REDIA, XCIV, 2011: 25-33

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NEW DATA AND RECORDS ON XANTHOLININI OF TAIWAN COLLECTED BY ALEŠ SMETANA, WITH DESCRIPTION OF NEW SPECIES (COLEOPTERA STAPHYLINIDAE)

225th Contribution to the knowledge of the Staphylinidae

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Bordoni A. – New data and records on Xantholinini of Taiwan collected by Aleš Smetana, with description of new species (Coleoptera Staphylinidae) - 225th Contribution to the knowledge of the Staphylinidae.

The author has studied plentiful material collected in Taiwan by Aleš Smetana during the years 1990-1998. Eleven new species (*Metolinus liseae* sp. n., *Atopolinus tenchi* sp. n., *A. subtiliphallus* sp. n., *A. diaphanus* sp. n., *A. anma* sp. n., *A. ilan* sp. n., *A. peitawu s*p. n., *A. kuai* sp. n., *A. smetanai* sp. n., *A. silvanus* sp. n., *A. tona* sp. n.) are described. The current knowledge on the population of Xantholinini in the island is summarized. Comment on geographical distribution, particularly of the many endemic species, including those of the genus *Atopolinus* Coiffait, 1982, are presented. *Thyreocephalus hongkongensis* (Redtenbacher, 1867) and *Erymus gracilis* (Fauvel, 1895) are new for Taiwan.

KEY WORDS: Coleoptera, Staphylinidae, Xantholinini, taxonomy, new species, *Metolinus*, *Atopolinus*, distribution, Taiwan.

INTRODUCTION

The island of Taiwan is located on the southeast coast of the China mainland, being separated from it by the Formosa Strait, just 140 km wide. The studied material comes almost entirely from the cold temperate coniferous forest zone extending from 2600 to 3000 m, formed by conifers trees (*Tusga chinensis formosana*, *Picea morrisonicola*, *Abies kawakamii*, *Chamaecyparis*) (SMETANA, 1995), from one high part of the many mountan range that characterize most of the island. This fact explaines the presence, especially within the genus *Atopolinus* Coiffait, 1982, of numerous endemic species due to isolation of that island.

The specimens of Xantholinini so far studied by the present (BORDONI, 2002) came from old collections by Sauter (Museum of Berlin), and especially the recent ones by colleagues Tateo Ito (Kyoto) and Yasutoshi Shibata (Tokyo).

By the reviewing of the Xantholinini of the Oriental Region (BORDONI, 2002) 18 species was listed from Taiwan. Two new species recently described (BORDONI, 2010) (*Thyreocephalus formosanus* Bordoni and *Daolus shibatai* Bordoni, both the first records of those genera from Taiwan) increased the total number to 20.

The present study of the Aleš Smetana material collected from 1990 to 1998, revealed 25 species, two of which being new to the island and 11 new to science, and this increased the number of Xantholinini of Taiwan to 33 species.

Certainly, many other additional species remain to be still discovered, particularly in the genus *Atopolinus* with many species occurring in the mountains.

Unless otherwise stated, all the specimens were collected by Aleš Smetana.

Depositories: cB- coll. Bordoni (Florence); cS- coll. Smetana (Ottawa).

Account of species

Thyreocephalus hongkongensis (Redtenbacher, 1867)

MATERIAL EXAMINED – Taiwan, Taichung Hsien, Wufeng, 11.vii.1993, 1 ex. (cS).

BINONOMICS – The specimen was taken by sifting of piles of weeds near rice field.

GEOGRAPHICAL DISTRIBUTION – The species is known from Burma to southern China, and from Philippines to Bali (BORDONI, 2002). New record from Taiwan.

COMMENT – Only one species of *Thyreocephalus* Guérin-Méneville, 1844 (i.e., *T. formosanus* Bordoni, 2010) was known from Taiwan until now. The finding of this species is interesting as proves that the genus, albeit to a lesser extent than in other geographical areas, could be widespread on the island more that it could appear at present.

Whit the exclusion of *T. purpuripennis* (Bernhauer, 1904) from Shangai, the species of the island are the most north-eastern in the Palaearctic Region. Tergite, sternite of the male genital segment and aedeagus as in fig. I, 1-3.

Liotesba itoi Bordoni, 2002

MATERIAL EXAMINED – Taiwan, Kaohsiung Hsien, Rd. abv. Tona For. Sta., km 16-17, 1700-1800 m, 28.iv.1998, 1 ♂ (cB).

BIONOMICS – The specimen was taken by sifting leaf litter, humus and various debris on wet spots along the escarpment of the forest road.

– Received 2 February 2011 Accepted 16 July 2011 Published 1 December 2011

GEOGRAPHICAL DISTRIBUTION – The species is known only from Taiwan. New record for Kaohsiung hsien.

COMMENT – This is the second record of the species which was known only from Nantou hsien.

Metolinus liseae sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Taitung Hsien, Hsinkangshan, above Chengkang, 800 m, L. Robillard leg. 17-22.iv.1998 (cS).

DESCRIPTION – Length of body 5.3 mm; from anterior margin of head to posterior margin of elytra: 2.5 mm. Brown black with lighter elytra; antennae and legs testaceous. Head subquadrate, with slightly rounded lateral sides; eyes small; surface with visible transversal microstriae and very sparse punctuation. Pronotum as long as head, narrower than that, with oblique anterior margins; surface with traces of transverse microstriation; dorsal series of 5 punctures. Elytra long, longer and wider than pronotum, with marked humeri; surface with numerous series of punctures. Abdomen with superficial transverse microstriation and very sparse punctuation.

Tergite and sternite of male genital segment as in fig. I, 4-5. Aedeagus (fig. I, 6) with characteristic distal plate and symmetrical, long parameres; inner sac with long, narrow piece and small area covered by scales.

BIONOMICS – The holotype was taken from one of the yellow pantraps set along the edges of a creek.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality in south-eastern Taiwan.

ETYMOLOGY – Dedicated to its collector, Mrs. Lise Robillar, the wife of Aleš Smetana, who took part in two collecting trips to Taiwan.

COMMENT – This is the first *Metolinus* species known from Taiwan and the most north-eastern species of the genus with more than a hundred taxa that occurs in all Oriental Region (BORDONI, 2002), New Guinea (BORDONI, 2010a) and North Australia (1 taxon) (BORDONI, 2005). The geographically closest species is *M. planulatus* (Sharp, 1889) from Fujian and Japan.

Indolinus formosae (Bernhauer, 1943)

MATERIAL EXAMINED – Taiwan, Kaohsiung Hsien, Kuanshan trail, above Kausanchi, 2550 m, 21.iv.1992, 1 ♂ (cS).

BIONOMICS – The specimen was taken by sifting forest floor debris in a broadleaved evergreen forest with bushy undergrowth.

GEOGRAPHICAL DISTRIBUTION – This species is known from numerous localities in Taiwan and from Guanxi and Hong Kong in mainland China (BORDONI, 2002).

Phacophallus flavipennis (Kraatz, 1859)

MATERIAL EXAMINED – Taiwan, Taitung Hsien, Hsinkangshan, above Chengkang, 800 m, 26.iv.1995, 1 ♂ (cS).

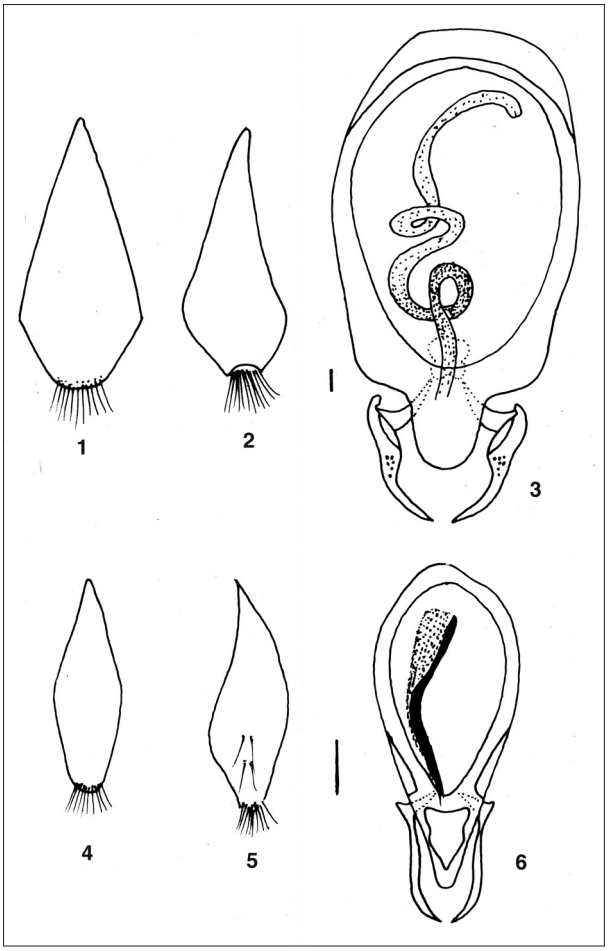

Fig. I – Tergite, sternite of the male genital segment and aedeagus of *Thyreocephalus hongkongensis* (Redtenbacher) (1-3) and *Metolinus liseae* sp. n. (4-6) (bar scale: 0.1 mm).

BIONOMICS – The specimen was taken by sifting whitish mushrooms growing on a dead tree.

GEOGRAPHICAL DISTRIBUTION – The species is known from Sri Lanka, India, Nepal, Myanmar, Malay Peninsula, Philippines, Vietnam, Borneo and from numerous localities in Taiwan (BORDONI, 2002).

Erymus gracilis (Fauvel, 1895)

MATERIAL EXAMINED – Taiwan, Kaohsiung Hsien, for. abv. Tona For. Sta, 1100 m, 30.iv.1998, 1 ex. (cS); Taitung Hsien, Hsinkangshan, above Chengkang, 550-600 m, 22.iv.1998, 1 ex. (cB).

BIONOMICS – The specimen from near Tona forest station was taken by sifting various mushrooms growing on rotting fallen trees. The specimen from Hsinkangshan was taken by sifting wet leaf litter and other debris accumulated at bases of rock walls along a forest road.

GEOGRAPHICAL DISTRIBUTION – The species is known from areas around the Caspian Sea and from much of the Oriental Region, from southern India to Sumba (BORDONI, 2002). New record for Taiwan.

Gyrohypnus maximus Bordoni, 2002

MATERIAL EXAMINED – Taiwan, Taoyuan Hsien, upper Palin, 1200 m, 18.iv.1990, 1 ♂ (cS); Taichung Hsien, Anmashan, 2230 m, 1.v.1990, 1 ♂, 2 ♀ (cS); 1 ♂ (cB); Chiai Hsien, Alishan, 2180 m, L. LeSage leg. 26.iv.1990, 1 ♀ (cB); Pingtung Hsien, Peitawushan. Kuai-Ku Hut, 2135 m, 30.iv.1992, 1 ♂ (cB).

BIONOMICS – Specimens were collected by sifting old mushrooms on dead wood in a broadleaved forest, and by sufting layers of wet debris at base of an escarpment along an old forest road.

GEOGRAPHICAL DISTRIBUTION – The species is known only from Taiwan. These are new records for Taoyuan, Taichung, Chiai and Pingtung hsiens.

COMMENT – These are the first subsequent records since the description of the species (Nantou, Meifeng).

Megalinus metallicus (Fauvel, 1895)

MATERIAL EXAMINED – Taiwan, Nantou Hsien, Hwy. 14 blw. Wushe, 1700 m, 21.iv.1990, 2 exx. (cS), 1 ex. (cB); same data, Hwy. 14 Fengnan, 700 m, 22.iv.1990, 1 ex. (cS); Taitung Hsien, Hsinkangshan, above Chengkung, 800 m, 26.iv.1995, 1 ex. (cS).

BIONOMICS – Specimens from Nantou hsien were taken by sifting piles of fermenting plum tree leaves in an orchard, that from Taitung hsien was taken by sifting whitish mushrooms growing on a dead tree.

GEOGRAPHICAL DISTRIBUTION – This species, quite variable in size and structures of the inner sac of the aedeagus, occurs in the mountains from Pakistan to Taiwan (BORDONI, 2002)

Megalinus suffusus (Sharp, 1874)

MATERIAL EXAMINED – Taiwan, Ilan Hsien, Talpingshan, 1895 m, 13-16.vii.1995, 1 ex. (cB); Taichung Hsien, Sungmao, 1550 m, 14.v.1990, 4 exx. (cS), 4 exx. (cB).

BIONOMICS – The specimen from Sungmao were sifted from old flood debris.

GEOGRAPHICAL DISTRIBUTION – The species is known from Japan and Taiwan (Taipei hsien) (BORDONI, 2002). New record for Ilan hsien.

Hypnogyra formosae (Cameron, 1949)

MATERIAL EXAMINED – Taiwan, Pingtung Hsien, Peitawushan, Kuai-Ku Hut, 2325 m, 22.v.1991, 1 ex. (cS), 1 ex. (cB).

BIONOMICS – The specimens were taken by sifting moist to wet floor debris in a broadleaved evergreen forest.

GEOGRAPHICAL DISTRIBUTION – *Hypnogyra formosae* is know only from Taiwan (Nantou, Chiai) (BORDONI, 2002). New record for Pingtung hsien.

Medhiama formosana Bordoni, 2002

MATERIAL EXAMINED – Taiwan, Nantou Hsien, Shanlinchi, 1650 m, 16.v.1990, 1 ex. (cB).

BIONOMICS – The specimen was taken by sifting of wet accumulated debris in the edges of a small creek in a broadleaved evergreen forest.

GEOGRAPHICAL DISTRIBUTION – *Medhiama formosana* occurs only in Taiwan (Nantou and Chiai).

COMMENT – This species belongs to a genus of special interest, consisting of sporadic species [apart *M. pauper* (Sharp, 1889)] that occur in the north-western part of India, Nepal and especially China (BORDONI, 2003), and Taiwan (one species only); the most eastern area are located in Japan and Taiwan (BORDONI, 2002). This is the first subsequent record of the species since it was described.

Atopolinus tenchi sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Nantou Hsien, Nenkaoshan, Tenchi Hut, 2880 m, 5.v.1992 (cS); paratypes, same data, 4 ♀ (cS), 1 ♂, 2 ♀ (cB).

DESCRIPTION – Similar to *A. shan* in size, colouration and punctuation; body somewhat shorter, with narrower head and pronotum, with sparser punctuation.

Sixth visible male tergite with posterior margin more or less convex. Male genital segment with pleurae partially fused but with trace of suture and tergite subtriangular (fig. II, 1); sternite as in fig. II, 2. Aedeagus (fig. II, 3) very small, 1 mm long, narrow, with particular additional structure of parameres; inner sac shaped like a narrow wrapped tube.

BIONOMICS – The specimens of the original series were taken by sifting leaf litter under a solitary, large *Rhododendron* bush.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality.

ETYMOLOGY – The specific epithet, a noun in apposition, refers to the type locality (Tenchi hsien).

COMMENT – The species of *Atopolinus* are remarkably similar externally, therefore only diagnostic characters, mostly the shape of the aedeagus and the sclerites of its internal sac, are highlighted in the description of the new species that are in most cases, related to *A. shan* Bordoni, 2002, which is the most common species of the genus in Taiwan. *Atopolinus shan* is characterized by the shiny, light brown body, small eyes, the head with fine and sparse punctuation, by the pronotum with dorsal series of 11-12 punctures, and by the short elytra with obsolete humeri and coarse punctuation, forming more or less regular longitudinal series.

Almost all the following species are similar to this species.

Atopolinus subtiliphallus sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Nantou Hsien, Maifeng, 2130 m, 3.v.1991 (cS); paratypes: same

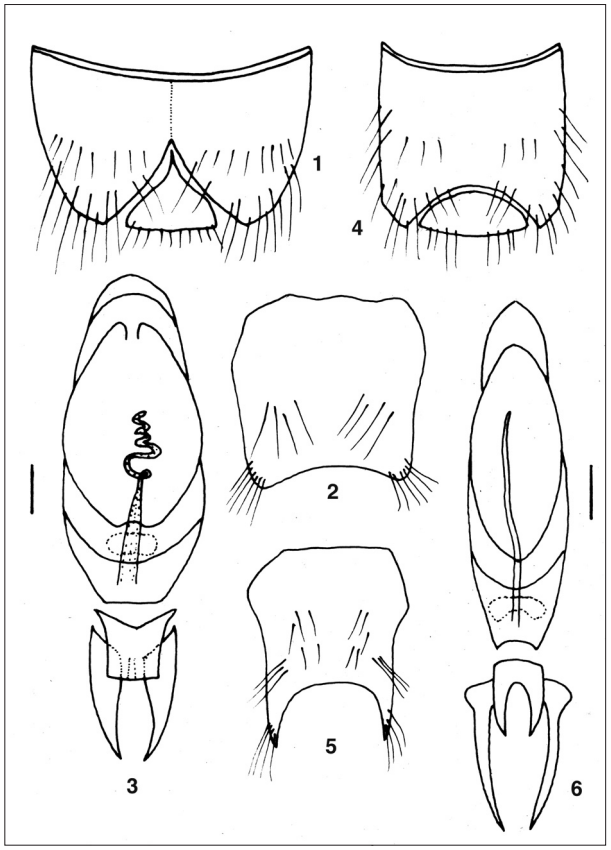

Fig. II – Male genital segment, sternite of the same and aedeagus of *Atopolinus tenchi* sp. n. (1-3) and *Atopolinus subtiliphallus* sp. n. (4-6) (bar scale: 0.1 mm).

data, 12.v.1991, 1 ♀ (cS), 1 ♂, 3.v.1998 (cS); 1 ♂, 2 ♀, 2.v.1991 (cB).

DESCRIPTION – Similar to *A. shan* but body clearly narrower and shorter (about 5 mm long); head, pronotum and elytra narrower; eyes smaller; head with traces of transverse microsculpture and with denser punctuation; elytra with superficial punctuation.

Sixth visible male tergite with posterior margin more or less convex. Male genital segment with pleurae completely fused, without trace of suture, with tergite reduced to oval sclerite (fig. II, 4); sternite of the same segment as in fig. II, 5, with very long lateral lobules. Aedeagus (fig. II, 6) very small, 0.96 mm long; very narrow and transparent, almost inrecognisable, with inner sac filiform, transparent, apparently without scales; parameres with particular additional structure.

BIONOMICS – Specimens of the original series were taken in an original broadleaved evergreen forest by sifting lush vegetation with plenty of leaf litter and humus at an escarpment along an old forest road, and by sifting moist moss and debris under it on large fallen trees in the same forest.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality.

ETYMOLOGY – The specific epithet refers to the subtile structure of the aedeagus, from Latin s*ubtilis- e* (thin) and *phallus* (aedeagus).

Atopolinus diaphanus sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Hualien Hsien, Taroko N. P., Nanhushi Hut, 2220 m, 8.v.1990 (cS); paratypes: same data, 2280 m, 9.v.1990, 1 ♀ (cS), 1 ♂ (cB); same data, Ridge SE Nanhushi Hut, 2700 m, 11.v.1990, 12 exx. (cS), 9 exx. (cB); same data, Chungyantienshin Riv., 2300 m, 10.v.1990, 1 ex. (cS); Taoyuan Hsien, Takuanshan Nat. For., 1650 m, 17.iv.1990, 2 exx. (cB); Nantou Hsien, Houhuanshan, Kuenyang, 3050 m, 29.iv.1990, 8 exx. (cS), 4 exx. (cB).

DESCRIPTION – Similar to *A. shan*, but darker with shorter body (about 6 mm long); head and pronotum narrower; head with denser punctuation; elytra wrinkled, with entirely obsolete humeri.

Sixth visible male tergite with posterior margin more or less convex. Male genital segment with pleurae completely fused, without trace of suture, with tergite reduced to very small oval sclerite (fig. III, 1); sternite as in fig. III, 2. Aedeagus (fig. III, 3) diaphanous, 0.96 mm long, with particular additional structure of parameres and with inner sac ribbon-like, wider than that in *A. tenchi*, covered by scales in distal portion and by minute and sparse scales on rest of the surface.

BIONOMICS – The specimens of the original series were taken in a coniferous forest by sifting various debris, mouldy bark and humus around bases of large dead trees, and by sifting old mouldy *Poliporus*-type mushrooms, as well as by sifting moist to wet mosses, grasses and various

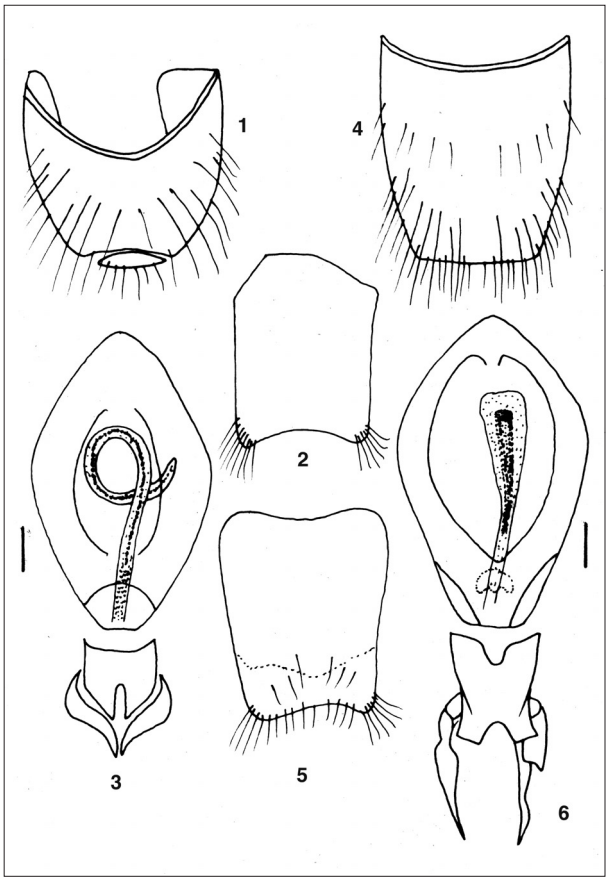

Fig. III – Male genital segment, sternite of the same and aedeagus of *Atopolinus diaphanus* sp. n. (1-3) and *Atopolinus anma* sp. n. (4-6) (bar scale: 0.1 mm).

debris along a small creek in an old *Abies kawakamii* (Hay) Ito forest.

GEOGRAPHICAL DISTRIBUTION – The species is at present kown from Hualien, Nantou and Taoyuan hsiens.

ETYMOLOGY – The specific epithet is the Latin *diaphanus- a- um* (diaphanous). It refers to the transparent and fragile aedeagus.

Atopolinus anma sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Taichung Hsien, Anmashan, 2225 m, 2.v.1990 (cS); paratypes: same data, 3 ♀ (cS), 2 ♂, 1 ♀ (cB); same data, 14.v.1992, 1 ♂ (cS), 1 ♂ (cB).

DESCRIPTION – Similar to *A. shan* but with shorter body (about 6 mm long); head, pronotum and elytra narrower; head with very sparse and fine punctuation.

Sixth visible male tergite with posterior margin more or less convex. Male genital segment with pleurae completely fused, without trace of suture; tergite not visible, fused with the pleura, without trace of suture (fig. III, 4); sternite of the same segment as in fig. III, 5. Aedeagus (fig. III, 6), 1.15 mm long, wider than that of previous species, with very different additional asymmetrical structure of parameres; inner sac in form of short and wide ribbon, covered by fine scales especially in middle of surface.

BIONOMICS – The specimens of the original series were taken in an original broadleaved forest by sifting accumulated layers of still green fermenting leaves and small twigs around a freshly fallen tree, and by sifting various debris and humus around bases of large standing trees.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality.

ETYMOLOGY – The specific epithet, a noun in apposition, is a partial name of the type locality.

Atopolinus ilan sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Ilan Hsien, Tapingshan, 1880 m, 14.vii.1993 (cS); paratypes: same data, 1 ♂(cB); same data, 13.vii.1993, 1 ♂, 1 ♀ (cS), 2 ♂, 1 ♀ (cB).

DESCRIPTION – Similar to *A. shan*, but with longer body (about 7 mm long); head narrower and smaller; pronotum more robust; elytra with denser punctuation.

Sixth visible male tergite with posterior margin more or less convex. Male genital segment with pleurae completely fused, without trace of suture; tergite reduced to a small sclerite (fig. IV, 1); sternite as in fig. IV, 2, with some black setae on lateral lobules and posterior margin membranous, entirely transparent and very tenuous. Aedeagus subovoidal, 0.9 mm long, with dark distal zone; parameres symmetrical, without additional structure (fig. IV, 3); inner sac ribbon like, long, covered by very fine scales.

BIONOMICS – The specimens of the original series were taken by sifting moss and various forest floor debris in a coniferous forest, and by submerging wet moss growing along edges of a small forest pond.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality, in northern Taiwan.

ETYMOLOGY – The specific epithet, a noun in apposition, is the name of the hsien the type locality is located in.

Atopolinus peitawu sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Pingtung Hsien, Peitawushan, Kuai-Ku Hut, 2325 m, 21.v.1991 (cS); paratypes: same data, 2 ♀ (cS); 22.v.1991, 2 ♂, 5 ♀ (cB); 2125 m, 27.iv.1992, 2 ♀ (cS); 2130 m, 27-30.iv.1992, 2 ♂, 6 ♀ (cS), 4 ♀ (cB).

DESCRIPTION – Body shorter (about 5.8 mm long) and narrower than that of *A. shan*; head very narrow with small eyes and with denser punctuation on sides; pronotum ovoid; elytra proportionally shorter, surface very wrinkled.

Sixth visible male tergite with posterior margin more or less convex. Male genital segment with pleurae completely fused, without trace of suture; tergite not visible, as it is fused together with plaurae, nor is any visible trace of suture (fig. IV, 4); sternite as in fig. IV, 5, with numerous black setae at lateral posterior lobules. Aedeagus (fig. IV, 6) ovoid, 0.88 mm long, with large characteristic additional structure of parameres; these wide, sub-triangular; inner sac transparent, difficult to define.

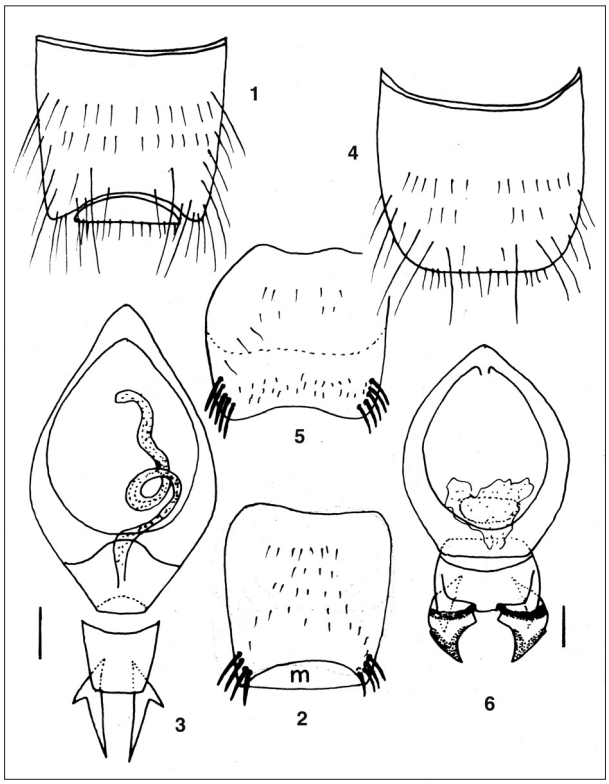

Fig. IV – Male genital segment, sternite of the same and aedeagus of *Atopolinus ilan* sp. n. (m = membranous portion) (1-3) and *Atopolinus peitawu* sp. n. (4-6) (bar scale: 0.1 mm).

BIONOMICS – The specimens of the original series were taken by sifting lush vegetation and humus among it, various forest debris, including leaf litter, and moss in broadleaved evergreen forests.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality in southern Taiwan.

ETYMOLOGY – The specific epithet, a noun in apposition, is a partial name of the type locality.

Atopolinus kuai sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Pingtung Hsien, Peitawushan, Kuai-Ku Hut, 2000 m, 23.v.1991 (cS); paratype: same data, 1 ♀ (cB).

DESCRIPTION – Body shorter (about 6 mm long) than that of *A. shan*, but longer than that of *A. peitawu*; head narrower posteriorly, longer than that of *A. peitawu*, with very sparse punctuation on the sides; pronotum with very oblique anterior margins, with dorsal series composed by large punctures; elytra short.

Sixth visible male tergite with posterior margin more or less convex. Male genital segment with pleurae completely fused, with a short proximal trace of suture; tergite not visible, as it is fused with pleurae, but a trace of suture is visible (fig. V, 1); sternite as in fig. V, 2, with some black setae at lateral posterior lobules and with sparse and long pubescence. Aedeagus (fig. V, 3) similar to that of *A. peitawu*, but much larger (1.48 mm long), with parameres of different shape, with different additional structure; inner sac short and large, covered by fine, sparse scales.

BIONOMICS – The two specimens of the original series were taken in a broadleaved evergreen forest with lush undergrowth by sifting leaf litter, rotting bark and wood and other debris along large fallen trees.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality in southern Taiwan.

ETYMOLOGY – The specific epithet, a noun in apposition, is a partial name of the type locality.

COMMENT – This species and *A. peitawu* are sympatric on Peitawu Shan and both lives in similar habitats in the broadleaved evergreen forest of that range.

Atopolinus smetanai sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Pingtung Hsien, Peitawushan, Kuai-Ku Hut, 2325 m, 21.v.19991 (cS); paratypes: same data, 2 ♀, 23.v.1991 (cS); 1 ♀, 22.v.1991; 1 ♂, 22.v.1992 (cS); same data, Peitawushan trail at 2000 m, 22.v.1991, 1 ♀; same data, 2125 m, 27.iv.1992, 7 ♀ (cS), 4 ♀ (cB); same data, trail at 1500 m, 1.v.1992, 3 ♂ (cB); Taichung Hsien, Anmashan, 2225 m, 11.v.1992, 2 ♀ (cS), 1 ♂ (cB); same data, 2 ♀ (cS), 1 ♂, 1 ♀ (cB); same data, 2225-2230 m, 11-12.v.1992, 11 exx. (cS), 7 exx. (cB); same data, 2200 m, 14.v.1992, 1 ♂ (cB).

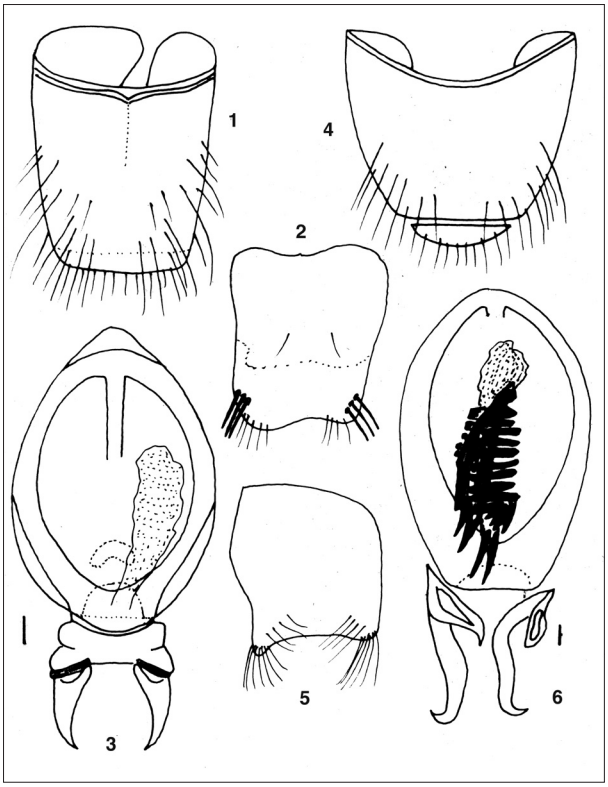

Fig. V – Male genital segment, sternite of the same and aedeagus of *Atopolinus kuai* sp. n. (1-3) and *Atopolinus smetanai* sp. n. (4-6) (bar scale: 0.1 mm).

DESCRIPTION – Very robust body, longer (9.5 mm long) than that of *A. shan*; head large, very dilated posteriad; pronotum sub-rectangular, slightly dilated anteriad; head and pronotum with very sparse punctuation; pronotum with dorsal series of only 7-8 punctures; elytra each with few series of punctures (2 near the suture, 1 in the middle, 1 lateral); abdomen with evident, deep transversal microstriation and very sparse punctuation.

Sixth visible male tergite with long posterior-medial, rounded lobule. Male genital segment wide, with pleurae completely fused, without trace of suture; the tergite is reduced to minute sclerite (fig. V, 4); sternite as in fig. V, 5. Aedeagus (fig. V, 6) wide, 2.4 mm long, subovoidal, with asymmetrical pseudoparameres, partially membranous; inner sac with a big longitudinal piece, ending with a few spines and covered by a superimposed series of parallel and sub-rectangular structures.

BIONOMICS – The specimens of the original series were taken mostly in broadleaved evergreen forests by sifting leaf litter and other debris of forest floor, rotting wood, bark and other debris along large fallen trees and around bases of large standing trees, as well as by sifting moss and humus under it on big fallen trees.

GEOGRAPHICAL DISTRIBUTION – The species is at present known from two distant mountain ranges: Peitawushan in southern Taiwan and Anmashan in north-central Taiwan. The pattern suggests likely that the species is widely distribuited in the mountainous areas of Taiwan.

ETYMOLOGY – The species was named in honour of its collector, Aleš Smetana

COMMENT – This species is very variable in the structure of the genital segment (some specimens have the plaurae separated and tergite sub-triangular), and the shape of the pseudoparameres. The differences are considered to fall within the intraspecific variability.

Atopolinus tona sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Kaohsiung Hsien, Rd. above Tona For. Sta., 1850 m, 29.iv.1998 (cB).

DESCRIPTION – Similar to *A. smetanai* but with shorted body (about 9 mm long), colour darker, brown with yellowish anterior margin of elytra and dark brown abdomen; head shorter and wider, with largely rounded lateral margins; pronotum with very oblique anterior margins, more than in *A. smetanai*, with deeper punctuation; elytra shorter with more marked punctures.

Sixth visible male tergite with posterior margin convex. Male genital segment narrow, with pleurae completely fused, without trace of suture; the tergite is reduced to minute sclerite (fig. VI, 1); sternite as in fig. VI, 2. Aedeagus (fig. VI, 3) shorter than that of *A. smetanai*, 2.2 mm long, with different pseudoparameres; inner sac with a long narrow piece, above which is a series of structures, similar to those of *A. smetanai*, but short in proximal part and long in distal part.

BIONOMICS – The holotype was taken in an original broadleaved evergreen forest by sifting layers of mouldy leaf litter and other debris along a large, rotting fallen tree.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality in southern Taiwan.

ETYMOLOGY – The specific epithet, a noun in apposition, is a partial name of the type locality.

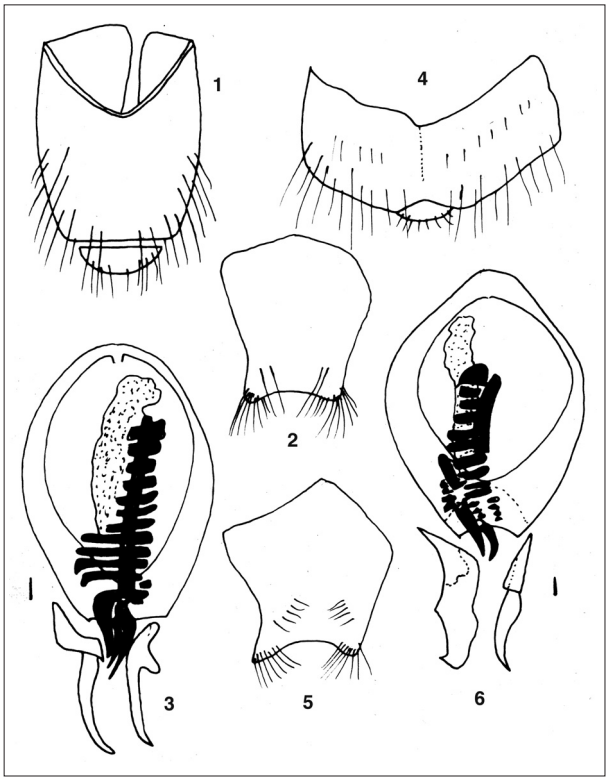

Fig. VI – Male genital segment, sternite of the same and aedeagus of *Atopolinus tona* sp. n. (1-3) and *Atopolinus silvanus* sp. n. (genital segment enlarged) (4-6) (bar scale: 0.1 mm).

Atopolinus silvanus sp. n.

MATERIAL EXAMINED – Holotype ♂: Taiwan, Kaohsiung Hsien Rd. abv. Tona For. Sta., 1850 m, 29.iv.1998 (cS); paratype: same data, km 16-17, 1700-1800 m, 28.iv.1998, 1 ♂ (cB).

DESCRIPTION – Similar to *A. smetanai,* but body shorter (about 9 mm long), colour darker; head wider; pronotum with rounded lateral margins and similar punctuation.

Sixth visible male tergite with protruding median lobule at posterior margin. Male genital segment wide, with plaeurae fused but with trace of proximal suture; tergite reduced to minute sclerite almost fused with the pleurae (fig. VI, 4), sternite as in fig. VI, 5. Aedeagus (fig. VI, 6) similar in shape to that of *A. tona*, 2.2 mm long, but with very different asymmetrical parameres; inner sac similar to that of *A. smetanai*, with the posterior piece short and narrow and with a long distal spine.

BIONOMICS – The holotype was taken in an original broadleaved evergreen forest by sifting layers of mouldy leaf litter and other debris along a large rotting fallen tree.

The paratype was taken by sifting leaf litter, humus and various debris on wet spots along the escarpment of a forest road in a similar forest.

GEOGRAPHICAL DISTRIBUTION – The species is known only from the type locality in southern Taiwan.

ETYMOLOGY – The specific epithet is the uncommon adjectiv from the Latin s*ilva -ae* (sylvan).

Atopolinus shan Bordoni, 2002

MATERIAL EXAMINED – Taiwan, Nantou Hsien, Houhuanshan, 3100 m, 20.iv.1990, 18 exx. (cS), 7 exx. (cB); same data, 3175 m, 15.v.1990, 4 exx. (cS), 1 ex. (cB); same data, Nenkaoshan, 1.5 km SW Tenchi Hut, 2830 m, 8.v.1992, 4 exx. (cB); 2900 m, 5.v.1992, 21 exx. (cS), 10 exx. (cB); 2990 m, 7.v.1992, 8 exx. (cS), 4 exx. (cB); 2.5 km SW Tenchi Hut, 2720 m, 6.v.1992, 20 exx. (cS), 11 exx. (cB); Nenkaoshan trail, Yuenhai Hut, 2350 m, 4.v.1992, 1 ex. (cS).

BIONOMICS – Specimens were taken in various habitats. Some were taken in broadleaved evergreen forests or in mixed forests by sifting leaf litter and other forest floor debris, by sifting debris (twigs, moss, rotting wood) accumulated at bases of escarpment along old forest roads. Some specimens were taken by sifting dead grasses, various debris and mosses in wet open habitats without trees at over 3000 m (e. g. at Houhanshan).

GEOGRAPHICAL DISTRIBUTION – This endemic species is at present known only from Nantou hsien but is very common there.

COMMENT – These are the first subsequant records since the species was described.

Atopolinus insulanus Bordoni, 2002

MATERIAL EXAMINED – Taiwan, Nantou Hsien, Houhuashan. Kuenyang, 3050 m, 4.v.1991, 8 exx. (cS), 4 exx. (cB); same data, 13.v.1995, 1 ex. (cS); Nenkaoshan trail, 2050-2150 m, 8.v.1992, 4 exx. (cS), 3 exx. (cB).

BIONOMICS – Specimens were taken in a *Abies kawakamii* (Hay) Ito forest by sifting wet moss, grasses and debris on two fallen trees in a small creek (Kuenyang) and by sifting old vegetation and debris at bases of escarpment along a trail inside a mature broadleaved evergreen forest.

GEOGRAPHICAL DISTRIBUTION – This endemic species occurs in Nantou, Hualien and Chiai hsiens (BORDONI, 2002).

COMMENT – These are the first subsequent records since the species was described.

Atopolinus shibatai Bordoni, 2002

MATERIAL EXAMINED – Taiwan, Nantou Hsien, Shanlinchi, 1650 m, 19.v.1991, 1 ♂ (cB); Taitung Hsien, Hsinkangshan, above Chengkang, 900 m, 19.iv.11998, 1 ♂, 1 ♀ (cS), 1 ♂, 1 ♀ (cB); Kaohsiung Hsien, Tengchin, 1565 m, 23.iv.1990, 1 ♂ (CS); same data, 1 ♀ (cB).

BIONOMICS – Specimens were taken by sifting wet debris along a small creek (Shanlinchi) and by sifting forest floor debris in a *Taiwania cryptomeroides* (Tengchin).

GEOGRAPHICAL DISTRIBUTION – This endemic species occurs in Nantou, Chiai, Taitung (BORDONI, 2002), and Kaohsiung hsiens. New record for Kaohsiung hsien.

Atopolinus regalis Bordoni, 2002

MATERIAL EXAMINED – Taiwan, Nantou Hsien, Maifeng, 12.v.1991, 1 ex. (cS), 1 ex. (cB).

BIONOMICS – The specimens were taken by sifting moss and humus under it on a large fallen tree in a broadleaved evergreen forest.

GEOGRAPHICAL DISTRIBUTION – This endemic species is known only from Nantou hsien. This is the first subsequent record since the species was described..

COMMENT – Unlike the previous species, this taxon has slightly protruding eyes and is dark coloured: the head and pronotum are blak, elytra reddish and abdomen brown-black.

GENERAL CONSIDERATIONS

In the island of Taiwan occurs a composite xantholinini fauna which combines elements of eastern origin with endemic elements belonging to genera of probable palaearctic origin that seem to have here the current south-eastern limit of distribution.

The genus *Nudobius* Thomson, 1860, whose representatives live also in China and Japan, is here rapresented by one species (*sejunctus* Watanabe & Shibata, 1965) known from Japan, while the genus *Gyrohypnus* Leach, 1819 is represented by an endemism (*maximus*). The genus *Megalinus* Mulsant & Rey, 1877, well spread on China and Japan, is represented by an endemic species (*oculatus* Bordoni, 2002), by a common taxon in Japan (*suffusus*) and by the most common species in the Oriental Region (*metallicus*). The genus *Eymus* Bordoni, 2002 is represented by one common species (*gracilis*).

A similar consideration should be done to the genus *Medhiama* Bordoni, 2002 that is present on the island with an endemic species (*formosana*). *Indolinus formosae*, common to Taiwan and southern China, belongs to a genus still little known, consists of two other species.

The correlation of Taiwan with Japan and China are also confirmed by the presence of a species widespread in those regions (*Xanthophius angustus* Sharp, 1874).

Taiwan also marks the north-eastern limit of uncommon oriental genera, as *Spaniolinus* Bernhauer, 1916 (*yoshimotoi* Bordoni, 2002), *Liotesba* Scheerpeltz, 1965 (*itoi*) and the genus *Pachycorynus* Motschulsky, 1858 (with the endemic species, *shanmo* Bordoni, 2002, next to the very common *dimidiatus*) and is rich in endemic entities.

Among these ones, are particularly important for systematic and biogeographic reasons the numerous species of *Atopolinus* Coiffait, 1982, a genus that seems to have originated in the western part of the Oriental Region. This genus, that occurs also in southern China, is represented here by 17 species which form a homogeneous group, the most conspicuous for abundance and diffusion even for Nepal and Thailand.

These species have a sporadic distribution on the most of the investigated mountains and a considerable external similarity, characterized by depigmentation, microphthalmia and subapterism. To this genus the island is the south-eastern limit of distribution.

During this study two other endemic species of *Atopolinus* werw not found (i.e., *itoi* Bordoni, 2002 from Chiai, Alishan and *yann* Bordoni, 2002 from Taipei, Lalashan and Chiai, Tadoangshan).

Some species occurs in different provinces or on multiple mountain ranges so that they appear to have a wider distribution (*Atopolinus diaphanus*, *smetanai*, *shan*, *shibatai*, *yann*, *insulanus*, *yann*, *regalis*). Others seem confined, at present, to just one mountain (*Atopolinus tenchi*, *subtiliphallus*, *anma*, *ilan*, *petawu*, *kuai*, *silvanus, tona*, *itoi*) and could be sometimes sympatric with one of the above mentioned species, such as *A. tenchi* with *A. shan* and *insulanus*; *A. anma* with *A. smetanai* or live on the same mountain with the latest, as *A. petawu* with *A. kuai.*

In this paper the first *Metolinus* Cameron, 1920 of Taiwan has been described (*liseae*) (*Metolinus* is one of the most widely distributed genus in the Oriental Region, with more of hundred entities), and recently the first *Thyreocephalus* Guérin-Méneville, 1844 (*formosanus* Bordoni, 2010) and the first *Daolus* Bordoni, 2004 (*shibatai* Bordoni, 2010) of the island were described.

All these data suggests that Taiwan constitues a land of contact between neighboring faunule, belonging to the Palaearctic and Oriental zoogeographical regions, with a significant group of endemisms (currently 24 out of 33 species, with a percentage over 72%), caused by the insularity and by the presence of high mountains that became areas of refuge for those genera that have a predominantly norther distribution in the Oriental Region.

ACKNOWLEDEMENTS

I wish to thank Dr. Aleš Smetana (Ottawa) for providing the material for this study, for the useful bionomic data, for the suggestions, and for his helping in the English version. Thanks also to the editorial staff of Redia.

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