median lobe of aedeagus in lateral view; (**15**) paramere; (**16**) spermatheca. Scale bars: 9: 0.5 mm; 10-16: 0.1 mm.

Abdominal tergites III-V with moderately deep anterior impressions, these impressions conspicuously densely and coarsely punctate, but not carinate; remainder of tergal surfaces with moderately dense and fine punctation; punctation of tergites VII-VIII somewhat sparser than that of tergites III-VI; interstices without distinct microsculpture; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII weakly convex, without appreciable sexual dimorphism.

♂: posterior margin of sternite VIII broadly convex and with dense long marginal setae; median lobe of aedeagus slender, 0.38 mm long; ventral process slightly longer than basal capsule, straight in lateral view, and apically rounded in ventral view (Figs 12-13); internal sac with moderately long flagellum and apical structures of distinctive shape (Fig. 14); paramere not distinctly modified, apical lobe small and with four long setae (Fig. 15).

♀: posterior margin of sternite VIII slightly less convex than in ♂; spermatheca as in Fig. 16.

Etymology: The specific epithet is an adjective derived from the Latin noun hamulus (small hook) and refers to the distinctive shape of the apical internal structures of the aedeagus.

Comparative notes: *Amarochara hamulata* is distinguished from the similar *A. schuelkei* by slightly smaller body size, the distinctly larger eyes, the different morphology of the antenna (particularly the much less transverse antennomere IV), the finer and denser punctation of the forebody, the shorter elytra, the weakly sinuate posterior elytral margin, the darker coloration of the legs, the different morphology of the mesoventrite, the different punctation of the abdomen (particularly of tergites VI-VII), as well as by the smaller, less slender aedeagus with internal structures of different shape. The aedeagus somewhat resembles that of *Amarochara heterogaster* CAMERON 1939 from the Himalaya. From this species, *A. hamulata* is separated by the larger average body size, larger eyes (shorter than postgenae and less strongly bulging in *A. heterogaster*), the more distinctly subquadrate head with more pronounced posterior angles, the larger pronotum (*A. heterogaster*: 1.13-1.25 times as wide as head), the larger aedeagus (*A. heterogaster*: approximately 0.32 mm), the practically straight ventral process in lateral view (*A. heterogaster*: ventral process curved in lateral view), the broadly rounded apex of the ventral process in lateral view (*A. heterogaster*: apex almost acute), and by the differently shaped internal structures of the aedeagus. For illustrations of *A. heterogaster* see ASSING (2002a).

Distribution and bionomics: The type locality is situated in the Tianmushan region, Zhejiang province, China. The specimens were captured with a flight interception trap at an altitude of 1200 m.

***Amarochara effeminata* nov.sp.** (Figs 17-25)

Type material: Holotype ♂ [probably slightly teneral]: "China: Yunnan, Dali Bai Aut. Pref., Wuliang Shan, 20 km NW Weishan, 25°19'58"N, 100°07'59"E, 1900 m, creek valley, litter & old flood debris sifted, 17.IX.2009, leg. M. Schülke [CH09-58] / Holotypus ♂ *Amarochara effeminata* sp.n. det. V. Assing 2010" (cAss).

Description: Body length 3.0 mm. Habitus as in Fig. 17. Coloration: body almost uniformly reddish-brown; legs reddish; antennae dark-brown, with antennomeres I-II reddish.

Head (Fig. 18) posteriorly without distinct neck, weakly transverse and of subquadrate shape, lateral margins subparallel in dorsal view; punctation very fine; interstices with shallow, but distinct microsculpture (Fig. 19); eyes moderately large and moderately convex, shorter than the distance from posterior margins to posterior carina of head; genal carina fine, but fully visible in lateral view. Maxillary palpus moderately slender, preapical palpomere little more than twice as long as wide. Antennae massive; antennomere I less than twice as long as wide and with pronounced dorso-apical furrow; II shorter and more slender than I, about twice as long as broad; III shorter than II, distinctly coniform, and approximately 1.5 times as long as wide; IV disc-shaped, approximately 3 times as wide as long; V-X slightly wider than IV, of subequal width, of gradually increasing length, and decreasingly transverse, X less than twice as wide as long; XI of ovoid shape and almost as long as the combined length of VIII-X (Fig. 20).

Pronotum (Fig. 18) 1.17 times as wide as long and 1.36 times as wide as head, posterior angles weakly marked; lateral margins convex, maximal width slightly behind the middle; punctation relatively dense and fine; interstices glossy, with shallow microsculpture visible only at higher magnification (Fig. 21); pubescence relatively short and depressed.

Elytra at suture 0.83 times as long as pronotum; posterior margin distinctly sinuate near posterior angles; punctation relatively dense, moderately fine (much coarser than that of pronotum), and defined (Fig. 22); interstices with extremely shallow, almost obsolete microsculpture visible only at high magnification, particularly near posterior margin (Fig. 22); pubescence depressed. Hind wings fully developed. Mesoventrite with pronounced median carina; process of mesoventrite long and apically narrowly truncate, reaching more than halfway between mesocoxae. Metatarsomere I elongated, approximately as long as the combined length of metatarsomeres II-IV.

Abdominal tergites III-V with moderately deep, densely and coarsely punctate, but not carinate anterior impressions; tergites VI-VII anteriorly with conspicuous coarse and striate punctation; remainder of tergal surfaces with very sparse and fine punctation; tergites III-VI without, tergites VII-VIII with very shallow microsculpture visible only at high magnification; interstices very glossy on all tergites.

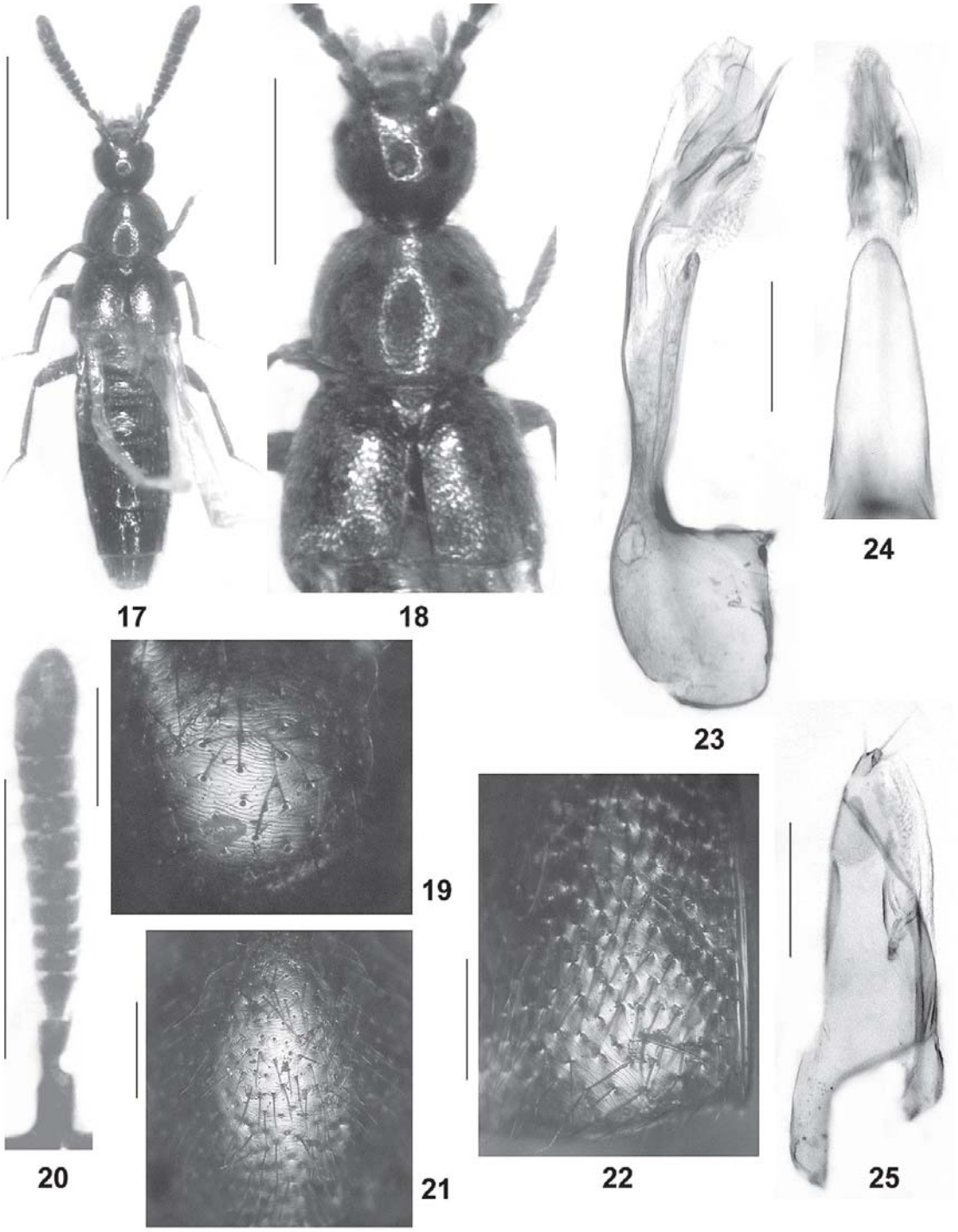
♂: tergite VIII posteriorly weakly convex; posterior margin of sternite VIII broadly convex and with dense long marginal setae; median lobe of aedeagus slender, 0.36 mm long; ventral process much longer than basal capsule, straight in lateral view (Figs 23-24); paramere 0.33 mm long, not distinctly modified, apical lobe small and with four long setae (Fig. 25).

♀: unknown.

E t y m o l o g y : The specific epithet (Latin, adjective) refers to the small aedeagus.

C o m p a r a t i v e n o t e s : Based on the similar external characters, well as the similar male sexual characters *Amarochara effeminata* is undoubtedly closely related to *A. schuelkei*. It is readily distinguished from all other congeners known from China particularly by the reddish-brown coloration of the body alone. From *A. schuelkei*, it is additionally separated by the less broad pronotum, the more pronouced microsculpture and the denser punctation of the forebody, the somewhat smaller eyes, the longer genal carinae, the pronounced median carina of the mesoventrite, and particularly by the distinctly smaller median lobe and parameres of the aedeagus.

D i s t r i b u t i o n a n d b i o n o m i c s : The type locality is situated in Yunnan, China, to the south of Xiaguan. The holotype was sifted from leaf litter and old flood debris in a stream valley at an altitude of 1900 m.



Figs 17-25: *Amarochara effeminata* nov.sp. (holotype): (**17**) habitus; (**18**) forebody; (**19**) median dorsal portion of head; (**20**) antenna; (**21**) median dorsal portion of pronotum; (**22**) posterior portion of left elytron; (**23**) median lobe of aedeagus in lateral view; (**24**) ventral process of median lobe of aedeagus in ventral view; (**25**) paramere. Scale bars: 17: 1.0 mm; 18, 20: 0.5 mm; 19, 21-25: 0.1 mm.

4. Key to the *Amarochara* species of the Holarctic region

In the first comprehensive part of the revision of *Amarochara*, a key to the species of the genus known from the Holarctic region at that time was provided. Since then, several species have been newly described or syonymized. In order to account for the recent changes, a new key is given below. One doubtful species, *Amarochara tingitana* JARRIGE 1952, which was originally described from Morocco, is not included because its external and sexual characters are unknown. The holotype is lost and no additional material has become available (ASSING 2002a).

References to illustrations in previous papers are abbreviated as follows: A02a = ASSING (2002a); A02b = ASSING (2002b); A03 = ASSING (2003); A07 = ASSING (2007).

1 Head posteriorly without a distinct neck. 2

- Head posteriorly with a distinct neck. Eastern Palaearctic region 25

2 Relatively large species, 3.0-5.0 mm. Abdominal tergite VI with distinct anterior impression (though this impression is somewhat shallower than those of tergites III-V). Elytral hind margins near posterior angles strongly sinuate. Mesoventrite with median carina. Aedeagus and spermatheca as in A02a: Figs 71-72, 74. W-Palaearctic (A02a: Map 6) ..... *A. forticornis* (LACORDAIRE)

- Abdominal tergite VI at most with very indistinct anterior impression. Elytral hind margins near posterior angles not or only weakly sinuate. Mesoventrite usually without, with very short, only in one species from Spain with long carina. Genitalia different 3

3 W-Palaearctic species 4

- E-Palaearctic or Nearctic species 14

4 Smaller species, 2.2-3.2 mm. Genal carina completely absent. Eyes very large and bulging, distinctly projecting from lateral outline of head. Head of ± distinctly subquadrate shape 5

- Larger species. Genal carina present, though often very fine. Eyes smaller and/or less bulging, usually distinctly shorter than postgenae in dorsal view and weakly projecting from lateral contours of head; the latter without or with weakly marked posterior angles 6

5 On average larger, 2.2-3.2 mm. Antennae relatively slender, at least approximately 0.7 mm long; antennomeres IX and X less than twice as wide as long (A02a: Fig. 5). Aedeagus and spermatheca as in A02a: Figs 8-10. Palaearctic region from Western Europe eastwards to Siberia, North Korea, and China (A02a: Maps 1-2) ..... *A. umbrosa* (ERICHSON)

- Body length 2.2 mm. Antennae approximately 0.6 mm long; antennomeres IX and X approximately twice as wide as long. Aedeagus unknown. Spermatheca similar to that of *A. umbrosa*. Species of doubtful status, possibly synonymous with *A. umbrosa*. Yemen ..... *A. rougemonti* PACE

6 Large species, length approximately 4.5 mm. Coloration distinctive: elytra bicoloured, with the anterior and lateral margins blackish and with the posterior and interior two thirds of each elytron rufous, thus forming a large reddish spot; head, pronotum, and abdomen blackish. Whole body without microsculpture. Elytra with dense and coarse punctation. ♂: median lobe of aedeagus very long and slender and, at base of ventral process, with distinct median process (A02a: Figs 122-123). Morocco ..... *A. freyi* (BERNHAUER)

- Coloration different, elytra not bicoloured. Head and pronotum either of paler coloration (except for dark specimens of *A. cribripennis*) or head with distinct microsculpture. ♂: median lobe of aedeagus without median process at base of ventral process and/or less slender 7

7. Larger species, 3.8-5.3 mm. Pronotum large in relation to head, 1.15-1.25 times as wide as long and approximately 1.4 times as wide as head or even wider. Antennomere III as long as II. Punctation of anterior impressions of abdominal tergites III-V very coarse and dense. Eastern Mediterranean.....8
- Smaller species. Pronotum less than 1.4 times as wide as head, only in one species from NW-Africa of similar relative width. Antennomere III often shorter than II. Punctation of anterior impressions of abdominal terga III-V less coarse and less dense. Absent from the Eastern Mediterranean, except for one species with fine punctation in anterior impressions of tergites III-V 10

8 Body larger, 4.5-5.3 mm. Head and pronotum blackish brown. ♂: aedeagus of distinctive morphology, ventral process of median lobe not narrowed at base (ventral view), with small process at base of ventral process (A03: Figs. 38-39). Southwestern Anatolia.....*A. wunderlei* ASSING
- Body smaller, 3.8-4.5 mm. Head and pronotum usually of paler coloration. Male sexual characters different. Central southern Anatolia and Middle East.....9

9 Median lobe of aedeagus in lateral view with distinct median process at base of ventral process (A02a: Figs 58-59). Central southern Anatolia to Lebanon (A02a: Map 5)..... . .....*A. siculifera* ASSING
- Median lobe of aedeagus with longer ventral process and in lateral view without median process at base of ventral process (A02a: Figs 62-63). Israel (A02a: Map 5) ....*A. inermis* ASSING

10 Coloration of body uniformly blackish. Head and pronotum with distinct microsculpture. Punctation in impressions of tergites III-V and near anterior margin of tergite VI coarse and dense. Spermatheca as in A02a: Fig. 68. Tunisia ..... *A. caeca* ASSING
- Colour of body at least partly paler. Head and pronotum with distinct microsculpture only in a pale-coloured species 11

11 Antennae more massive and longer (at least approximately 1.2 mm) (A02a: Fig. 69). Metatarsomere I at least slightly longer than the combined length of the three following tarsomeres (A02a: Fig. 70). Punctation in the anterior impressions of tergites III-V coarse and dense. Western Mediterranean 12
- Antennae less massive and shorter than 1.2 mm. Metatarsomere I shorter than the combined length of the three following tarsomeres 13

12 Mesoventrite with median carina. Antennae with much more transverse antennomeres; antennomere V approximately 3 times as wide as long; eyes much shorter than postgenae in dorsal view; pronotum smaller and less broad, approximately 1.3 times as wide as head; elytra shorter, at suture approximately 0.75 times the length of pronotum. Legs much shorter; approximate length of metatibia and metatarsus 0.62 mm and 0.51 mm. Spermatheca as in A02a: Fig. 78. Northern Spain.....*A. carinata* ASSING
- Mesoventrite without median carina. Antennae with less transverse antennomeres (A02a: Fig. 69); antennomere V approximately twice as wide as long; eyes almost as long as postgenae in dorsal view; pronotum large and broad, approximately 1.4 times as wide as head; elytra shorter, at suture approximately 0.85 times the length of pronotum. Legs much longer; approximate length of metatibia and metatarsus 0.74 mm and 0.63 mm, respectively (A02a: Fig. 70). Sexual characters unknown. Morocco ....*A. crassicornis* (QUEDENFELDT)

13 Head and pronotum with shallow, but distinct microsculpture. Colour of body yellowish-brown to pale-brown. Antennae shorter and less massive (A02a: Fig. 50). Abdomen (especially the anterior tergites) with sparser and finer punctation. Aedeagus as in A02a: Figs 44-45. Widespread from Anatolia in the southeast to France and Great Britain in the west and northwest (A02a: Map 3) .....*A. bonnairei* (FAUVEL)
- Head and pronotum without distinct microsculpture. Body colour usually darker. Antennae longer and more massive (Fig. 57). Abdomen (especially the anterior tergites) with denser and coarser punctation. Aedeagus as in A02a: Figs 52-53. Corsica and Sardinia .....*A. cribripennis* MULSANT & REY

14 E-Palaearctic species.....15

- Nearctic species.....22

15 Small species with fine genal carinae. Abdomen with anterior impressions of tergites III-V shallow and posteriorly ill-defined; sternites III-V with weak anterior constriction; punctation distinctive: on tergites III-VI weakly granulose; on tergites III-V rather dense and well-defined, but not very coarse, not coarser and denser in anterior impressions than on remainder of tergal surface; on tergite VI slightly coarser and denser than on tergites III-V, and on tergite VII finer and sparser than on tergites III-VI. Pubescence of forebody short, dense, and decumbent. Pronotum almost as wide as elytra. Antenna slender (similar to that of *A. umbrosa*). Spermatheca as in A02a: Fig. 28. Northern India.....*A. sororcula* CAMERON

- Anterior impressions of abdominal tergites III-V deeper and with coarser punctation than posterior tergal portions. Pubescence of forebody longer, less dense, and usually ± suberect. Antenna - except for the widespread *A. umbrosa* - more massive. 16

16 Small species with completely absent genal carinae and slender antennae (A02a: Fig. 5). Head of subquadrate shape and with ± distinctly marked posterior angles. Aedeagus and spermatheca as in A02a: Figs 8-10. Widespread Palaearctic species; in the Eastern Palaearctic eastwards to West Siberia, North Korea, and China (A02a: Maps 1-2).....
. .....*A. umbrosa* (ERICHSON)

- Mostly larger species. Genal carina present, sometimes reduced, but rudiments usually visible at least near occiput. Antennae more massive. Head often with weakly marked or indistinct posterior angles. Genitalia different 17

17 Large and pale-coloured species. Genal carina pronounced. Pronotum very large, approximately 1.4 times as wide as head. Punctation in anterior impressions of tergites III-V and near anterior margin of tergite VI very dense and coarse; punctation on remainder of tergal surfaces finer than in anterior impressions of tergites III-V, but conspicuously coarse, somewhat granulose, and dense. Spermatheca of characteristic morphology (A02a: Fig. 112). Japan.....*A. densepunctata* ASSING

- Colour of body in most species darker. Punctation of posterior areas of abdominal tergites III-V less coarse, less dense, and not granulose. Absent from Japan.....18

18 Smaller and more slender species, < 3.5 mm; pronotum relatively slender, 1.13-1.25 times as wide as head. ♂: median lobe of aedeagus smaller, approximately 0.32 mm long, and shaped as in A02a: Figs 21-22; spermatheca as in A02a: Fig. 24. Northern India, Nepal.....*A. heterogaster* CAMERON

- On average larger species, 3.0-4.1 mm; pronotum broader in relation to head, except for one species from Taiwan. ♂: median lobe of aedeagus larger, at least approximately 0.36 mm long, and of different shape. Species from China and Taiwan 19

19 Elytra much (ca. 1.4 x) broader than pronotum. Pronotum slender, approximately 1.05 times as wide as long and 1.2 times as wide as head, and with extremely dense fine punctation; interstices narrower than diameter of punctures. Forebody with distinct microsculpture and with suberect pubescence. Metatarsus approximately 0.7 times as long as metatibia; metatarsomere I shorter than combined length of II-IV. Whole abdomen with dense punctation. Aedeagus and spermatheca as in A02a: Figs 104-105, 107. Taiwan (A02a: Map 8). . .....*A. formosana* ASSING

- Elytra only slightly (1.20-1.25 x) broader than pronotum. Pronotum broader, distinctly transverse, at least 1.1 times as wide as long and at least 1.3 times as wide as head. Punctation of pronotum not extremely dense, interstices at least as wide as diameter of punctures (Fig. 11). Elytra dark-yellowish. Forebody without distinct microsculpture and with depressed pubescence. Metatarsus at least approximately 0.8 times as long as metatibia; metatarsomere I at least as long as combined length of II-IV. Abdomen with less dense punctation. Genitalia different. China. 20

20 Body of almost uniformly reddish-brown coloration and slighly smaller, approximately 3 mm long. ♂: aedeagus small, 0.36 mm long, and shaped as in Figs 23-24; paramere small, 0.33 mm long (Fig. 25). China: Yunnan.....*A. effeminata* nov.sp.

- Body blackish-brown to blackish, with the elytra sometimes paler, > 3 mm long. ♂: aedeagus either distinctly longer (0.45 mm) or of completely different shape.. 21

21 Eyes smaller and less bulging, approximately as long as the distance between posterior margin of eye and posterior carina in dorsal view (Fig. 2). Antennomeres IV and V disc-shaped, approximately 3 times as broad as long (Fig. 3). Maxillary palpus moderately slender, preapical palpomere approximately 2.5 times as long as broad. Posterior margin of elytra near postero-lateral angles strongly sinuate (Fig. 2). Forebody with less fine and less dense punctation. ♂: median lobe of aedeagus longer, approximately 0.45 mm long, and with conspicuously long and slender apical portion (Figs 5-6). China: Yunnan.....*A. schuelkei* nov.sp.

- Eyes larger and strongly bulging, longer than distance between posterior margin of eye and posterior carina in dorsal view (Fig. 9). Antennomeres IV and V not disc-shaped, barely twice as wide as long (Fig. 10). Maxillary palpus long and slender, preapical palpomere approximately 4 times as long as broad. Posterior margin of elytra near postero-lateral angles weakly sinuate (Fig. 9). Forebody with finer and denser punctation (Fig. 11). ♂: median lobe of aedeagus shorter, approximately 0.38 mm long, and with shorter and less slender apical portion (Figs 12-13). China: Zhejiang ....*A. hamulata* nov.sp.

22 Head and pronotum with conspicuously coarse microsculpture, almost completely matt (A07: Figs 2, 20).♂: median lobe of aedeagus as in Figs 8-12. Eastern Canada: New Brunswick .....*A. formicina* ASSING

- Head and pronotum with or without very shallow microsculpture, shiny. Male sexual characters different.....23

23 Colour of body ± uniformly brown or ferrugineous, only abdominal tergite VI and sometimes head and antennae ± infuscate. Antennae shorter, less than 0.75 mm long. Eyes shorter and less bulging, postocular region at least 1.5 times as long as eyes in dorsal view. Punctation of abdomen very fine, only in anterior impressions of tergites III-V somewhat more distinct. ♂: median lobe of aedeagus and paramere as in A07: Figs 15-18. ♀: spermatheca as in A02a: Fig. 38. U.S.A.: Iowa; Canada: New Brunswick .....*A. inquilina* (CASEY)

- At least head and abdomen distinctly darker. Antennae longer than 0.75 mm. Eyes larger and more bulging, distinctly projecting from lateral contours of head; postocular region less than 1.5 times as long as eyes in dorsal view. Punctation of abdomen very distinct.....24

24 Larger species, 3.0-3.8 mm. Coloration on the whole usually darker, pronotum at most only slightly paler than the dark-brown to blackish head; antennae not distinctly bicoloured. Antennae longer and with less transverse antennomeres; antennomeres VII-IX approximately twice as wide as long (A02a: Fig. 37). Pronotum relatively large, 1.25-1.30 times as wide as head. Elytra relatively short, at suture approximately 0.75 times as long as pronotum. Legs distinctly longer, length of metatarsus even in small specimens at least 0.37 mm long; first metatarsomere very elongate, as long as the combined length of the three following tarsomeres or nearly so (A02a: Fig. 35). Abdomen with more clearly defined and less dense punctation, and with pronounced shine. ♂: aedeagus of completely different shape, with much longer and more slender ventral process (A02a: Figs 29-30). ♀: spermatheca smaller (A02a: Fig. 32). Indiana, Kansas, Georgia ..... *A. fenyesi* BLATCHLEY

- Smaller species, 2.8-3.2 mm. Pronotum pale-brown to brown, distinctly paler than the blackish head; antennae distinctly bicoloured, dark brown to blackish, with yellowish to ferrugineous basal antennomeres. Antennae shorter and with more transverse antennomeres; antennomeres VII-IX almost 3 times as wide as long. Pronotum relatively smaller. Elytra longer, at suture > 0.80 times as long as pronotum. Legs much shorter, length of metatarsus approximately 0.30 mm; first metatarsomere of similar length as in *A. umbrosa*, shorter than the three following tarsomeres. Abdomen with less defined and much denser punctation, and therefore with reduced shine. ♂: median lobe of aedeagus with much shorter and broader ventral process (A02a: Figs 39-40). ♀: spermatheca larger (Fig. 42). Kansas .....*A. brevios* ASSING

25 Abdominal tergites III and IV with one, tergite V with two conspicuous transverse series of dense and coarse punctures in posterior half. Small species. Nepal (A02a: Map 7).....*A. seriepunctata* ASSING

- Abdominal tergites III-V without distinct transverse series of dense and coarse punctures in posterior half. Larger species 26

26 Median lobe of aedeagus and parameres strongly modified. Ventral process of median lobe short and small in relation to basal portion, in lateral view with short process or obtuse projection near base of ventral process; internal sac with several strongly sclerotized structures. Apical lobe of paramere distinctly flattened (A02a: Figs 84, 85, 95) 27

- Aedeagus and paramere not strongly modified. Ventral process of median lobe longer in relation to basal portion, in lateral view without short process or obtuse projection near base of ventral process; internal sac with weakly sclerotized structures. Apical lobe of paramere not distinctly flattened 29

27 ♂: apex of ventral process of aedeagus in lateral view obliquely truncate and in ventral view keeled, internal structures distinctive (A02b: Figs 1-2); apical lobe of paramere flattened, transverse, and apically truncate (A02b: Fig. 3). Nepal ..... *A. sequax* ASSING

- ♂: ventral process of aedeagus slender in lateral view and not keeled; internal structures of aedeagus and apical lobe of paramere of different shape 28

28 Ventral process of median lobe longer, in lateral view near base of ventral lobe with short and acute process; sclerotized structures of aedeagus of distinctive shape (A02a: Figs 82-83, 86); apical lobe of paramere not transverse, apically rounded (A02a: Figs 84-85); spermatheca as in A02a: Fig. 87. Nepal (A02a: Map 7) ..... *A. loebli* PACE

- Ventral process of median lobe shorter, in lateral view near base of ventral lobe with obtuse projection; sclerotized structures of aedeagus different (Figs 92-93); apical lobe of paramere transverse, apically truncate (A02a: Figs 94-95). China (Sichuan, Shaanxi) (A02a: Map 8) ..... *A. armata* ASSING

29 Antennae much longer, antennomeres VII-X approximately 1.5 times as wide as long. Eyes larger, approximately as long as postocular region in dorsal view. Posterior halves of abdominal tergites III-V with distinct, though not very dense punctation. Aedeagus and spermatheca as in A02a: Figs 100-101, 103). Nepal and Taiwan (A02a: Map 8) ..... . *A. megalops* ASSING

- Antennae distinctly shorter, antennomeres VII-X more than twice as wide as long. Eyes smaller, somewhat shorter than postocular region in dorsal view. Posterior halves of abdominal tergites III-V with very fine and sparse punctation. Aedeagus and spermatheca as in A02a: Figs 96-97, 99. China: Sichuan, Shaanxi, Yunnan .... *A. wrasei* ASSING

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Zusammenfassung

Ischnopoda turfanensis PACE 1998 nov.syn. wird mit *Amarochara umbrosa* (ERICHSON 1837) synonymisiert. *Amarochara schuelkei* nov.sp. (China: Yunnan), *A. hamulata* nov.sp. (China: Zhejiang) und *A. effeminata* nov.sp. (China: Yunnan) werden beschrieben und abgebildet. Für mehrere Arten, davon eine unbeschrieben, werden weitere Nachweise gemeldet. Eine aktualisierte Bestimmungstabelle der Arten der Holarktis wird erstellt. In der Holarktis ist die Gattung derzeit mit 30 beschriebenen Arten vertreten.

References

ASSING V. (2002a): A taxonomic and phylogenetic revision of *Amarochara* THOMSON. I. The species of the Holarctic region (Coleoptera: Staphylinidae, Aleocharinae, Oxypodini). — Beiträge zur Entomologie, Keltern **52** (1): 111-204.

ASSING V. (2002b): A new species of *Amarochara* THOMSON from the Himalayas (Coleoptera: Staphylinidae, Aleocharinae, Oxypodini). — Linzer biologische Beiträge **34** (1): 297-298.

ASSING V. (2003): New species and records of Staphylinidae from Turkey (Insecta: Coleoptera: Staphylinidae). — Entomologische Blätter **98** (2002): 153-177.

ASSING V. (2007): A revision of *Amarochara* of the Holarctic region. III. A new species, a new synonym, and additional records (Coleoptera, Staphylinidae: Aleocharinae, Oxypodini). — Zootaxa **1411**: 25-32.

PACE R. (1991): Aleocharinae dello Yemen (Coleoptera, Staphylinidae). — Bollettino del Museo civico di Storia naturale di Verona **15** (1988): 125-150.

PACE R. (1998): Aleocharinae della Cina: parte II (Coleoptera, Staphylinidae). — Revue suisse de Zoologie **105** (2): 395-463.

PAŚNIK G. (2006) A revision of the world species of the genus *Tachyusa* ERICHSON, 1837 (Coleoptera, Staphylinidae: Aleocharinae). — Zootaxa **1146**: 1-152

SMETANA A. (2004): Staphylinidae, subfamily Aleocharinae, pp. 353–494. — In: LÖBL I. & A. SMETANA (eds): Catalogue of Palaearctic Coleoptera. II. Hydrophiloidea – Histeroidea – Staphylinoidea. — Stenstrup, Apollo Books: 942 pp.

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